worcestershire countycouncil

SLC Rail

Rushwick Station

Strategic Outline Business Case

March 2021

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Document Control

Version Control

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V0.3	Ian Baxter	Strategy Director, SLC Rail	19.3.21
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Executive Summary

This document is a Strategic Outline Business Case (SOBC) for a new station at Rushwick between Malvern Link and Worcester Foregate Street.

The context is that the South Worcestershire Development Plan (SWDP) is being reviewed in order to accommodate a substantial increase in new housing in the County over that currently in the Local Plans. Overall, it is anticipated that 42,400 new homes will be built in the area bounded by Evesham, Droitwich and Great Malvern in the next 20 years. Worcestershire's population is expected to increase by nearly a quarter.

Effective and high-quality transport infrastructure will be essential to support this order of development. East of Worcester, much of the new development is expected to be built around the new station at Worcestershire Parkway, making the most of a new transport asset built by Worcestershire County Council. However, no such facility exists to the west of Worcester, where the River Severn presents a barrier to road travel and where the existing railway service is constrained by station locations and lack of parking at them.

In the Strategic Case, the following objectives are identified:

- Provide sustainable transport for new developments west of Worcester
- Release suppressed demand for station car parking west of Worcester
- Improve connectivity for Malvern Hills
- Alleviate road congestion into Worcester
- Reduce long distance rail heading for long journeys
- Reduce road mileage and shorten road trips for local rail access

The analysis in the Strategic Case shows that the best solution to achieve these objectives is a new railway station west of Worcester, and that the best location for this is at Rushwick. This is also the location for a proposed 1,000 new homes under the SWDP review. A site has been identified for the station and an initial engineering review has confirmed its deliverability.

The Economic Case identifies that the business case for this new station – estimated to cost £14.24m – is highly sensitive to the level of train services provided at it. This in turn is constrained by the railway infrastructure in the Worcester area, whose capacity is limited by Victorian-era signalling. We have identified that 63% of trains passing through the Rushwick site in the pre-pandemic timetable would be able to call at the station, limited by timetabling and infrastructure constraints.

However, other parties are proposing service increases: in particular Midlands Connect through their Midlands Rail Hub programme, and the North Cotswold Line Task Force. Network Rail is considering a condition-led asset renewal programme of the signalling around Worcester for the 2024-29 Control Period. All of these factors suggest that a holistic approach to rail services in the Worcester area is well overdue, and should be the key next step, incorporating Rushwick station alongside these other service and renewal aspirations. This document proposes a Worcester Area Board involving Network Rail, West Midlands Rail Executive and Midlands Connect alongside Worcestershire County Council and Train Operators.

The station itself has the potential, subject to train service provision, to represent high value for money, and in the best case is "cash positive" to the public purse. The potential impact of COVID has been modelled through two economic scenarios: a "Business as Usual" one, assuming that the economic impact of the pandemic is temporary, and a "Low Growth" scenario, which is in line with the DfT's worst case modelling.

At this early stage of development a number of options for funding are in play, including developer contributions, borrowing and grant sources. These will be further investigated and developed in the next stage of work.

This SOBC demonstrates that Rushwick station has considerable potential to deliver significant benefits for Worcestershire and the railway in the second half of the 2020s. It identifies the next steps as:

- Establishing a Worcester Area Board
- Under its auspices, setting out a vision for the complete picture of services through Worcester with WMRE, Midlands Connect and Network Rail
- A formal requirements management process involving the Local Authorities and rail industry partners to capture and document the scope of the proposal
- Feeding into the specification for Worcester Area Resignalling to ensure that station calls can be reliably accommodated

It will then be for Worcestershire County Council to determine the speed at which the Develop/Outline Business Case stage of the project should progress in conjunction with the SWDP review process.

March 2021

1 Strategic Case

1.1 Introduction

1.1.1 Worcestershire County Council asked SLC Rail to prepare a Strategic Outline Business Case for a new station between Worcester and Malvern Link to address connectivity challenges for new development proposed as part of the South Worcestershire Development Plan (SWDP) review. The review has commenced and a new Local Plan is expected to be adopted in April 2023.

1.2 Strategic Context

1.2.1 The strategic context is that housing growth in Worcestershire is already significant and the SWDP will increase this further. The graphic below shows that the population of the county over the period to 2040 is expected to grow by 23.5%. Of the 61,320 new houses over the period 69% is expected to be in the area bounded by Evesham, Droitwich and Great Malvern.

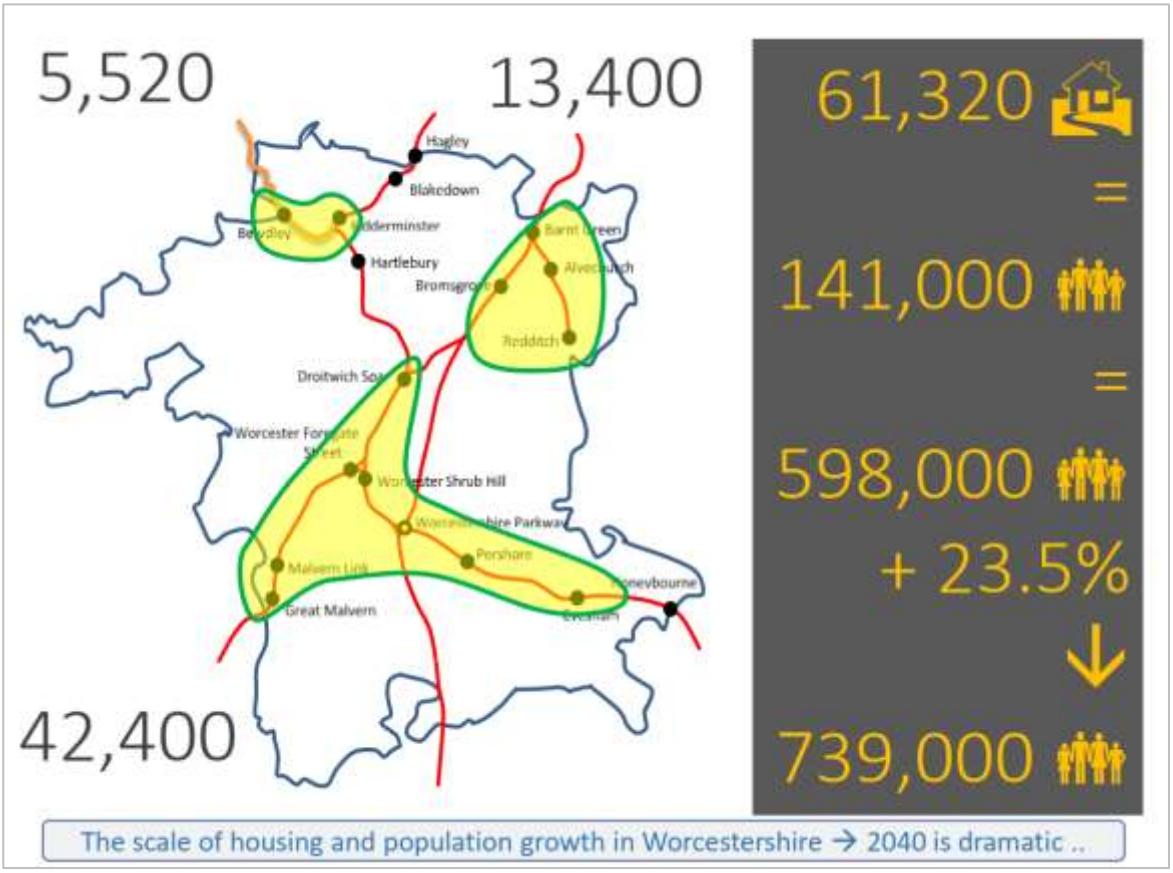

Figure 1 - SWDP housing growth

1.2.2 Worcestershire Parkway station was opened in February 2020 and is intended to help support growth to the east of this area. Since its opening, the SWDP review has commenced, and 10,000 of the 42,400 new houses are expected to be located immediately around this new station. The station will support sustainable travel and connectivity for these new residents.

1.2.3 However, no such "ready-made" opportunity exists to support housing growth west of Worcester and the River Severn. Of the existing stations in this area:

- The Worcester stations have very limited car parking (Worcester Foregate Street has none), and they can only be accessed from the west through the congested streets of Worcester, and from many locations via the single bridge across the Severn into the city and the gyratory ("Worcester Bridge").
- Malvern Link station is situated off the A449 Malvern – Worcester single carriageway road, but has only 58 car parking spaces, with no prospect of expansion.
- Great Malvern station is situated within a network of town streets on the outskirts of the town, and in an area of attractive Victorian buildings. The station car park has 122 spaces, again with no prospect of expansion, especially given its attractive area and given that the station retains most of its original Victorian station design by the architect Edmund Wallace Elmslie and is a Grade II listed building.

1.2.4 The following photographs illustrate the above.

Figure 2 - Worcester Bridge - the main way into Worcester from the west

Figure 3 - Malvern Link station car park (58 spaces)

Figure 4 - Great Malvern station - the car parking is on the approach road

1.2.5 The other strategic issue is that, prior to the COVID-19 pandemic, the railway in Worcestershire was seeing significant growth. The graph below shows the increase in entries and exists recorded in the ORR station usage data series for Great Malvern – growth of 64% over 20 years. Paradoxically this shows both that there Is pressure on the station arising from growth in usage and that the lack of car parking is a problem:

64% compares with a national average over the same period of c.100%. A similar picture applies at the other stations in the area.

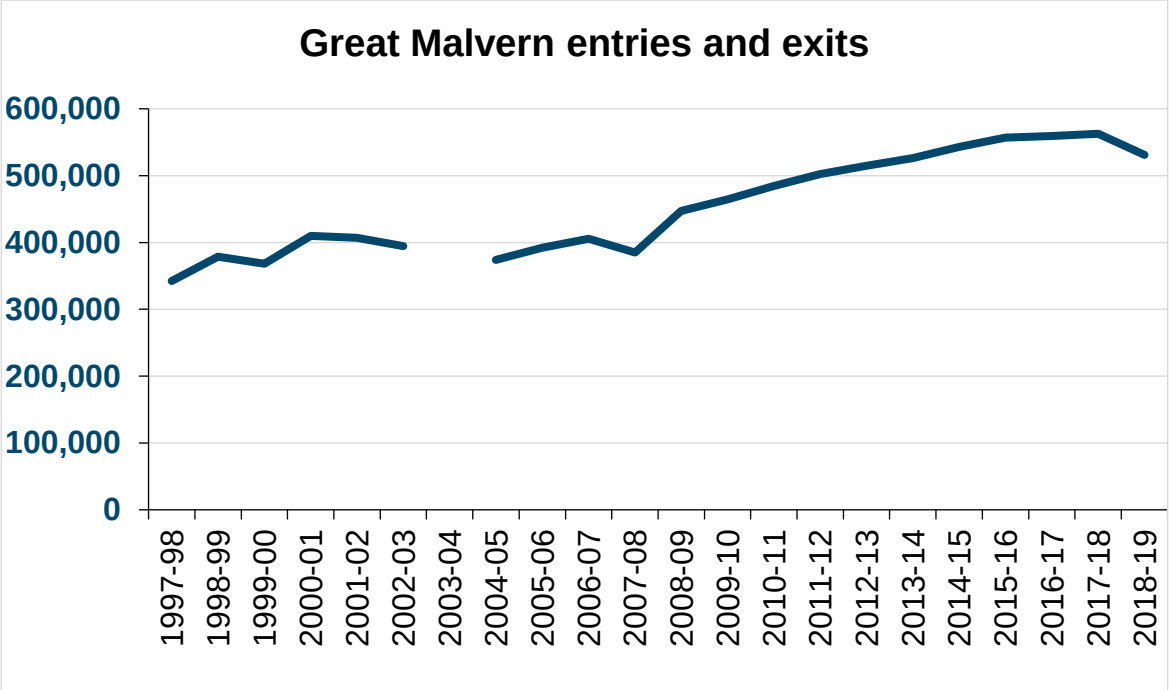

Figure 5 - Great Malvern station usage data (the dataset does not include 2003/04)

1.2.6 The strategic backdrop is one of significant change in the railway industry and major economic disruption caused by the COVID-19 pandemic. This means there are significant uncertainties around demand, the shape of future train services, and the contractual structure of the rail industry.

1.3 Policy Context

1.3.1 The table below illustrates the policy context for rail and housing growth in Worcestershire.

Document	Strategy
Worcestershire LEP Strategic Economic Plan, 2014	Grow County's economy by £2.9bn 25,000 additional jobs, 47,200 homes "To build a connected, creative, dynamic economy that delivers increased prosperity for all those who choose to live, work, visit and invest in Worcestershire."
South Worcestershire Development Plan Review, 2020	42,400 new homes by 2040
Worcestershire Local Transport Plan, 2017	Main challenges will be: • To relieve congestion; • To enable and promote growth; • To enhance journey time reliability; • To address deteriorated ambient air quality; • To improve all aspects of road safety Rushwick included as strategic transport scheme
Worcestershire Rail Investment Strategy, 2017	Provision of additional car park capacity at existing stations and/or new stations to accommodate forecast passenger growth to 2043
West Midlands Rail Executive Rail Investment Strategy, 2018[1]	Includes an increase in fast train services between Birmingham, Worcester and Hereford by 2031.
Midlands Connect Strategy, 2017	This strategy identifies the Birmingham – Worcester – Hereford corridor as a priority for transport and connectivity development. And increased services on this corridor now form an important part of their Midlands Rail Hub scheme.

Figure 6 - Policy context

[1] Driving a Revolution in Rail Services for West Midlanders

1.3.2 The Midlands Connect priority corridors are shown on the map from their Strategy below.

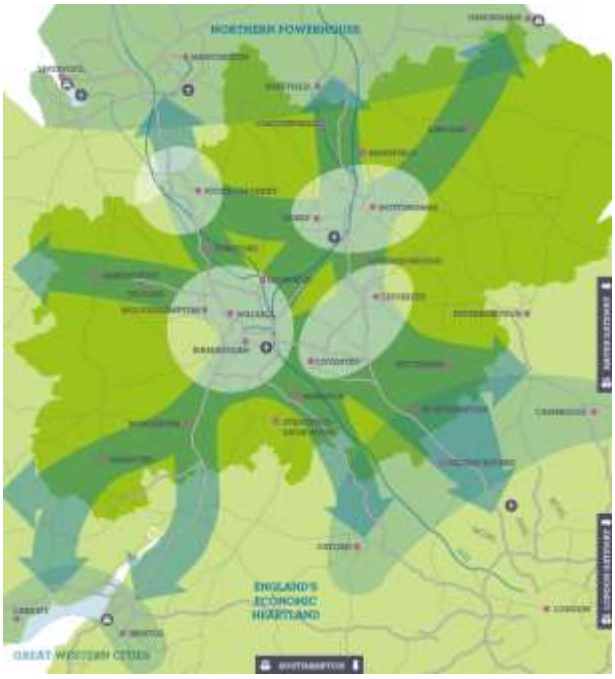

Figure 7 - Midlands Connect priority corridors

1.4 Problem Identification

1.4.1 Given the strategic context set out above, Worcestershire County Council have identified a series of related problems that this SOBC seeks to address. These are:

Problem Statement 1	Problem Statement 2	Problem Statement 3	Problem Statement 4
The transport infrastructure west of the River Severn is insufficient to support the level of housing growth proposed.	There is congestion into Worcester from the West which additional housing growth will only make worse.	There is insufficient connectivity from the Malvern Hills area to jobs and major economic centres to support the growing economy.	The railway cannot contribute sufficiently to the prosperity and growth of the area west of Worcester because of the lack of station car parking.

Figure 8 - Problem statements

1.4.2 These problems are illustrated on the map below.

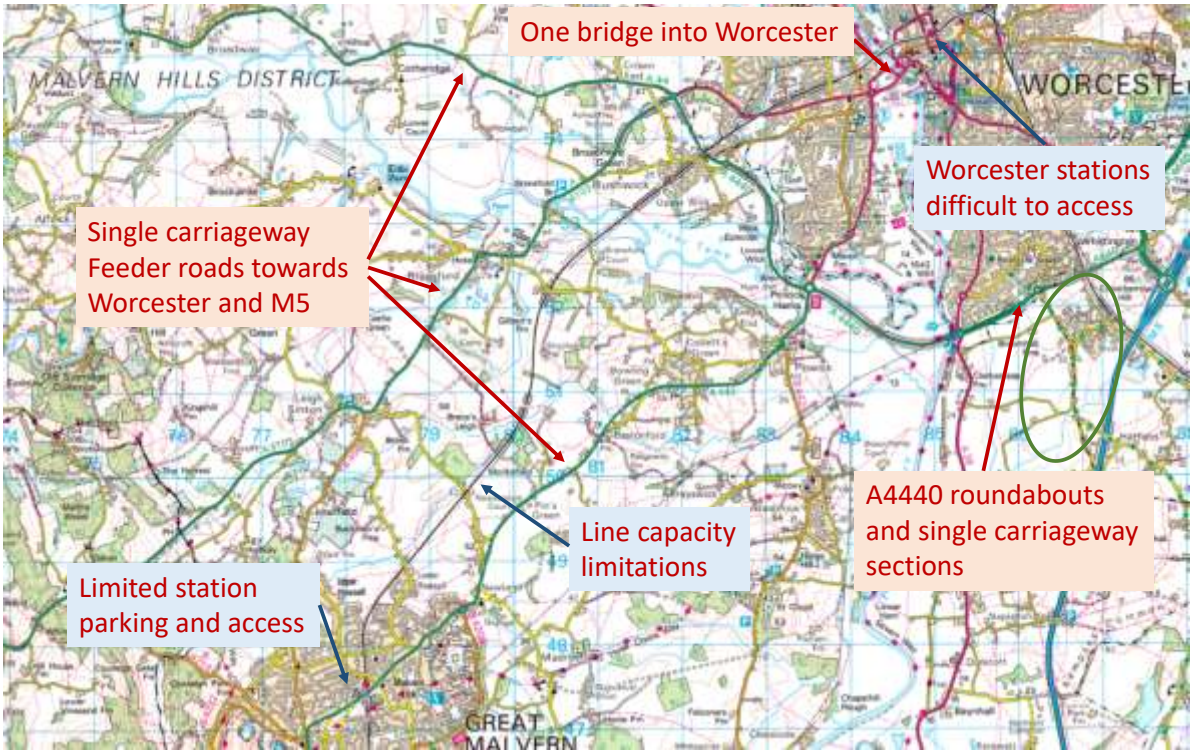

Figure 9 - Map illustrating the problems west of Worcester

1.5 Impact of Non-Intervention

1.5.1 Having identified four problem statements, the table below examines the impact of no interventions being undertaken. The impacts are wide-reaching, for example with a lack of connectivity for the professional services sector, job forecasts may not materialise, and hence the transformational growth forecast by the LEP is constrained.

Statement 1:	**Statement 2:**	**Statement 3:**	**Statement 4:**
The transport infrastructure west of the River Severn is insufficient to support the level of housing growth proposed	There is congestion into Worcester from the West which additional housing growth will only make worse	There is insufficient connectivity from the Malvern Hills area to jobs and major economic centres to support the growing economy	The railway cannot contribute sufficiently to the prosperity and growth of the area west of Worcester because of the lack of station car parking

Figure 10 – Impact of Non-intervention

1.6 Objectives and Measures of Success

1.6.1 Building on the identified problem statements, a set of objectives has been identified to guide the development and assessment of options. Each objective is then supported by a measure for success. The logic is shown in the graphic below.

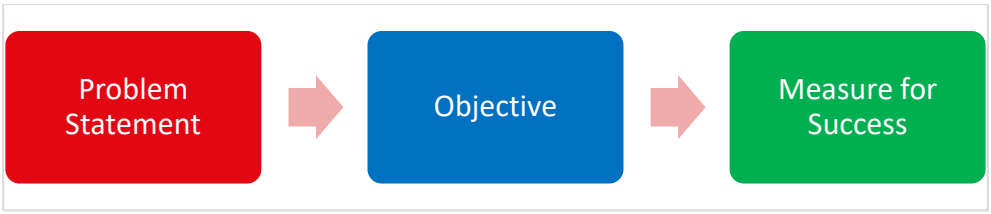

Figure 11 - Logic sequence

1.6.2 The objectives derived in this way are shown in the table below.

Problem Statement	Objective
Problem Statement 1 **The transport infrastructure west of the River Severn is insufficient to support the level of housing growth proposed**	Provide sustainable transport for new developments west of Worcester
Problem Statement 2 **There is congestion into Worcester from the West which additional housing growth will only make worse**	Alleviate road congestion into Worcester Reduce road mileage and shorten road trips for local rail access
Problem Statement 3 **There is insufficient connectivity from the Malvern Hills area to jobs and major economic centres to support the growing economy**	Improve connectivity for Malvern Hills Area Reduce long distance rail heading for long journeys
Problem Statement 4 **The railway cannot contribute sufficiently to the prosperity and growth of the area west of Worcester because of the lack of station car parking**	Release suppressed demand for station car parking west of Worcester

Figure 12 – Objectives

1.6.3 The table below outlines the measures of success for achieving the objectives.

Objective	Measures of Success	Expected Outcomes
Provide sustainable transport for new developments west of Worcester	Fast and frequent public transport services for new developments. Increased usage of public transport in the Malvern Hills area	Better access from new developments to jobs further afield, increasing affluence and improving productivity.
Alleviate road congestion into Worcester	Alternative solutions that enable people to access where they need to go without driving into central Worcester. Reduced congestion across the Worcester Bridge	Reduced congestion and improved air quality in Worcester city centre.
Reduce road mileage and shorten road trips for local rail access	People use stations west of Worcester to access the rail network	Modal shift to rail and reduced carbon emissions from longer distance road journeys.
Improve connectivity for Malvern Hills Area	Increased usage of public transport in the Malvern Hills area	Better access to higher value jobs and improved productivity.
Reduce long distance rail heading for long journeys	People use stations west of Worcester to access the rail network	Modal shift to rail and reduced carbon emissions from longer distance road journeys.
Release suppressed demand for station car parking west of Worcester	People use stations west of Worcester to access the rail network	Modal shift to rail.

Figure 13 - Measures of success

1.7 Intervention Options

1.7.1 The following high-level options explore possible solutions to the four problem statements in order to achieve the objectives. These options should provide a sustainable means to offset the disbenefits of road travel (pollution and congestion) and cater for the anticipated growth in demand driven by increases in housing and in further economic prosperity.

OPTION	Sustainable transport for new residents	Release suppressed rail demand	Connectivity for Malvern Hills Area	Aleviate road congestion into Worcester	Reduce long distance rail heading
Do nothing					
Road improvements, including to ring road (including to support access to Worcestershire Parkway)					
Improve access to rail through existing stations					
New station west of Worcester					

Figure 14 - RAG review of high-level options

1.7.2 The following comments can be made on this analysis:

- The scale of housing growth across Worcestershire means that transport solutions will be required to make them sustainable.

- Road improvements are possible around Worcester (and indeed part of the Southern Orbital road is currently being made into a dual carriageway). However, the main arterial routes spreading out towards Malvern, Hereford and Leominster will remain single carriageway. A road-based approach is likely to encourage longer distance road movements and long-distance rail heading (for example, there is evidence that some people from this area drive to Warwick Parkway to catch a train to London).

- There is no scope to increase car parking at Great Malvern station and onlyvery limited scope at Malvern Link. Whilst there is significant public car parking in the centre of Worcester that could be used by prospective new residents west of Worcester to access the rail network, this would increase congestion over Worcester Bridge and within the centre of the city,

1.7.3 Having identified that a new station west of Worcester is potentially the best way of achieving the objectives, a Multi-Criteria Analysis was then undertaken on the potential station sites identified below. These sites were identified using professional judgement. One of the sites reviewed was the development of the existing station at Malvern Link.

1 – Bransford 2 - Rushwick West 3a/b – Rushwick East 4 – Boughton 5 – Henwick
6 – Existing stations

Figure 15 - Sites assessed in the Multi-Criteria Analysis

1.7.4 Each site was assessed against the following criteria:

- Relevant South Worcestershire Development Plan (SWDP) Objectives
- Transport Objectives (LTP and RIS)
- Station-Specific Objectives
- Railway Feasibility
- Transport Impacts
- Environmental
- Managerial (Public acceptability, quality of supporting evidence, level of risk)
- Development impacts

1.7.5 Each site was scored against the criteria on whether the impact was very, moderately or slightly adverse or beneficial. The results of the scoring from this exercise are shown in the table below. The full analysis can be found at Appendix 8.

Option	Description	Score
1	Bransford	-16
2	Rushwick West	19
3a	Rushwick East (West of A4440)	-10
3b	Rushwick East (East of A4440)	7
4	Boughton	-4
5	Henwick	-4
6	Malvern Link	7

Figure 16 - Multi-Criteria Analysis scoring

1.7.6 Rushwick West (site 2) was identified as the most favourable location. Compared to the other locations considered; this location is in close proximity to new housing developments which align with SWDP objectives. It also has the greatest land availability for a rail development and its car park, which can release supressed demand for rail car parking across Worcestershire, another SWDP objective. However, this location, along with others, did not score so well for its ability to timetable train stops and its potential negative impact on the local road transport network.

1.8 Scope of the Interventions

1.8.1 The position of the Rushwick site in the context of the rail network in the area is shown below.

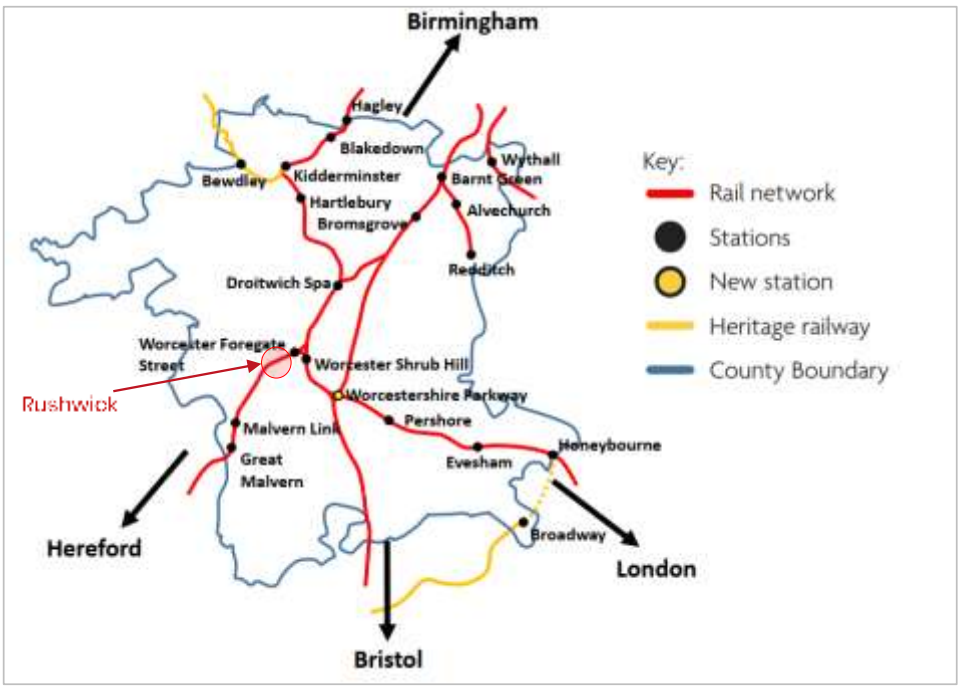

Figure 17 - Position of Rushwick on the rail network in Worcestershire

1.8.2 The Rushwick site is also one identified for an additional 1,000 houses in the SWDP review. Malvern Hills District Council has led a development process with the landowners and prospective developers to establish a concept Masterplan for the site, incorporating a station as identified through this analysis. Version 3 of the concept plan is shown below with the station circled in red, and a background note on the proposed expansion of Rushwick by the District Council is attached at Appendix 1.

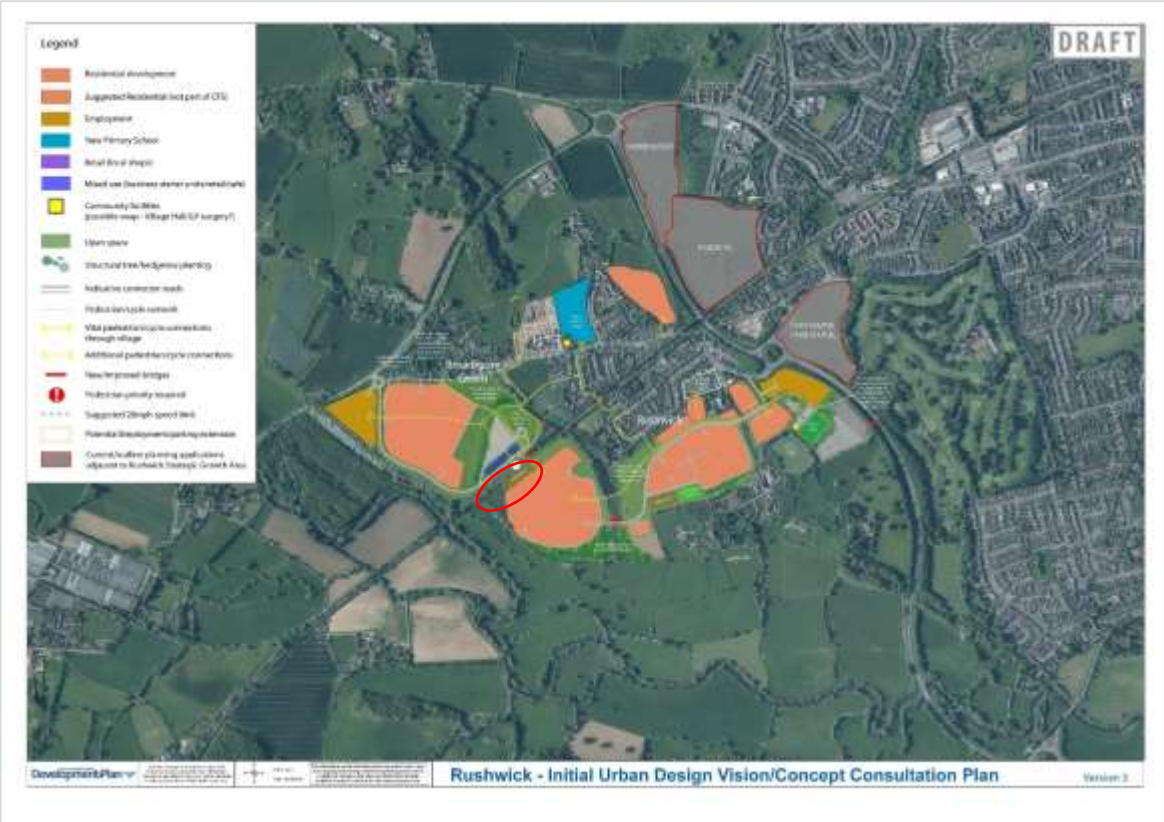

Figure 18 - Rushwick Concept Plan

1.8.3 An initial desk study of the existing track and a review of standards has indicated that it is feasible to locate a station at the position identified with the current vertical track gradient present. The station can accommodate 148m long platforms equivalent to a 6-car Class 196 train. Based on the predicted footfall, the proposed station is assumed to be Category F in line with guidance from the DfT Better Stations Report 2009[2], and it is assumed, therefore, that the station will be unstaffed, and the facilities will be limited to platform shelters, footbridge and lifts or ramps.

[2] [ARCHIVED CONTENT] (nationalarchives.gov.uk)

1.8.4 A 250-space car park can be accommodated at the site, meeting the user demand study forecast by the year 2041. It is proposed for the new station car park to be located on the north-west side of the existing tracks; this is driven by the station user demand study which identifies that most car users will approach from the north-west of Rushwick. This can integrate the proposed station access with the proposed development access road from the A4103 and Bransford Road as outlined in the South Worcestershire Development Plan Vision.

1.8.5 A Client Outcome Specification is included at Appendix 2, an Engineering Feasibility Report at Appendix 3 and Cost Estimates at Appendix 4. The anticipated final cost in 2020 prices including 40% risk is £14.24m.

1.8.6 An initial assessment of land and planning issues has been undertaken and is detailed in the Land and Planning Report at Appendix 6. This report notes in relation to the SWDP review that:

"The formal period of public consultation on the SWDPR 'Preferred Options' was undertaken between 4th November 2019 – 16th December 2019. The Plan which was the subject of the 'preferred options' consultation confirms the council's ambitions for the expansion of the existing settlement at Rushwick.

"Policy SWDPR 51: Rushwick Expanded Settlement of the 'preferred options' Plan states that 1,000 new dwellings and 10ha of employment land will be delivered by the end of the plan period. The draft plan anticipates that the development (expansion of Rushwick) will not begin until after 2030, by which time the critical transport infrastructure – a new railway station and 500-space car park[3] would be provided at Rushwick.

"The 'preferred options' plan states that: "It is proposed to prepare a Development Plan Document for Rushwick which will set out in detail the development boundary, the quantum of development, the mix of land uses and all of the necessary infrastructure needed alongside an evidence base which will need to demonstrate development viability and deliverability."

Indeed, Policy SWDPR 3: Strategic Transport Links of the draft plan states that: "The following transport schemes, as identified within Worcestershire LTP4, are the most

[3] Subsequently amended to 250 spaces as a result of the demand modelling described in the Economic Case.

significant for the successful implementation of the SWDPR: Rushwick Railway Station and Car Park"

1.9 Train Services

1.9.1 The following train services currently pass through the Rushwick site in a typical hour (pre-pandemic).

Service	Frequency	Operator
Birmingham New Street – Hereford via Bromsgrove	Hourly, with some additional peak trains	West Midlands Trains
London Paddington – Great Malvern/Hereford	13 trains each way, with 6 extending from Hereford and 5 extending to Hereford	Great Western Railway
Weymouth or Southampton – Great Malvern	Two-hourly	Great Western Railway
Birmingham Snow Hill – Great Malvern via Kidderminster	Two-hourly	West Midlands Trains

Figure 19 - Pre-pandemic train services through the Rushwick site

1.9.2 The fundamental requirement is not only for a railway station but also for a regular interval timetable of train services being able to stop at this proposed station. The railway station provides the means to access the train service. Given the critical importance of the train service pattern, a key requirement for successful development of the station is that the railway industry is comfortable that the station call can be accommodated within the timetable without materially impacting on train performance and that in due course DfT undertake to ensure that the stopping pattern is included within the service specification for a future operating company.

1.9.3 Attached at Appendix 7 is an initial assessment (Technical Note on Timetabling Rushwick) of which train services in the pre-pandemic timetable could call at Rushwick compliantly with the industry's Timetable Planning Rules. These set out, for example, for each route the time apart that trains can be planned when following each other ("headway") and the allowance needed between conflicting moves, such as at junctions ("margin").

1.9.4 The route between Worcester, Great Malvern and Hereford is operated using traditional signalling and is heavily capacity-constrained, with long headway sections and stretches of single track. This means that some services are effectively "locked" into their current timings with limited ability to accommodate additional station calls.

1.9.5 Of the 45 Up (eastbound) trains operating on the section between Great Malvern and Worcester on each weekday, solutions were identified to enable 30 to call at Rushwick.

1.9.6 Of the 42 Down (westbound) trains operating between Worcester and Great Malvern on each weekday, solutions were identified to enable 25 to call at Rushwick.

1.9.7 Of the trains that cannot call the vast majority are Hereford-Birmingham services. The problem with these trains is that they cross each other at Ledbury and have fixed interactions with Cross City Line services between Bromsgrove and Birmingham.

1.9.8 It is clearly desirable that Rushwick, if it is built, has a reasonable level of train service, including at least one train per hour fast service to Birmingham (from Hereford) and preferably two.

1.9.9 Future service improvements are envisaged on the route, including an increase in the London-Great Malvern service (North Cotswold Line Task Force) to hourly and an increase in the Birmingham-Hereford service (Midlands Connect) to two trains per hour. Worcestershire County Council is a member of both these organisations. Should these improvements, and any associated infrastructure, come to fruition it would be possible to plan for Rushwick station as part of scheme.

1.9.10 For these reasons the Economic Case in this document assesses three train service options:

- A **"Reduced Service"** scenario, with only those for which a Timetable Planning Rules compliant solution was found in Appendix 7.
- An **"All Services"** scenario, which assumes that all service timetable to pass through Rushwick in the pre-pandemic timetable call.
- A **"Stakeholder Service Aspiration"**, which includes in addition to the All Services scenario the additional services proposed by Midlands Connect and the North Cotswold Line Task Force.

1.9.11 It is recognised that this is the first step in an iterative business case process and that more detailed analysis will be required during the Outline Business Case stage, including:

- Modelling accurate Sectional Running Times for trains calling at Rushwick
- Detailed development of a Working Timetable incorporating the station
- Performance modelling to assess the impact on train performance and recovery from perturbation
- Identification of any potential mitigating measures for any negative performance impact

1.10 Dependencies and Interfaces - Resignalling

1.10.1 It is widely recognised that the rail infrastructure around Worcester is heavily constrained. The key constraints are:

- Single line between Worcester Shrub Hill and Worcester Foregate Street.
- Two independent single lines through Worcester Foregate Street station.
- Absolute block signalling between Henwick and Malvern Wells, with an intermediate signal box at Newlands East. This means that only one train can operate between Henwick and Newlands East and between Newlands East and Malvern Wells (in each direction) at any one time.
- Trains terminating at Great Malvern (e.g. from Birmingham or London Paddington) must proceed from the station to Malvern Wells to reverse as the infrastructure to allow this to happen in the station does not exist.
- Single line between Malvern Wells and Ledbury.
- Single line between Ledbury and Shelwick Junction (where this line joins the Shrewsbury-Hereford line).

1.10.2 Unsurprisingly these infrastructure constraints impose significant planning restrictions when constructing a timetable.

1.10.3 As noted above, there are aspirations from Midlands Connect and the North Cotswold Line Task Force for additional services on the line between Worcester and Great Malvern.

1.10.4 It is also the case that replacement of the Victorian-era signalling equipment in the Worcester area is long overdue. It is expensive to maintain, using increasingly scarce skills, and expensive to staff. Control of this section of route is to pass to Network Rail's Central Route (from Western) in April 2021, and Network Rail has started the process of working on a resignalling scheme business case (Worcester Area Resignalling).

1.10.5 The rail industry's initial view is that Rushwick can only happen when Worcester Area Resignalling is being delivered, or at least is committed. This is because:

- Without the additional capacity that resignalling would bring it would be difficult to accommodate calls at Rushwick reliably.

- It may not be possible to identify solutions to allow the Hereford-Birmingham services to call without more flexible infrastructure. Given the preponderance of travel to Birmingham in the demand forecasts for the station, this is important.

1.10.6 Therefore, the strategy needs to be to identify a Worcester wide service proposal that incorporates the reasonable aspirations of all stakeholders/funders, including Rushwick station. It will be essential to manage the interfaces between these proposals to ensure that a coherent strategy emerges for the Worcester area. The business case for Rushwick is highly sensitive to the level of train service that can be provided, as shown in the Economic Case. This in turn depends on the train service pattern that emerges from the above proposals. In turn the service pattern may rely on new infrastructure being provided in conjunction with a scheme to resignal the area.

1.10.7 If resignalling becomes a committed renewals scheme, it may then be possible to open Rushwick station in advance with a more limited service in the expectation that a full service is provided when the resignalling is delivered.

1.10.8 In the Management Case we propose a Worcester Area Board to manage these interfaces.

1.10.9 The earliest Worcester Area Resignalling can take place is in Network Rail's CP7 Control Period (2024-2029), and realistically probably in the second half of this period. Inclusion in the CP7 as a renewals-led project requires it to be included in Network Rail's CP7 Business Plan which we expect will be submitted to the Office of Rail and Road for consideration and approval in February 2023.

1.11 Dependencies and Interfaces – SWDP Review

1.11.1 The proposal for a station at Rushwick is brought about because of the SWDP review. Worcestershire County Council and Malvern Hills District Council wish to see that part of the SWDP review proposed for Rushwick (1,000 houses) dependent in whole or in part on a new station coming forward.

1.11.2 The timescale for the SWDP Review is as follows.

Stage	Date
Further Preferred Options consultation	March / April 2021
Publication Consultation	October / November 2021
Submission to Planning Inspectorate	February / March 2022
Examination	May 2022 to January 2023
Inspector's Report	March 2023
Adoption	April 2023

Figure 20 - Timescales for SWDP review

1.11.3 It follows, therefore, that a key question is how much development on the scheme is needed before then:

- To convince Inspector that there is sufficient likelihood of the station being built
- To enable station construction to start before too many of the houses are built at Rushwick

1.11.4 A firm position on Worcester Areas Resignalling is unlikely to be achieved before formal submissions to the Planning Inspectorate in February/March 2022. There is no easy answer to this.

1.12 Stakeholder Engagement

1.12.1 At the next stage of the business case process a Stakeholder Engagement Strategy for Rushwick will be produced. As a first step in the process the main stakeholders are identified below.

Organisation	Role in the Rushwick Project
Worcestershire County Council	Sponsor Transport Authority
Malvern Hills District Council	Planning Authority
Landowners (x6) – identified	Seller
Land Agents - identified	Negotiating land purchase
Developers	Purchaser Agreement with Planning Authority (S106 etc)
Network Rail	Needs to approve station

	Either will built it or enter into Asset Protection Agreement Will lead Worcester Area Resignalling
West Midlands Railway	Expected to be the station operator Formal consultee through Network Change process
Great Western Railway	Expected to be station beneficiary through calling trains there Formal consultee through Network Change process
West Midlands Rail Executive	Responsible for local rail network strategy and formal involvement in managing West Midlands Trains contract
Midlands Connect	Responsible for regional rail network strategy and is promoting additional services between Birmingham and Hereford through Midlands Rail Hub project
North Cotswold Line Task Force	Confederacy of Local Authorities and LEPs promoting an increase in services between London and Worcestershire
Department for Transport	Will need to agree to the station through its control of contracts entered into by WMR Potential funder
Ministry of Housing and Local Government	Potential funder through National Homebuilding Fund

Figure 21 - Stakeholder list

In development of this SOBC rail industry meetings have been held with Network Rail, West Midlands Rail Executive and West Midlands Railway.

1.12.2 A working group involving Malvern Hills District Council and landowners representatives, with representation from Worcestershire County Council has been developing proposals for the Rushwick development and has met throughout 2020.

1.13 Strategic Case Summary

1.13.1 This Strategic Case has identified a need for a transport solution to support new development west of Worcester and to support sustainable growth in the area. A wide number of options has been identified, and the one that performs best is a new station immediately to the west of the village of Rushwick.

1.13.2 The principal challenge to the delivery of the new station is the interface with railway infrastructure and the fact that resignalling of the Worcester area may be needed in

order to provide the station with a satisfactory train service. The timing of this is uncertain. However, there are other important train service aspirations – in particular those from Midlands Connect, which are also likely to require resignalling. For this reason it is important that a rail strategy for the Worcester Area is developed as soon as possible, involving Worcestershire County Council, as well as Network Rail, Midlands Connect and West Midlands Rail Executive and Train Operators

2 Economic Case

2.1 Introduction

2.1.1 This chapter presents the Economic Case, at Strategic Outline Business Case level, for the proposed opening of a new station at Rushwick. It considers the value for money of the options appraised, centred at this stage of scheme development on monetised impacts. We also use the economic case to set out our approach to demand forecasting, the outcomes of which underpin the economic case.

2.1.2 An appraisal framework has been developed which has followed DfT Transport Appraisal Guidance (TAG), specifically including guidance from Units *A1-1 Cost Benefit Analysis, A1-2 Scheme Costs, A1-3 User & Provider Impacts* and *A5-3 Rail Appraisal*. Our demand forecasting approach is based around a bespoke rail demand model developed for Worcestershire County Council.

2.1.3 The location of the station, around two miles to the west of Worcester city centre, allows the station to serve both a local catchment, much of which is within walking distance, and a wider more rural catchment accessing the station by car. The station is closely associated with the development of the South Worcestershire Development Plan and one of the three strategic sites contained within it which will be delivered adjacent to the station.

2.1.4 The scheme has been shown to be cash positive over a 60-year appraisal period based around the construction of a two-platform station opening in 2026 served by a service of two trains per hour including the hourly Birmingham – Hereford service. For operational reasons referenced in the Strategic Case, it may be necessary to operate a more limited service, at least in the early years of the station, in which case the station would not cover all of its costs but would represent high value for money.

2.1.5 Based around Level 1 economic impacts, the central case ("Core" scenario) is cash positive based on a Present Value of Benefits (PVB) of £6.74m and a Present Value of Costs (PVC) of minus £3.09m (ie the revenue is greater than the costs) giving a Net Present Value of £9.83m over 60 years.

2.1.6 In the following sections, we present the findings of the economic case and a summary of our approach, beginning with the approach taken to estimating demand for the station.

2.2 Demand Forecasting: The Proposed Station and its Catchment

2.2.1 The proposed site for a station at Rushwick would be located to the south west of the existing Rushwick village with access provided either from the A4440 via a new link road (as part of proposed residential development in the area) or to the north from Bransford Road and A4103.

2.2.2 The figure below shows the proposed location of the station.

Figure 22 - Location of Rushwick station

2.3 Existing Stations and their Catchments

2.3.1 The station would be well located for a catchment to the west of Worcester and may well have the effect of enhancing demand for rail services in the area. Currently the stations that serve the west Worcester catchment are Worcester Shrub Hill, Foregate Street, Malvern Link and Great Malvern.

2.3.2 All these stations have limitations in serving the wider west Worcester catchment as described below:

- **Worcester Foregate St** – Foregate St station is located in the centre of Worcester, however access is via narrow and congested urban roads, the station also lacks

dedicated parking facilities. Access from the west to both Foregate St and Shrub Hill is hampered more generally by the local road network and the physical geography of the area with only two crossings of the River Severn available. The first, Worcester Bridge, is the most relevant to Rushwick as it provides direct access to the city centre from the west but being the only crossing into the city centre it is heavily used by vehicular traffic. The alternative crossing on the A4440 Worcester Southern Link Road is 2 miles further south and represents a significant diversion from the west Worcester and Malvern area to access either of the city centre rail stations, though it may be attractive for accessing Worcestershire Parkway.

- **Worcester Shrub Hill** – Shrub Hill station is located on the east side of the city centre and as such is less accessible from the west of the city than Foregate St. It does however have 121 parking spaces though historically these are fully occupied from early in the morning.
- **Malvern Link** – The station at Malvern Link does have a car park of 96 spaces; however its distance from Worcester and Rushwick (over 4 miles), coupled with the general lack of station car parking in the area means that its ability to accommodate potential demand from a wider catchment is limited. There is limited opportunity to extend the car park further.
- **Great Malvern** – Great Malvern station has a car park of 122 spaces but as with Malvern Link is too remote to serve the parts of the west Worcester catchment. The station is also located in the centre of the town making it unattractive for passengers from the wider area and there are no opportunities for additional parking capacity.

2.3.3 In addition to the stations referenced above a new station at Worcestershire Parkway opened in February 2020. At the current time, due to the COVID-19 pandemic, it has not been possible to fully comprehend how this station will be used by passengers and the full extent of its catchment. However, based on its location the station may represent a suitable alternative for passengers in west Worcester and the Malvern Hills Area, but due to the length of the journey to the station and the likely level of journey time unreliability caused by congestion on the A4440 Worcester Southern Link Road it may not represent a dramatic improvement over access to the existing Worcester stations from the Malvern Hills area. The 10,000 houses proposed in the SWDP around Worcestershire Parkway may also impact on accessibility.

2.3.4 The figure below presents an indicative catchment for Worcestershire Parkway.

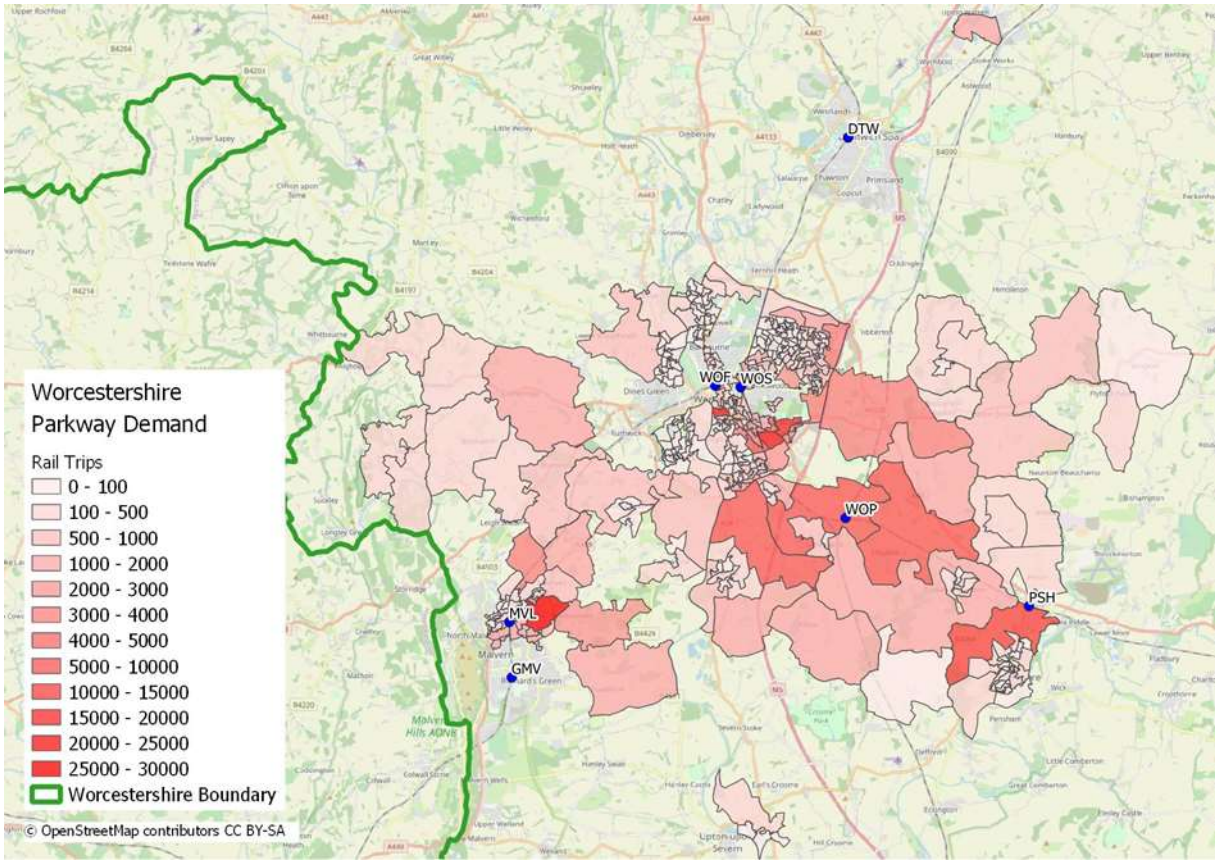

Figure 23 - Worcestershire Parkway catchment

2.3.5 Using National Rail Travel Survey data (which dates from 2005 but prior to the opening of Worcestershire Parkway is likely to remain valid), it is possible to plot the catchment area of the four stations described above to understand the level of rail usage in the area as a precursor to exploring the catchment of Rushwick station in the section below.

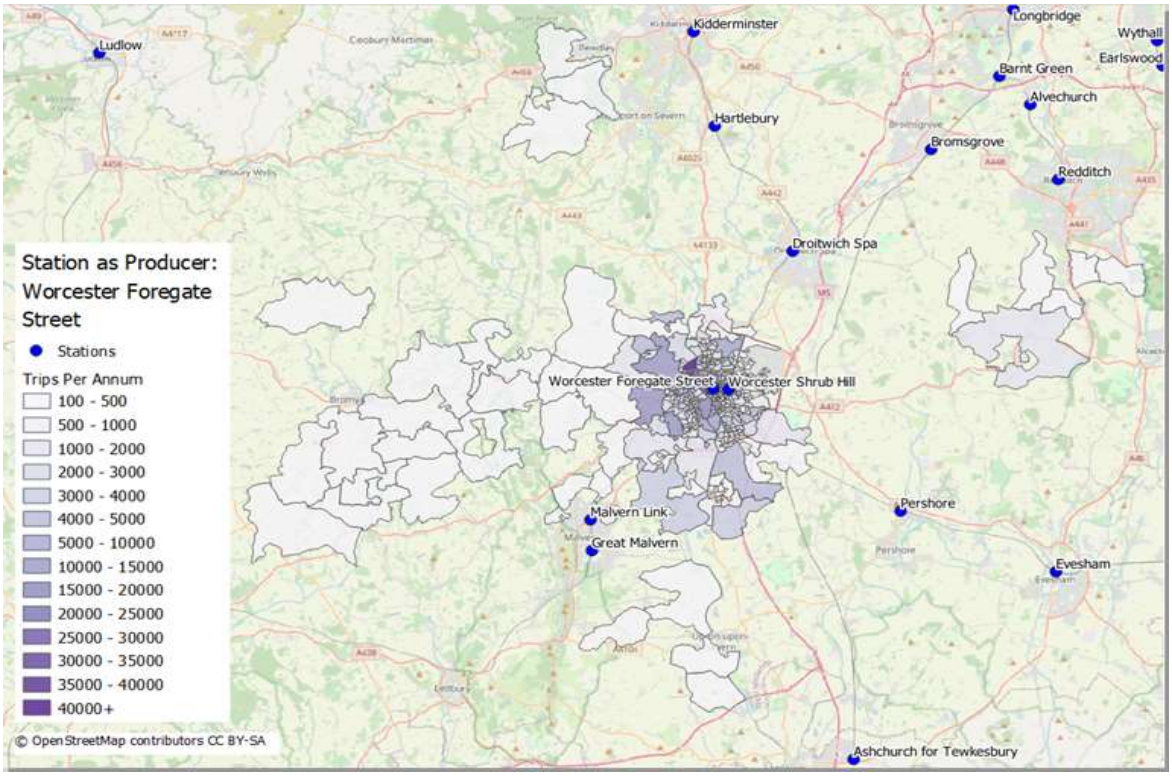

Figure 24 - Worcester Foregate Street catchment

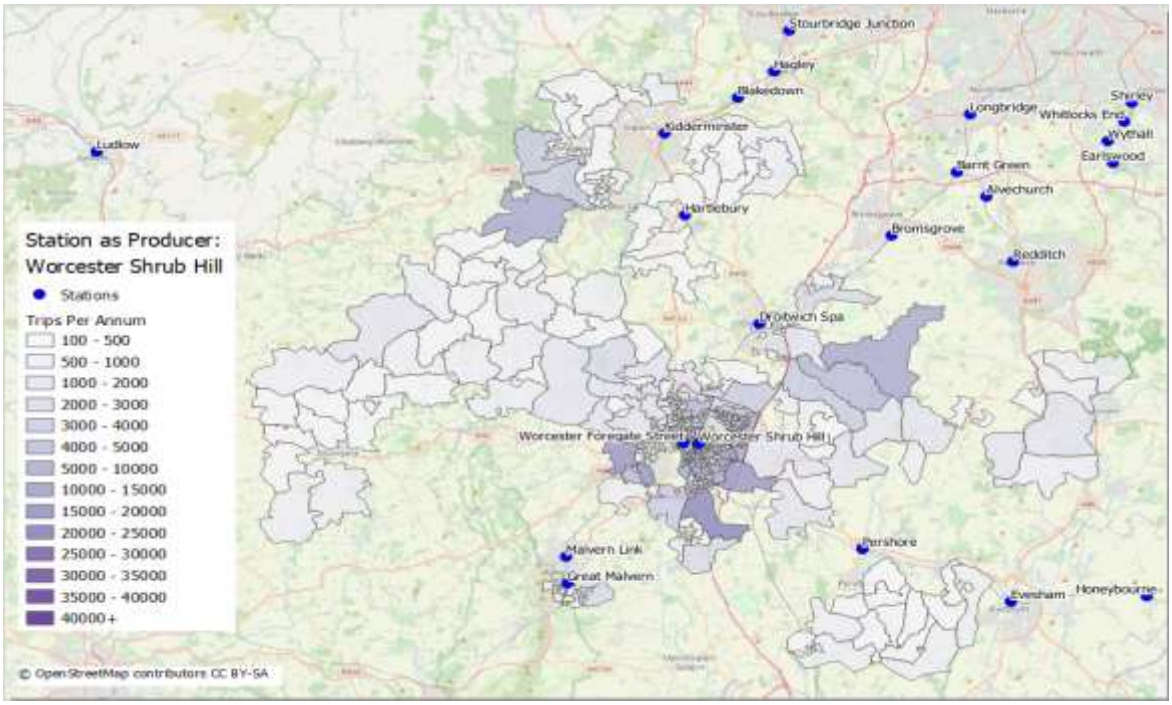

Figure 25 - Worcester Shrub Hill catchment

2.3.6 The figures above for the Worcester stations show that the greatest level of usage is unsurprisingly from within Worcester itself, and although slightly lower the built-up area on the west side of the Severn does generates significant number of trips.

Foregate St station is around 1.5 miles from this area so many passengers may walk into the city to access the station.

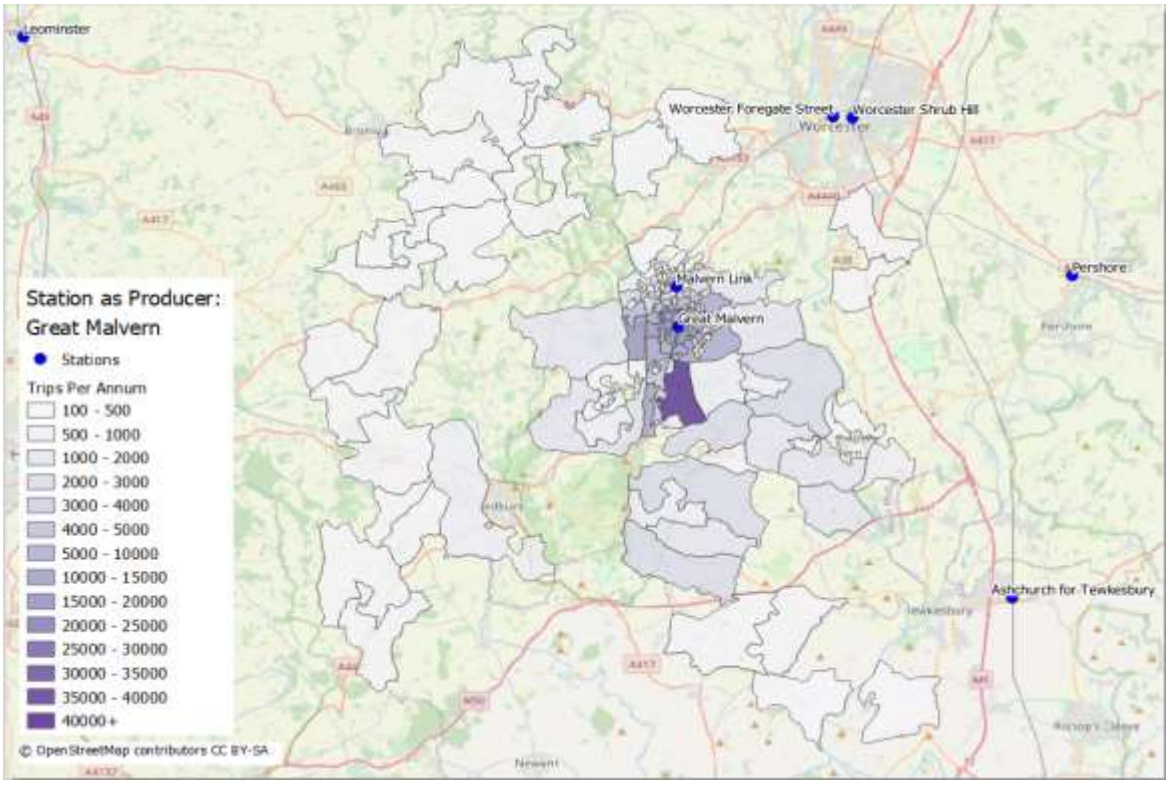

Figure 26 - Great Malvern catchment area

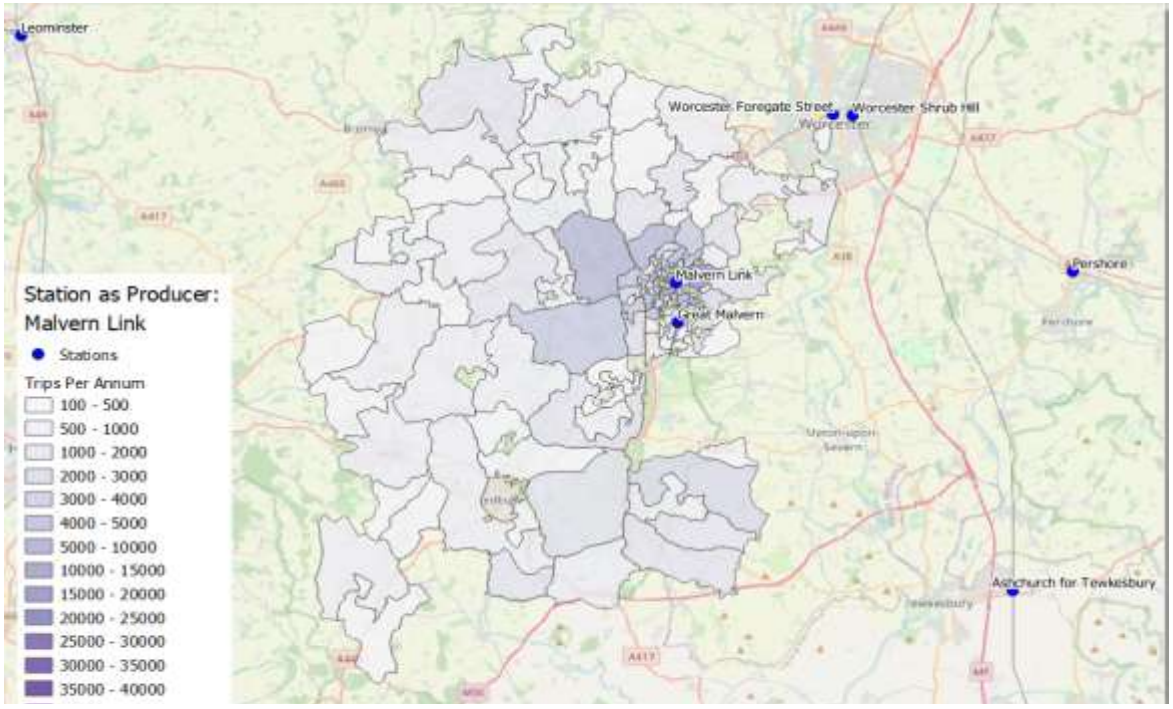

Figure 27 - Malvern Link catchment area

2.3.7 The Great Malvern station catchments are both less extensive than the Worcester stations catchments but do highlight a number of features. The first of these is that the rural catchment for Malvern Link is larger, perhaps reflecting better accessibility from the rural area to the north relative to Great Malvern. Malvern Link also has a catchment that runs relatively close to the edge of Worcester, perhaps suggesting that passengers are prepared to double back via Malvern Link rather than try to drive into Worcester to access the station.

2.3.8 The catchment for Great Malvern is more heavily concentrated in the built-up area of Great Malvern.

2.3.9 A new station at Rushwick would improve access to the rail network west of Worcester and its catchment is defined in more detail below.

2.4 Rushwick Station Catchment Area

2.4.1 We have estimated a catchment area for Rushwick station using a Geographic Information System programme. We then identified those areas where Rushwick would be likely to be the most attractive station to use.

2.4.2 The figure below presents the catchment area identified for the station.

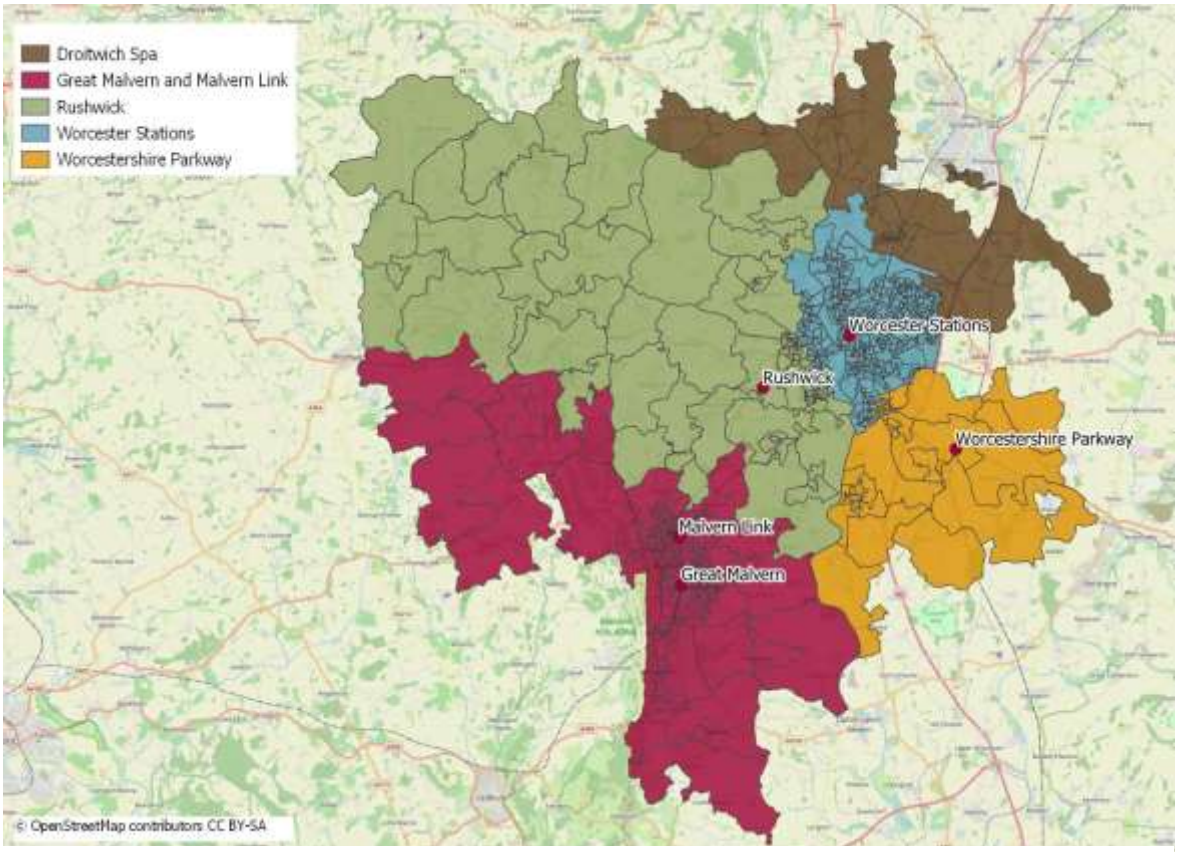

Figure 28 - Rushwick catchment area

2.4.3 The figure above shows that the station has a significant rural catchment to the north west, supporting a local catchment around the station. The area of Worcester to the west of the River Severn is divided between Rushwick and Worcester Foregate St station, with this area being very sensitive to access times to the station.

2.5 Rushwick Train Services

2.5.1 SLC Rail has undertaken initial train service development work for Rushwick. The main service groups that operate between Great Malvern and Worcester are:

- Hereford – Birmingham New St via Bromsgrove
- Great Malvern – Birmingham Snow Hill via Kidderminster
- Great Malvern – Bristol via Gloucester
- Hereford/Great Malvern – London Paddington via Oxford

2.5.2 Of the 45 eastbound services through Rushwick the work demonstrated that 30 services could call and 25 out of 42 westbound services could call.

2.5.3 Of the services that cannot call the most significant are a number of Hereford – Birmingham and Birmingham – Hereford services (notably in the off peak). The absence of these services would detract from the service offer at Rushwick which will in turn have a negative impact on the business case.

2.5.4 In view of this issue, within our demand modelling work we have undertaken two demand forecasts based around trains service specification. The first is based around the findings of the SLC Rail work (the "Reduced Services" scenario), whilst the second makes the assumption that a way could be found to accommodate all Birmingham – Hereford services (the "All Services" scenario).

2.6 Demand Forecasting Approach

2.6.1 To estimate demand for a station at Rushwick we have drawn on the recently completed Worcestershire Rail Demand Model which as well as assisting in forecasting future demand for rail travel in the area also contains a significant level of data about current patterns of rail demand across Worcestershire.

2.6.2 To assess demand comprehensively and to support an economic appraisal there are a number of specific areas of demand that have to be assessed. These are as follows:

- **Newly generated demand** – the amount of demand at the station which is new to rail, either through abstraction from other modes or through the generation of additional travel. In the case of Rushwick this type of demand

falls into two categories, the first being local demand from the surrounding area and the second covers a wider area of demand.

- **Abstracted demand** – the amount of demand at the new station which has been abstracted from other stations in the area.
- **Trains service impacts** – this covers the impact on pre-existing demand for the train services that call at the station which will see an increase in journey time and thus a reduction in demand as a result of the new station.

2.6.3 Together the three categories defined above form the net demand and revenue for the station. The bulk of benefits associated with a new station come from the first category of newly generated demand as these bring revenue to the railway and socio-economic transport benefits to both users and non-users. Within the models discussed below an estimate of total usage at the station is made before the newly generated impact is estimated by deducting the abstracted demand discussed below.

2.6.4 In contrast abstracted demand typically has a neutral impact as revenue is transferred from other stations, with small increases and reductions depending on whether the rail portion of the journey increases or decreases. At a wider level abstracted demand can generate benefits where, for example, a new station reduces access journey times, especially when this is by car and can therefore reduce the negative impacts of congestion.

2.6.5 The train service impacts are almost exclusively negative, except on very rare occasions where the structure of the timetable allows a station to be included in the timetable without a negative impact on journey times.

2.7 Calculation of Newly Generated Demand

2.7.1 To estimate the total number of trips using the new station, and thus the newly generated trips we have used an adjusted trip rate approach. This has drawn on data on producer and attractor trips rates for stations across Worcestershire contained within the Worcestershire Rail Demand Model. These are divided into different catchment bands of <800m, 800m-2km, 2km-5km and >5km. We are also able to estimate trips rates at origin – destination level, for example we could estimate a trip rate from Great Malvern to Worcester separately from Great Malvern to Birmingham.

2.7.2 A number of stations were identified as having similar characteristics to the Rushwick area and were thus used to estimate the trips rate for the new station. The table below contains trips rates for these stations.

	GREAT MALVERN	MALVERN LINK	DROITWICH SPA	EVESHAM
0 – 800m	32.07	23.47		
800m – 2km	11.68	8.34		
2 – 5km	4.54		7.24	
Over 5 km	0.95		0.94	1.47

Figure 29 - Trip rates per person per annum

2.7.3 The stations which have been used to estimate the trip rate for Rushwick have been chosen for the following reasons:

- Malvern Link and Great Malvern were chosen due to their proximity to the proposed station and similar service pattern
- Worcester Shrub Hill and Worcester Foregate Street were not included despite also being close to Rushwick as, the demographic characteristics of Worcester are very different from those of the Rushwick area.
- Droitwich Spa and Evesham were chosen due to having strong over 5km trip rates in comparison to other stations, which is also expected at Rushwick given the lack of alternative stations in the western part of the catchment

2.7.4 To reflect the differing levels of service in operation at the stations identified above relative to Rushwick and the differences in journey time we have adjusted the trip rates on a flow-by-flow basis. This is achieved using changes in Generalised Journey Time (GJT) between the "donor" station and Rushwick station which, using demand elasticities contained within the Rail Delivery Group (RDG) Passenger Demand Forecasting Handbook, allows the trip rates for each flow to be aligned with the service at Rushwick.

2.7.5 The output of this process provides us with an estimate of the total forecast demand for the station. The newly generated trips are estimated by deducting the abstracted trips (discussed below) from the total.

2.8 Calculation of Abstracted Trips

2.8.1 Abstracted trips are calculated using a logit station choice model. For each Output Area in the station catchment the generalised cost is calculated from the output area to the final destination station via the currently available stations and the new station. In certain locations multiple stations are used by residents of a particular Output Area and thus abstraction has to be estimated for multiple stations.

2.8.2 The logit model applies parameters from the DfT PLANET framework model to estimate the preference between stations. This approach of using a station choice logit model allows more granularity in the results and is less arbitrary than approaches that effectively draw a line around a station and assume that all existing passengers transfer to the new station. Instead it provides a recognition that station choice is complex and is driven by services levels, access mode choice and in some cases variables specific to the lives of individual users.

2.9 Train Service Impacts

2.9.1 To estimate train service impacts and impacts on existing rail users of additional journey times we have used demand flows extracted from the West Midlands Rail Executive version of MOIRA[4] that pass along the section of route between Malvern Link and Worcester Foregate St and used changes in generalised journey time and PDFH demand elasticities to estimate the reduction in demand associated with reduced journey times.

2.9.2 We have estimated this impact based on the two core train service specifications described above. In the scenario where not all trains services can call the impact will be less than the scenario where all services are assumed to call, as the impact will be constrained by those services that cannot call, retaining all of their existing passengers.

2.10 Development Trips

2.10.1 As part of the assessment of the demand forecast for the station, we have included an assessment of the impact of proposed development trips in the area. This includes *Temple Laugherne – Worcester West Urban extension* which will support 2,150 homes, 5ha of employment land and a population of approximately 5,500.

2.10.2 Adjacent to the station is the Rushwick Strategic Site, identified within the South Worcestershire Development Plan Review. Up to 1,000 homes are to be constructed in an arc around the west and south of the existing Rushwick village. The station would be located at the centre of this development, providing a more direct catchment for the new station.

[4] MOIRA is the industry software for estimating the demand impact of train service changes

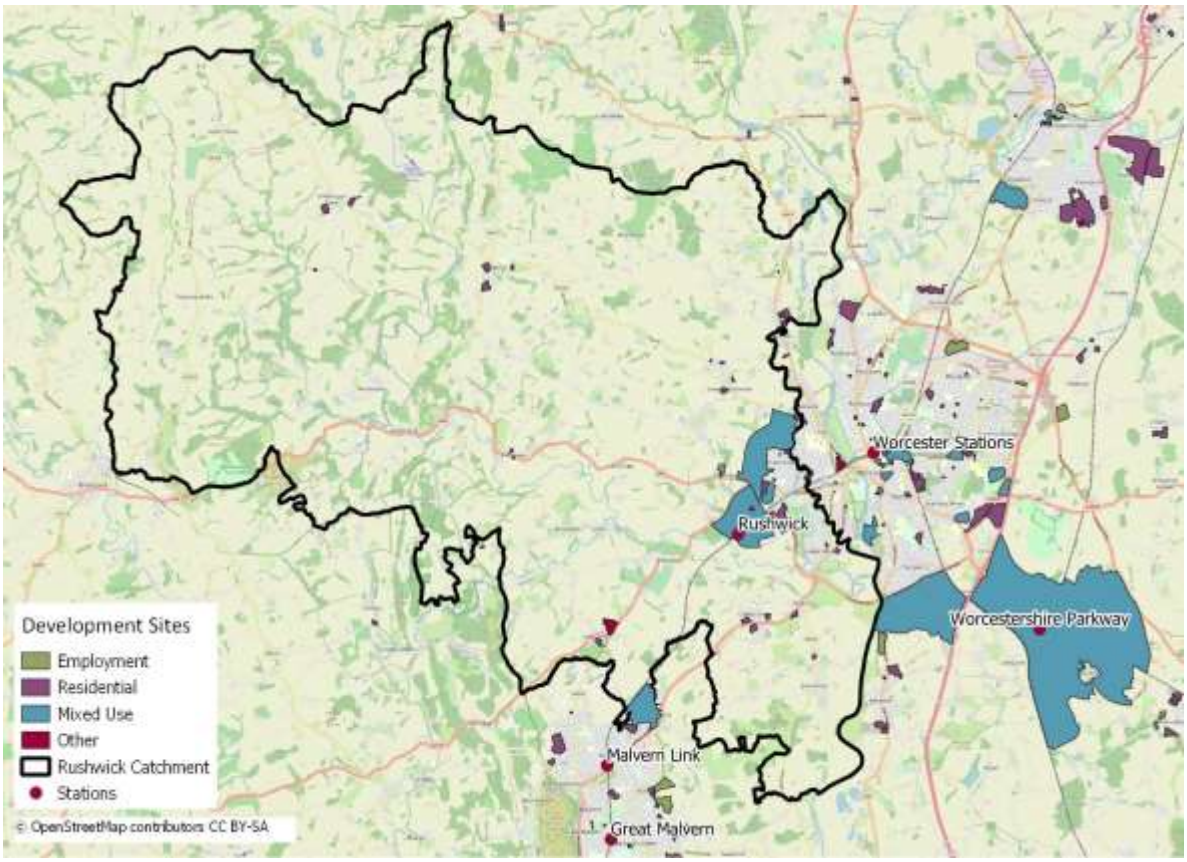

Figure 30 - Development sites around Rushwick station

2.10.3 The treatment of these development trips is defined in more detail below.

2.11 Forecasting Background Growth

2.11.1 Our approach to forecasting background growth follows RDG PDFH guidance on forecasting future growth and the consideration of factors exogenous to the railway. Our modelling work has also tried to incorporate what the impacts of COVID-19 might be on the business case.

2.11.2 Our model incorporates the following background growth scenarios:

- **Business as Usual** – The continuation of growth in rail use based on pre COVID-19 levels of demand and with the continuation of economic growth at pre COVID-19 levels. This essentially represents a benchmark against which we can compare other options.
- **Low Growth** – This assumes that there is a slow return to economic growth after the COVID-19 pandemic is over. It also assumes that there is a long term and permanent reduction in demand of 25%.

2.11.3 The base forecasts are based on the Department for Transport's National Trip End Model (NTEM) dataset. This dataset was last updated in 2016 and sets out the government's predictions of employment and population growth up to 2051.

2.11.4 Given the availability of more locally specific information a second scenario has been set up to examine the impact of Local Plan (the adopted South Worcestershire Development Plan) development at Rushwick on demand for the station. This is based on the latest publicly available local plan information.

2.12 Demand Forecasting results

2.12.1 To undertake our demand forecasting work we have identified a core scenario and a series of sensitivity tests. The components of these tests are show in the table below.

TEST	TRAIN SERVICE		DEVELOPMENT			COST	
	ALL SERVICES	REDUCED SERVICE	DEVELOPMENT AROUND STATION	BUSINESS AS USUAL	LOW GROWTH	+20% OPEX	+20% CAPEX
Core Scenario	✓		✓	✓			
Sensitivity 1	✓		✓		✓		
Sensitivity 2		✓	✓	✓			
Sensitivity 3		✓	✓		✓		
Sensitivity 4	✓		✓	✓			✓
Sensitivity 5	✓		✓		✓		✓
Sensitivity 6	✓		✓	✓		✓	
Sensitivity 7	✓		✓		✓	✓	
Sensitivity 8	✓		✓	✓		✓	✓
Sensitivity 9	✓		✓		✓	✓	✓
Sensitivity 10			✓				

Figure 31 - Sensitivity test matrix

2.13 Core Scenario

2.13.1 The table below summarises the demand impacts from 2026 (station opening) to 2041 (end of the local plan period) for the core scenario. The core scenario is based on the All Services scenario, includes local plan development and assumes no COVID impact (Business as Usual).

SCENARIO	2026	2031	2036	2041
Newly generated	47,355	92,989	96,783	99,942
Abstracted	41,206	81,086	84,570	87,476
Rushwick Development	9,015	82,524	130,775	146,423
Other Development	4,087	14,434	21,437	28,510
TOTAL AT STATION	**101,664**	**271,034**	**333,565**	**362,351**
Impact on existing passengers	-12,767	-25,989	-28,174	-30,829

Figure 32 - Forecast demand - core scenario

2.13.2 The table above indicates that of the three demand sources, the majority of demand is predicted to be from development trips. The second largest source of demand is the newly generated demand from the existing population around the catchment area. Although the abstracted demand forms the smallest demand element it still forms a significant part of overall station demand (over 20% of all demand). Additionally, by 2041, approximately 31,000 passengers are expected to be lost from existing services as a result of the journey time imposed by the station.

2.14 Reduced Service

2.14.1 The table below presents a demand breakdown of the above scenario but with a reduced service, that is without the 1TPH between Birmingham – Hereford throughout the day.

SCENARIO	2026	2031	2036	2041
Newly generated	29,843	58,580	60,949	62,921
Abstracted	39,499	77,752	81,119	83,925
Rushwick Development	7,054	64,586	102,365	114,632
Other Development	3,195	11,284	16,759	22,291
TOTAL AT STATION	**79,592**	**212,202**	**261,193**	**283,769**
Impact on existing passengers	-6,653	-13,670	-15,551	-15,850

Figure 33 - Forecast demand with Reduced Service

2.14.2 The table above indicates that without the direct Birmingham service throughout the day, demand is expected to be 20% lower the core scenario. The impact on existing passengers is almost half of the impact shown in the core scenario.

2.15 Sensitivity Tests

2.15.1 The following tables present the demand and revenue impacts across the various sensitivity tests in 2041 (after full development build out).

2.15.2 The table below presents the results of the All Services scenario, with local plan development, across the low growth COVID-19 scenario.

	2041 DEMAND	
SCENARIO	**BUSINESS AS USUAL (CORE)**	**LOW GROWTH (S1)**
Newly generated	99,942	85,619
Abstracted	87,476	75,415
Rushwick Development	146,423	126,630
Other Development	28,510	23,373
TOTAL AT STATION	**362,351**	**311,036**
TOTAL REVENUE (2019 prices)	**£1,672,284**	**£1,505,761**

Figure 34 - Forecast demand, all services, business as usual and low growth

2.15.3 The table above indicates that the COVID-19 sensitivity test is predicted to have a moderate impact on demand in 2041. Demand is expected to decrease by over 50,000 trips in the low growth scenario.

2.15.4 The table below presents the results of the reduced service, with local plan development, across the low growth COVID scenario.

	2041 DEMAND	
SCENARIO	**BUSINESS AS USUAL (CORE)**	**LOW GROWTH (S1)**
Newly generated	62,921	53,879
Abstracted	83,925	72,297
Rushwick Development	114,632	101,133
Other Development	22,291	18,280
TOTAL AT STATION	283,769	245,590
TOTAL REVENUE (2019 prices)	**£1,221,884**	**£1,112,167**

Figure 35 - Forecast demand, reduced service, business as usual and low growth

2.16 Car park capacity

2.16.1 The car park capacity requirement has been calculated based on mode splits for existing nearby stations (Great Malvern, Malvern Link and Droitwich Spa). The table below summarises the predicted car park capacity required at various appraisal years in the core scenario.

	2027	2032	2037	2042
Annual usage	134,571	242,717	288,825	309,920
Daily usage	398	718	855	917
Car park capacity required	100	183	218	234

Figure 36 - Car park capacity requirement

2.17 The Approach to Assessing Value for Money

2.17.1 The value for money of the scheme has been assessed within a framework methodology in line with the requirements of TAG. This framework covers a range of economic impact workstreams assessed in a progressive manner across all levels as shown in the table below. At this stage of SOBC development, we have focused our analysis on Level 1 benefits dealing with user benefits, non-user benefits and private provider impacts, with a view to exploring Levels 2 and 3 benefits as the scheme is moves though the Develop/Outline Business Case (OBC) stage.

Level	Economic Impact	Assessed at SOBC	To be assessed at OBC
Level 1	User Impacts	✓	
	Non-user Impacts	✓	
	Private provider impacts	✓	
Level 2	Additional (lower certainty) impacts on transport network		✓
	Wider economic impacts (fixed land use)		✓
Level 3	Land use change		✓
Non-monetised impacts	Environmental		✓
	Social		✓

Figure 37 - Assessment of economic impacts

2.17.2 Considering only Level 1 impacts is proportionate at SOBC level as it covers the areas of appraisal around which there is a high level of methodological certainty and which typically form a large proportion of monetised benefits.

2.17.3 In addition, the variation in different appraisal options is centred around train service specifications and demand side sensitivities, rather than different ways of delivering the station and as such there will be little variation in non-monetised impacts associated with the station development for example local environmental issues.

2.18 Assumptions

2.18.1 In developing this appraisal, we have made a number of assumptions:

- First full year of operation: 2026

- Background growth cap: 2040
- Inflation year cap: 2040
- Appraisal period: 60 years
- Background growth approach: PDFH simplified framework
- Employment and population growth based on TEMPRO[5] excluding Worcestershire
- The station would be constructed during 2024 and 2025
- The capital costs for the station at 2020 prices, not including contingency or Optimism Bias, would be £10.28m[6]
- The operating cost per annum would be £172,801 per annum at 2020 prices
- Optimism Bias was applied at a rate of 64% to capital costs and 41% to operating costs
- At this stage a Quantified Risk Assessment has not been developed

2.19 Appraisal Results

2.19.1 The tables below present a summary of the results of the economic appraisal. This includes the Present Value of Costs, Present Value of Benefits, Net Present Value and Benefit Cost Ratio. The first table presents the results for the core scenario, this is presented in two ways, firstly with revenue treated as a benefit and secondly presented in line with guidance in TAG Unit A5-3 Rail Appraisal with revenue as a negative cost.

2.19.2 Included at Appendix 5a-c we have provided completed appraisal tables for the preferred option.

2.19.3 The table at Figure 38 (over) presents the results for the core scenario (All Services and Business as Usual) and the first sensitivity test (the worst-case COVID-19 scenario – Low Growth).

[5] Trip End Model Presentation Program

[6] This is consistent with the Anticipated Final Cost estimate of £14.24m including risk contingency described in section 3.2 of the Financial Case below.

	Conventional BCR		Revenue as negative cost[7]	
	Business as Usual	**Low Growth**	**Business as Usual**	**Low Growth**
Present Value of Benefits (PVB)	£22,651,215	£17,784,670	£6,740,826	£4,156,831
Present Value of Costs (PVC)	£12,821,541	£12,821,541	-£3,088,848	-£806,298
Net Present Value (NPV)	£9,829,675	£4,963,129	£9,829,675	£4,963,129
Benefit Cost Ratio (BCR)	1.77	1.39	Cash Positive	Cash Positive

Figure 38 - Core scenario (preferred option and sensitivity 1)

2.19.4 As can be seen in the table above, the new station at Rushwick is expected to be cash positive in both the core and low growth scenarios when revenue is treated as a negative cost. If the BCR is presented in the conventional format then the station is predicted to generate medium value for money in the core scenario and low value for money in the low growth scenario.

2.19.5 The table below presents the appraisal results for the Reduced service.

	Conventional BCR		Revenue as negative cost	
	Business as Usual	**Low Growth**	**Business as Usual**	**Low Growth**
Present Value of Benefits (PVB)	£18,709,521	£15,135,332	£7,181,272	£5,234,650
Present Value of Costs (PVC)	£12,821,541	£12,821,541	£1,293,292	£2,920,858
Net Present Value (NPV)	£5,887,980	£2,313,791	£5,887,980	£2,313,791
Benefit Cost Ratio (BCR)	1.46	1.18	5.55	1.79

Figure 39 - Reduced service scenario (sensitivities 2 and 3)

[7] The DfT TAG requires revenue generated by a scheme to be netted off the costs. Therefore if the Present Value of Costs (PVC) is negative this means that the revenue is greater than the costs.

2.19.6 As can be seen in the table above, the reduction in service level has a significant impact on the BCR for the scheme. When revenue is treated as a negative cost, the core scenario is shown to no longer be cash positive, however it is shown to generate very high value for money. All other scenarios in the table above are shown to represent medium or low value for money.

2.19.7 The table below summarises the impacts of a sensitivity test in which the capital costs are increased by 20%.

	Conventional BCR		Revenue as negative cost	
	Business as Usual	**Low Growth**	**Business as Usual**	**Low Growth**
Present Value of Benefits (PVB)	£22,651,215	£17,784,670	£6,740,826	£4,156,831
Present Value of Costs (PVC)	£14,623,080	£14,623,080	-£1,287,309	£995,242
Net Present Value (NPV)	£8,028,135	£3,161,589	£8,028,135	£3,161,589
Benefit Cost Ratio (BCR)	1.55	1.22	Cash positive	4.18

Figure 40 - Core scenario cost sensitivity +20% capex (sensitivities 4 and 5)

2.19.8 The table above shows that even when capital costs are increased by 20%, when revenue is treated as a negative cost the scheme is still expected to be cash positive in the core scenario.

2.19.9 The table below presents the appraisal results when the operating costs are increased by 20%.

	Conventional BCR		Revenue as negative cost	
	Business as Usual	**Low Growth**	**Business as Usual**	**Low Growth**
Present Value of Benefits (PVB)	£22,651,215	£17,784,670	£6,740,826	£4,156,831
Present Value of Costs (PVC)	£13,584,309	£13,584,309	-£2,326,080	-£43,529
Net Present Value (NPV)	£9,066,906	£4,200,360	£9,066,906	£4,200,360
Benefit Cost Ratio (BCR)	1.67	1.31	Cash positive	Cash positive

Figure 41 - Core scenario cost sensitivity +20% opex (sensitivities 6 and 7)

2.19.10 The table above shows that, when revenue is treated as a negative cost, the scheme in the core scenario is cash positive in both the core and low growth scenarios.

2.19.11 The table below presents the appraisal results when both sets of costs are increased by 20%.

	Conventional BCR		Revenue as negative cost	
	Business as Usual	**Low Growth**	**Business as Usual**	**Low Growth**
Present Value of Benefits (PVB)	£22,651,215	£17,784,670	£6,740,826	£4,156,831
Present Value of Costs (PVC)	£15,385,849	£15,385,849	-£524,540	£1,758,010
Net Present Value (NPV)	£7,265,367	£2,398,821	£7,265,367	£2,398,821
Benefit Cost Ratio (BCR)	1.47	1.16	Cash positive	2.36

Figure 42 - Core scenario cost sensitivity +20% capex and +20% opex (sensitivities 8 and 9)

2.19.12 The table above shows that when both sets of costs are inflated, and revenue is treated as a negative cost, the scheme is still predicted to be cash positive in the core scenario and represent high value for money in the low growth scenario.

2.20 Stakeholder Service Aspirations

2.20.1 In addition to the tests above we have also appraised the impact of long term strategic changes to the train service that could be implemented at Rushwick. This covers two specific service developments:

- Operation of two trains per hour between Birmingham and Hereford following the completion of the Midlands Rail Hub in 2031. This would increase the attractiveness of the service towards Birmingham. In addition to the Midlands Rail Hub work in Birmingham, lengthening of the passing loop at Ledbury is required for this service to operate

- Operation of two trains per hour between Worcester and London with one train per hour starting from Great Malvern providing an enhanced frequency from Great Malvern and thus Rushwick over the current service. This also includes a reduction in average journey times to stations to Oxford and London. This could be delivered from 2026 but requires the completion of the North Cotswold Line Task Fforce

scheme to complete doubling between Pershore and Evesham and Hanborough and Wolvercote Junction.

2.20.2 Whilst neither of these services are committed at this stage, it is useful to understand the impact they have on the scheme appraisal, and this is presented in the table below, comparing the core scenario with this aspirational level of service.

	Core Scenario		Stakeholder Service Aspiration	
	Business as Usual	**Low Growth**	**Business as Usual**	**Low Growth**
Present Value of Benefits (PVB)	£22,651,215	£17,784,670	£26,677,680	£21,226,241
Present Value of Costs (PVC)	£12,821,541	£12,821,541	£12,821,541	£12,821,541
Net Present Value (NPV)	£9,829,675	£4,963,129	£13,856,139	£8,404,700
Benefit Cost Ratio (BCR)	1.77	1.39	2.08	1.66

Figure 43 - Core scenario and stakeholder service aspirations (conventional BCR approach)

2.20.3 It can be seen that that the addition of these services makes a substantial difference to the NPV of the station, increasing it by 40% in the core scenario and 70% in the low growth scenario. Similarly, the BCR increases by one value for money category in each case. Driving this change is an increase in revenue and demand at the station without an increase in the station-related costs.

2.21 Appraisal Summary Table

2.21.1 The Appraisal Summary Table has been completed and is presented in Appendix 5. There are a number of areas which have not been assessed in detail at SOBC, as it is proposed to conduct a more detailed analysis at Outline Business Case.

2.22 Value for Money Statement

2.22.1 The table below presents the value for money statement for the Core scenario ("All Services" and "Business as Usual".

Criteria	Comment
Value for money	In the core scenario the scheme offers medium value for money, and if revenue is treated as a negative cost in line with TAG guidance is cash positive.
NPV	The scheme has a Net Present Value of £9.83m over 60 years
Initial BCR	N/A
Adjusted BCR	Not calculated at SOBC level
Summary of benefits and costs	The scheme has the following impacts: 1. Generates £14.78m of revenue (discounted over 60 years at 2010 prices) for the railway 2. On the current approach has a net negative impact of -£11.47m over 60 years due to additional journey times for existing users. 3. Generates £15.07m of other benefits over 60 years arising from changes in the Marginal External Costs of Congestion and Generalised Costs 4. The station reduces indirect taxation accruing to the Treasury by £4.61m over 60 years. 5. The station has discounted operating costs of £3.81m over 60 years 6. The station has discounted capital costs of £9.01m
Significant non-monetised impacts	None calculated at this stage, more work will be completed on this during Develop/OBC stage.
Distributional Impacts	Assumed to be neutral at this stage of development

Figure 44 - Value for money statement

2.23 Summary

2.23.1 This chapter shows that the core scenario is cash positive for the public sector with revenue taken as a negative cost in accordance with DfT Transport Appraisal Guidance (TAG) criteria. In a low growth scenario, representing a downside assessment of the long-run impact of COVID-19, the BCR on a similar basis is 3.92,

representing high value for money. This presents the scheme sponsors with the opportunity to source external funding through central government grants.

3 Financial Case

3.1 Introduction

3.1.1 The Financial Case concentrates on the affordability of the Rushwick Station scheme. At this stage the focus is on the emerging costs for the scheme, based on the high-level engineering review undertaken to date. The broad financial viability of the scheme, comparing revenue and operating costs, are presented alongside a discussion around the emerging funding proposals.

3.1.2 At SOBC stage the minimum requirements for the Financial Case are to outline:

- the approach taken to assess affordability; and
- the approach and analysis associated with the potential funding for the scheme

3.2 Scheme Costs

3.2.1 The feasibility of the scheme has been assessed by SLC Rail as described in the Engineering Feasibility Study attached at Appendix 3.

3.2.2 This Study concludes as follows: *"Initial desk study of the existing track and a review of standards has indicated that it is feasible to locate a station at the position identified with the current vertical track gradient present. The station can accommodate 148m long platforms equivalent to a 6-car Class 196 train. Based on the predicted footfall, the proposed station is assumed to be Category F in line with guidance from the Better Stations 2009.*

"A 250-space car park can be accommodated at the site, meeting the user demand study forecast by the year 2041. It is proposed for the new station car park to be located on the north-west side of the existing tracks; this is driven by the station user demand study which identifies that most car users will approach from the north-west of Rushwick. This can integrate the proposed station access with the proposed development access road from the A4103 and Bransford Road as outlined in the South Worcestershire Development Plan Vision."

3.2.3 A cost estimate of the scheme described in the Engineering Feasibility Study is included at Appendix 4, and is summarised below, with an Anticipated Final Cost excluding inflation of £14.24m.

Ref	Estimate Breakdown		Preferred Option 250 spaces with Single Bridge
1	**Direct Construction Works Costs**		**Value (£)**
1.01	Station and Car Par Works		£5,049,290
	PROW Works		£38,610
	Shared Infrastructure		
	DIRECT CONSTRUCTION WORKS COST TOTAL		**£5,087,900**
2	**Indirect Construction Works Costs**		
2.01	Temporary Works		£50,000
2.02	Preliminaries	30%	£1,526,370
2.03	Traffic and Pedestrian Management		£10,000
2.04	Spares		£5,000
2.05	Contractors Overhead and Profit	10%	£657,566
	PRELIMINARIES AND TEMPORARY WORKS TOTAL		**£2,248,936**
	TOTAL CONSTRUCTION COST		**£7,336,835**
3	**Design, Project Management and Other Project Costs**		
3.01	Design	12%	£880,420
3.02	Project Management	12%	£880,420
3.03	Schedule 4 Costs	1%	£50,879
3.04	TOC PMO Costs		£24,000
3.05	NR Costs	7.5%	£381,592
3.06	Possession Management	2%	£101,758
3.07	Network Rail Fee Fund	10%	£38,159
3.08	Network Rail Industry Risk Fund	2%	£186,249
	DESIGN, PROJECT MANAGEMENT AND OTHER PROJECT COST TOTAL		**£2,543,479**
	BASE COST ESTIMATE		**£9,880,314**
4	**Contingency**		
4.01	Risk	40%	£3,952,126
4.02	Risk - Allowance for costs associated with Covid-19 and other factors		Excluded
	CONTINGENCY COST TOTAL		**£3,952,126**
5	**Land Costs**		
5.01	Land Costs		£403,600
	LAND COSTS COST TOTAL		**£403,600**
	ANTICIPATED FINAL COST (Excluding Inflation)		**£14,236,040**
6	**Inflation**		
6.01	Inflation to 1Q2030	12.78%	£1,819,366
	INFLATION COST TOTAL		**£1,819,366**
	TOTAL COST		**£16,055,405**

Figure 45 – Capital cost estimate (2020 price & Q1 2030 inflated cost)

3.3 Operating Costs

3.3.1 There will be ongoing operating and maintenance costs attached to the new station that are anticipated to fall into two categories as follows:

- Operating costs (utilities and services, routine maintenance, asset insurance)
- Annual Long-Term Charge (a rail regulatory term, referring to asset renewal costs)

3.3.2 For the purposes of the SOBC and undertaking an initial economic and financial appraisal, operating costs have been estimated for Rushwick station based upon benchmarks of existing stations of a similar size and nature. The estimated annual operating and maintenance costs are shown below. The operating costs are based upon the assumption that the new station will not have a station building and thus will be an unstaffed facility.

ITEM	COST (£)
Operating cost	172,801

Figure 46 - Annual operating and maintenance costs (2020 prices)

3.3.3 The forecasts shown in Figure 32 suggest that there will be 362,351 trips per year at the station. Subtracting the abstracted demand the impact on existing passengers (ie passengers who will no longer travel by rail because of the extended journey time from calling at the station) gives 244,046 trips per year. This approximates to 380 new to rail passengers each way per day[8]. As these passengers are spread throughout the day, it is assumed that no additional rolling stock will be required to cater for demand from the station. It should also be noted that West Midlands Trains have ordered new Class 196 trains in 4 car and 2 car formations for use on the Hereford – Birmingham services, allowing 6 car trains to operate at the busiest times. In addition, GWR has recently deployed Class 802 Inter-city Express Trains on the London services through the site. These trains have more capacity per car than the HSTs and Turbo DMUs they replaced.

[8] Trips per year divided by 2 (each way) and 321 (annualised days).

3.4 Cashflow and Funding Profile

3.4.1 The cash flow profile has been estimated from the indicative project development programme and scheme cost estimates as described in above. Until the commercial strategy for delivery of the station is established during the Outline Business Case stage, the sources of funding cannot yet be confirmed.

3.4.2 The figure below provides a forecast of the anticipated expenditure required to develop the scheme through each of the project key decision points, which correspond with the DfT Rail Network Enhancements Pipeline (RNEP) stages and decision gates to develop third party railway projects. The forecast expenditure per stage is based upon SLC Rail high level benchmarks of third party delivered new railway station projects.

PROJECT SCOPE	COST (£ 000's)	% of Total
Develop Stage (Outline Business Case)	427	3%
Design Stage (Full Business Case)	712	5%
Deliver & Deploy Stages	13,097	92%
TOTAL	**14,236**	

Figure 47 - Forecast of anticipated expenditure (2020 prices)

3.4.3 The costs for the next Develop/OBC stage have been estimated based on benchmarks of similar schemes, with work comprising of strategic and engineering functional workstreams to progress the scheme to a single option preferred solution and facilitate the development of an outline commercial and funding strategy that will be set out in the Outline Business Case.

3.4.4 The scheme will generate operational revenue, consisting of farebox and car park ticketing revenue. It is assumed the station will be an unstaffed facility with no station building and thus no retail income will be generated. Until the commercial strategy for the station is agreed during the Outline Business Case stage it is not possible to determine who will be absorbing ongoing costs and revenues from the station, and hence how these will be funded.

3.5 Funding Sources

3.5.1 As described in the Economic case, the core scenario is cash positive for the public sector with revenue taken as a negative cost in accordance with DfT Transport Appraisal Guidance (TAG) criteria. In a low growth scenario, representing a downside assessment of the long-run impact of COVID-19, the BCR on a similar basis is 3.92, representing high value for money. This presents the scheme sponsors with the opportunity to source external funding through central government grants.

3.5.2 However, it is recognised that the call on central government funds, and particular RNEP, will need to be minimised given funding constraints and the over-subscribed nature of that scheme. At this stage of development we envisage that funding will be achieved through a blend of sources, as described below.

3.5.3 **Section 106 Developer Contribution**. The station is associated with the construction of 1,000 houses in the immediate vicinity. This creates the opportunity to secure a capital contribution from the developers through a Section 106 agreement with Malvern Hills District Council as the Planning Authority.

3.5.4 **Land Value Capture.** In addition to an upfront capital contribution, it may be possible to secure a contribution based on the increased sale price of homes because of the existence of the station. The DfT is also actively considering this in relation to the Ashington-Blyth project. There is research in many countries, including the UK, about this effect. For example: *"It is a truth universally acknowledged that good transport links have a positive effect on local house prices. The general rule of thumb that the closer a property is to a train station (or tram stop, in some cities), the higher the price it will fetch. For example, according to analysis by Nationwide building society:*

- *Homes in proximity to Glasgow rail station are worth an extra £9,400*
- *Homes close to a Metrolink stop in Manchester are worth an extra £12,000*
- *Homes with a tube station nearby in London are worth an extra £42,000"*[9]

Securing a proportion of the house price uplift as a condition of planning permission may enable a significant funding contribution towards the cost of the station over time, whilst also reducing the risk to the developer as funding might only be released in line with house sale completions.

[9] How Transport Can Affect Property Markets - Aspen Woolf

3.5.5 **Local Authority Borrowing**. Worcestershire County Council funded the construction of Worcestershire Parkway, which opened in 2020, through Prudential Borrowing from the Public Works Loan Board. A deal was struck with GWR and DfT to repay the borrowing over time through a proportion of the revenue achieved through the station. In the case of Rushwick the projected new-to-rail farebox revenue is insufficient to cover the entire cost of the station, but could make a significant contribution. In order to secure agreement for this approach, it would be necessary for Worcestershire County Council as the promoter and DfT to agree a set of revenue forecasts for the station, in order to establish a deal for repayment, along with appropriate guarantees.

3.5.6 **Private Sector Investment**. In the case of some other stations a private investor has been brought in to support the construction and ongoing operation of the station through a Special Purpose Company. This approach has been used, for example, for Coleshill Parkway and Aylesbury Vale Parkway (John Laing plc in these cases). There are a number of financial institutions who are willing to provide finance for rail infrastructure schemes, including new railway stations. The private financiers will often act also as developers, or co-developers, and like to own or part own the assets which they have financed. Key to gaining value for money private finance is to be able to prove to the financier that the project structure comes with an income stream which is dependable and stable, which over time will repay the initial capital with a commercial return.

3.5.7 In this model, the financier / developer will own the station and lease it to the local train operating company. The rental payments which come through the lease will be scaled to ensure they are sufficient to repay the loan principal and interest with a commercial return. Usually an undertaking is required from the Department for Transport to give an assurance that successive franchise operators will lease the station and pay the rent for a period of sufficient duration to repay the loan. This mechanism works well when the projected new to rail farebox revenues which the new station will attract are large enough to cover the rental payments – meaning that the cost of building the station is met by its users rather than government subsidy. In the case of Rushwick, this approach would only be able to pay for a proportion of the capital cost (between 25% and 60% depending on the assumption).

3.5.8 **Public Sector Grant**. Central government will often provide grants to Local Authorities to enable them to deliver schemes which deliver particular policy objectives on transport, housing and regeneration. LEPs can also access a range of growth deal type funds. It can help to access such funds where it can be shown that the new station will specifically facilitate housing growth. The Government, for example, announced a £7.1bn National Homebuilding Fund in the Comprehensive Spending

Review statement in November 2020. This Fund is available for investment in enabling infrastructure.

3.5.9 Whilst it is not possible to say, at this early stage of development, the levels of funding that could be achieved through these sources, or the proportionate mix of them, the existence of a number of funding options that could potentially be used gives confidence that a funding solution can be identified in the next stage of development.

4 Commercial Case

4.1 Introduction

4.1.1 The purpose of the Commercial Case is to establish whether the Project is commercially viable and sets out the procurement strategy that will be used to engage the market. In assessing commercial viability, the conclusion is whether the Project can be delivered on viable terms for all parties and makes commercial sense.

4.2 Delivery and Ownership Strategy

4.2.1 At this early stage of the project, a delivery strategy has not been confirmed. However, Worcestershire County Council is aware of a number of different delivery and ownership models that could be deployed for the station. Further discussions with all parties, including Train Operators, Network Rail and DfT will be needed during the next stage of development to establish which model best fits this case.

4.2.2 In high level terms there are three delivery and ownership models, each of which have their advantages and disadvantages for Local Authority promoters. These are described in the tables overleaf at a summary level.

Option 1: Network Rail Delivery and Ownership

Nature	Advantages	Disadvantages
Promoter enters into an Implementation Agreement with Network Rail, in which promoter specifies the outcomes it wants to see, which Network Rail then designs and delivers. Promoter raises the funds required for the capital cost of the station Network Rail procures the construction contractor and project manages the works. The completed station is owned by Network Rail and is usually leased to the local train operating company who provides the staff, cleaning, maintenance etc and collects the farebox revenues which the station's passengers provide.	Promoter pays a fee to Network Rail manage all of the challenges associated with project management, construction, and delivery of the new station project. The Implementation Agreement is a template form of contract with regulatory approval Network Rail has the ability to use its existing framework contracts, which can streamline procurement timelines The process of managing handover can be simple as the Implementation Agreement assumes the works as owned by Network Rail once complete	Does not relieve the Promoter from the burden of raising funds to meet the outturn cost of delivery. Promoter does not have direct control of the conduct of the project, and continues to bear the consequences of cost and programme risk e.g. if Network Rail advise that the outturn cost exceeds the level of funding which the promoter has sourced, then the promoter has to find further funding. Deviations from the standard form Implementation Agreement are difficult to negotiate. Promoter does not have any long-term stake in the completed station thus has less control over future expansion and improvement of the asset.
The recently approved new small station at Soham in Cambridgeshire is being delivered by Network Rail to Cambridgeshire & Peterborough Combined Authority for a budget of £18.6m under this model.		

Figure 48 - Delivery option 1: Network Rail delivery and ownership

Option 2: Third party managed then handed over

Nature	Advantages	Disadvantages
Promoter procures the construction contractor(s) and project manages the works Network Rail approve designs, and 'accept' the completed station into its asset base. Once accepted, the completed station is owned by Network Rail and is then usually leased to the local train operator who provides the staff, cleaning, maintenance etc and collects the farebox revenues which the station's passengers provide.	Promoter has a high degree of control and ownership of the scheme design so can tailor it to meet local / customer needs Promoter has control over the cost and transfer of delivery risk by managing a competitive tendering process and employing the construction contractor Promoter has a higher degree of control over project programme than option 1 because it is directly project managing the works	Promoter needs to be 'competent' to act as Client for railway works. Cost overruns must be borne by Promoter. The process of gaining Network Rail acceptance of the completed works can be protracted. This leads to tension where it causes delay and cost escalation. It can be particularly concerning to local politicians when it appears that construction is complete but the station has not opened because of problems achieving handover. Promoter does not have any long-term stake in the completed station, making future expansion or improvement hard to achieve
This model was used for Worcestershire Parkway station, which SLC Rail managed on behalf of Worcestershire County Council. The station opened in February 2020.		

Figure 49 - Delivery option 2: Third party managed then handed over

Option 3: Third party promoted, Project Company Owned

Nature	Advantages	Disadvantages
The promoter role is held jointly by the local authority and a developer, formalised through a Development Agreement. The promoter roles and risks are allocated to the party best able to handle them. For example, the local authority may lead on land and planning, and the developer may arrange or provide project finance, procurement and management of project delivery. The promoter enters into an Asset Protection Agreement with Network rail to approve designs. The scope of the project can be efficiently delivered by only requiring elements which directly interface with the operational railway to be approved by Network rail. The completed station is owned by the project company, in which the local authority and developer can both have an equity stake	Promoter has input to design of the scheme so can tailor it to meet local / customer needs Promoter has a degree of control over the cost by tendering construction contracts and employing the construction contractor Promoter has a degree of control over project programme because it is project managing the works The developer will often be able to provide project finance privately. This obviates the need for the local authority to provide or arrange grant funding. If cost overruns occur these can be handled by arranging more project finance, which is repaid over time. The presence of a developer / financier / project company can bring useful discipline on cost, programme and conduct Local authority has influence but is not burdened by carrying all of the cost and programme risk If the project company is profitable, the local authority will enjoy a dividend stream, whereupon there is the option to sell the future dividend stream to an investor for a lump sum. This offers a perpetual investment opportunity – because the dividends or lump sum can be re-invested in improvements / other transport projects.	This is a more complex structure compared to Options 1 and 2 There can sometimes be ideological objections from politicians to the use of private finance for public infrastructure schemes
SLC staff have in depth experience of devising and setting up this model which was effectively used at Aylesbury Vale Parkway and Coleshill Parkway stations.		

Figure 50 - Delivery option 3: Third party promoted, and project company owned

4.2.3 Worcestershire County Council is the promoter of the project and will need to weigh up the advantages and disadvantages of the three approaches described above. Key factors that will need to be taken into account will be:

- The level of projected revenue from the station compared to the capital cost
- The relative balance of funding sources, as described in the Financial Case
- Worcestershire County Council's appetite for risk
- The extent of interaction with Worcester Area re-signalling, as described in the Strategic Case (for example, project dependencies might argue for Rushwick to be delivered by Network Rail)
- The opinion of rail industry stakeholders, including Network Rail, West Midland Trains (as prospective station operator) and DfT

4.3 Procurement Options

4.3.1 If either of options 2 or 3 above are taken forward, it is assumed that Worcestershire County Council as promoter will procure the project on a design and build basis. However, this approach will be tested during the RNEP Develop/OBC Stage for appropriate risk transfer and cost effectiveness. Should the project promoters form a partnership with a private sector financier/developer partner this may evolve into a Design, Build, (part) Finance and Maintain DBFM approach. In the latter case, responsibility for maintenance and renewal of the station post Deployment stage would be passed to the private sector partner.

4.3.2 Early Contractor Involvement (ECI) will be undertaken during the Develop/OBC stage to provide the relevant expertise to reduce construction risks and shape the procurement process and tender strategy. ECI will assist by providing market input in the determining of the most appropriate contract form, based on the risk profile generated and encapsulated in the cost and schedule risk analysis exercises.

4.3.3 The final procurement strategy and form of contract will be confirmed towards the end of Outline Design, based on the ECI and additional market engagement feedback sought, together with further discussion with the Promoters on their role in delivery, and as a key public sector shareholder and stakeholder. This will include, for example, an understanding of whether the Promoters involvement would necessitate full open procurement compliant to EU procurement rules.

4.3.4 Should option 1 be taken forward, the appointment of a Design and Build contractor would be undertaken by Network Rail in consultation with the sponsor.

4.3.5 Currently the high-level programme assumes that the procurement process to secure design and build (part Design, Deliver and Deploy RNEP stages) contractor will occur in mid-2025 to coincide with obtaining Decision to Deliver by the end of 2025.

4.4 Risk Allocation and Transfer

4.4.1 The contract is the key means of allocating risk and providing an incentive mechanism to manage the risk. Careful thought needs to be given to which party is best placed to manage each risk and the implications for price of transferring risk.

4.4.2 Development risk is currently being taken by Worcestershire County Council as the Promoter. The current working assumption is that the Council will continue to carry development risk in future stages of the project unless a private sector developer/investor partner is engaged (likely to be towards the end of the Develop/OBC stage). From this point forward cost, scope, and programme risk to undertake detailed design and delivery would be transferred to the private sector partner,

4.4.3 During the delivery phase, as much of the price and programme risk as possible will be transferred to the Principal Contractor through the works contract, subject to market testing of acceptability and risk pricing as noted above. The delivery risk profile will be reduced by awarding a design and build contract, because the Contractor is not then expected to take on the liability of another party's design. This contract could either be let directly by the Council (under option 2), by Network Rail (under option 1) or by the private sector developer/investor via a Special Purpose Company (under option 3).

4.4.4 On station opening, the operational and maintenance risk would transfer to the station operator and Network Rail (under options 1 and 2) or would be held by the private sector developer/investor (under option 3).

4.5 Conclusions

4.5.1 The project is drawing on Worcestershire County Council's recent experience of delivering Worcestershire Parkway, and from the involvement of SLC Rail as their rail advisers who have a background in procuring design and build contracts for new railway stations, under third party and private developer models.

4.5.2 The promoter will assess delivery through a Design Build Finance and Maintain (DBFM) model in the Develop/OBC stage to determine if this structure compliments its resource, experience and capability and increases the likelihood of success,

facilitating delivery of the station scheme to acceptable risk parameters, and in a timely and cost-effective manner.

5 Management Case

5.1 Introduction

5.1.1 The Management Case assesses whether a proposal is deliverable by testing its project planning, governance, structure, risk management, communications and stakeholder management, benefits realisation, and assurance arrangements.

5.1.2 The Rushwick Station project is being developed against a backdrop of significant change in the railway industry and major economic disruption caused by the COVID-19 pandemic. This means there are significant uncertainties around demand, the shape of future train services, and the contractual structure of the rail industry. However, Worcestershire County Council is determined to continue to plan for the future, and to take the steps now that will enable it to respond to future housing growth over the period to 2040 and beyond. The earliest the station could be open is 2026, although this could be several years later depending on the extent of interdependence with Worcester Area Resignalling as discussed in the Strategic Case.

5.1.3 An adaptive approach will be needed in the development of the Rushwick project, therefore, taking account of wider developments in industry structure and plans, as well as the speed and extent of demand recovery from the pandemic. The proposals in the Management Case are designed to enable the scheme timing and governance to be adapted to these emerging factors.

5.2 Evidence of Similar Projects

5.2.1 Worcestershire County Council has direct experience of developing, funding and delivering a new railway station at Worcestershire Parkway, which opened in February 2020. In this case, the County Council undertook all development and delivery risk before transferring the station to Network Rail on opening.

5.2.2 SLC Rail, which supported Worcestershire County Council as specialist rail advisor, including for Worcestershire Parkway) has recent experience of developing and delivering new railway stations as follows:

- Stratford Parkway – Client Warwickshire County Council, Opened May 2013
- Coventry Arena – Client Coventry City Council, Opened January 2016
- Bermuda Park – Client Coventry City Council, Opened January 2016
- Kenilworth – Client, Warwickshire County Council, Opened April 2018

- Worcestershire Parkway – Client, Worcestershire County Council, Opened February 2020.

5.2.3 The County Council is also an active member of West Midlands Rail Executive and of Midlands Connect, with the result that it is engaged with the development of wider rail strategy and service planning.

5.3 Governance

5.3.1 As identified in the Strategic Case, Rushwick is one of a number of interfacing proposals for new facilities, services and capabilities for the Worcester area. Specifically:

- Midlands Connect's proposals for an additional hourly Hereford – Birmingham service as part of the Midlands Rail Hub project.
- The North Cotswold Line Task Force's proposals for two trains per hour between London Paddington and Worcester, with one continuing to Great Malvern and the other to Kidderminster.
- The Masterplan for Worcester Shrub Hill being developed by Worcestershire County Council and Worcester City Council.
- Network Rail's early-stage consideration of a need for asset renewal of the signalling in the Worcester Area.
- The West Midlands Rail Executive is updating its Rail Investment Strategy, with several different service patterns in the Worcester area being considered dependent on emerging demand following the pandemic.

5.3.2 It will be essential to manage the interfaces between these projects to ensure that a coherent strategy emerges for the Worcester area. Rushwick fits into this picture. For example, the business case for Rushwick is dependent on the train service that can be provided. This in turn depends on the train service pattern that emerges from the above proposals. In turn the service pattern may rely on new infrastructure being provided in conjunction with a scheme to resignal the area.

5.3.3 For these reasons, we believe that the early stage project governance for Rushwick should fall under a wider Project Board for the Worcester Area, on which Network Rail, the Train Operators, Midlands Connect, WMRE and Worcestershire County Council should sit. DfT would also be invited. The remit of this Board would be to:

- Manage the interfaces between the proposals outlined above in order to understand sequences and dependencies

- Ensure that stakeholder aspirations are properly captured and managed so that a coherent strategy can be agreed for services and infrastructure in the Worcester area.

5.3.4 A Rushwick Project Working Group would report to the Worcester Area Project Board. This Working Group will manage the development of the Rushwick project, in a way that is consistent with the Worcester area strategy described above.

5.3.5 At a later appropriate point in the development of the Rushwick project and when the interfaces are better understood, it may be appropriate to separate the governance of Rushwick with its own Project Board in line with the approach taken on most new station schemes and Worcestershire County Council's own governance processes.

5.3.6 In due course, and once established, the Station Project Board will be chaired by a senior officer or member of Worcestershire County Council. It will focus on full collaboration with Network Rail and comprise members from the County Council, Malvern Hills District Council and West Midlands Rail Executive with attendance from key rail industry parties including train operators, Network Rail and DfT.

5.3.7 A separate agreement will be in place for the construction of highways infrastructure within the Rushwick development that will act as ancillary infrastructure to the station. This ancillary infrastructure will be delivered as a separate project to the station and does not form part of the scope of this SOBC.

5.4 Project Programme

5.4.1 Key to the project programme are the following:

- The relationship between the station opening and housing being built on the site, and

- The potential requirement for Worcester Area Resignalling prior to a train service being provided that can call at Rushwick at sufficient frequency to support the business case.

5.4.2 These two factors govern the speed at which the station scheme can and should be developed. The particular challenge is that the timing of the second of these two factors is currently unknown. As described in the Strategic Case, our working assumption is that Worcester Area Resignalling will be included within Network Rail's CP7 Business Plan (2024-29). On this basis we have assumed that the earliest the

station can open is 2026, with an interim train service, but with certainty that Worcester Area Resignalling is to be delivered/is in delivery and that the desired train service will be delivered shortly after that.

5.4.3 A high-level indicative programme based on this assumption is shown below.

Rushwick High Level Programme and Interdependencies Feb 2021							
	Year						
Event	2021	2022	2023	2024	2025	2026	2027
SWDPR Consultation	November						
SWDPR Submission to Planning Inspectorate		March					
Inspectors Report			March				
Adoption			April				
Housing Development Build							
Develop	November						
Design						Earliest	
Deliver							
Open						Earliest	
NR Control Period 7 Starts				April			
Worcester Area Re-signalling		Renewals decision required					Earliest

Figure 51 - High level timeline

5.4.4 The project will build further momentum during the Develop/OBC stage. The engineering feasibility design will be progressed in more detail to align with stakeholder output requirements captured through several workshops. This will allow improved cost estimating certainty, in parallel with the refinement of timetable and performance models. Progression of discussions with Worcestershire County Council and key rail industry stakeholders and Early Contractor Involvement will generate outcomes that will feed into a preferred delivery and procurement strategy for the Outline Business Case to support a 'Decision to Design'.

5.4.5 Further discussion is required during the Develop/OBC stage, however the car park, and other associated facilities located outside the Network Rail boundary are anticipated to be progressed under the Royal Institute of British Architects (RIBA) process to ensure a consistent approach with the wider development. The assets to be constructed on Network Rail land will largely follow the Governance of Railway Investments Projects (GRIP) process; to ensure consistency where relevant to Network Rail specifications.

5.4.6 Consequently, it is anticipated that the Rushwick programme when developed in further detail will comprise key milestones for the railway station project that are both

GRIP related (for station elements on Network Rail land) but also involve some parallel deliverables associated with the RIBA process (for station elements outside Network Rail land).

5.5 Project Management Plan

5.5.1 Rushwick station is a multi-disciplinary project involving multiple stakeholders and project components. Key to the success of the project is to have a clear plan outlining the management processes to be followed to satisfy promoters, funders, and statutory body requirements and to minimise risk to the project.

5.5.2 To achieve this, a Project Management Plan (PMP) will be produced to cover the planning, coordination and provision of assurance activities and approval points throughout the project lifecycle, proportionate to levels of project cost and risk. The benefits of a PMP are:

- Clarity of roles and responsibilities and clear understanding of participation requirements by project team, funders, and stakeholders.
- Enables resourcing to be planned efficiently to meet project development requirements
- Provide details of the objectives and scope of works for the project.
- Identifies the organisation and governance arrangements for managing the project.
- Identifies the key deliverables.
- Describes the approach to stakeholder management.
- Advises the programme milestones.
- Establishes the risk management procedures.
- Establishes the change management procedure.

5.6 Risk Management

5.6.1 A risk register will be developed during the Develop/OBC phase of the project by the Project Manager. This will be used to capture:

- Risk description and categorisation,

- Impacts,
- Likelihood and severity,
- Proposed mitigations,
- Action owners and deadlines.

5.6.2 The risk register will be reviewed and updated at regular periods to capture:

- New / emerging risks,
- New mitigations,
- Risks that have materialised,
- Risks that can be closed.

5.6.3 Any early warnings notified by the delivery team, stakeholders or supply chain will be subject of risk reduction meetings to capture any urgent actions or mitigations. Following mitigation, any residual risks will be retained in the register for ongoing review and assessment. Risk status summary will be reported to each meeting of the Project Board, including escalation of items that require assistance or action at Board Level.

5.6.4 At this stage in the project's development, the following top-level risks have been identified:

- The existing site has medium-high vulnerability level for groundwater pollution, where it could be polluted during construction and operation.
- The stability of the cutting is unknown, there is a risk of slope failure due to applied excessive surcharge loads during construction.
- Unforeseen ground conditions such as land contamination could increase project cost and programme.
- The gradient through the station at 1:132 could result in mitigations that would increase project cost and programme
- The existing tracks could have low rail adhesion due to the leaves that may fall on the tracks from trees and shrubs present on the cutting.

- The programme dates for Network Rail's Worcester Resignalling Scheme are unknown and there is a risk that this could influence when a new station can be built at Rushwick.
- The implications of the proposed station on the existing signalling have not yet been considered. Potential signalling changes could be required which add significant cost to the project.
- The housing developer's proposal for land take are conceptual and there is risk of change which could impact the proposed station design.

5.6.5 **Risk Management Strategy**

5.6.6 The risk management process for the Rushwick project will be overseen by the Project Manager and reviewed in detail by the Project Working Group and Stakeholder Groups. The Risk Management Process will comply with Network Rail's GRIP standard, the Common Safety Method (CSM) required under European and UK Law and Highways Design Standards and processes, (Road Safety Audit Stages 1 to 3 where applicable).

5.6.7 During the Develop/OBC stage a Risk Register will be established covering overall project risks. This will include a process of hazard identification and preliminary system definition to establish whether the project represents a 'significant' risk in respect of CSM in conjunction with Network Rail.

5.6.8 **Risk Review Cycles**

5.6.9 The Working Group will review the identified risks each month, depending on stage of the project based on updates from the functional team leaders (i.e. engineering, planning, property, finance, economic, legal) to ensure risks are being identified and mitigated and to make a qualitative assessment of the effect on the programme risk exposure.

5.6.10 The purpose of the regular reviews is to ensure mitigating actions are being put in place and to report the effect on the risk profile to the Project Board who will focus on the top 5 risks and issues and any new potential risks.

5.6.11 Quarterly Risk Review – Not less than Quarterly, or at RNEP stage reviews as appropriate, there will be a review of the full risk register by the Project Working Group with support from technical and operations team, and Network Rail where applicable.

5.6.12 At this review, all newly identified risks that have been added to the register since the last Quarterly review will be assessed and validated by the whole team. The quantification of all risks (new and existing) will be assessed, and any changes to mitigating actions identified.

5.6.13 Periodically the project will be subject to a Quantified Cost Risk Assessment (QCRA) and Quantified Schedule Risk Assessment (QSRA). These will be carried out at the end of Develop/OBC stage based on the scope preferred option and again during the Design stage based on the outline design.

5.7 Progress Reporting

5.7.1 During the Develop/OBC and Design stages the appointed Project Manager will provide regular reports summarising progress against programme, actions, and issues at the regular Project Working Group meetings. Subsequently an executive report will be produced by the Chair of the Working Group, summarising project progress, issues, and recommendations for submitting to the Project Board and promoting regular reporting of key issues and timely decision making.

5.7.2 During the Delivery and Deployment stages, the contractor selected to deliver the station will be required to develop programme controls supported by robust reporting processes that align with the project governance framework, integrating key stakeholder requirements, facilitating continuous monitoring, and incorporating accurate performance measurement. The purpose is to provide accurate project information in a timely way to ensure well informed decisions are made and appropriate action is taken.

5.8 Next Steps and the Develop/OBC Stage

5.8.1 Given the uncertainties around timing, the most important next steps are:

- Establishing a Worcester Area Board
- Under its auspices, setting out a vision for the complete picture of services through Worcester with WMRE, Midlands Connect and Network Rail
- A formal requirements management process involving the Local Authorities and rail industry partners to produce a Requirements Document
- Feeding into the specification for Worcester Area Resignalling to ensure that station calls can be reliably accommodated

5.8.2 It will then be for Worcestershire County Council to determine the speed at which the Develop/OBC stage of the project should progress.