

NORTH BLACKBURN GROWTH DEAL 3

Business Case

December 2018



Document Control Sheet

Project: North Blackburn Growth Deal 3
Client: Blackburn with Darwen Borough Council
Project No: CS095977
Document title: Business Case

Contents

1. Strategic Case	4
2. Economic Case	31
3. Financial Case	52
4. Commercial Case	55
5. Management Case	59
Appendix A – Proposed Scheme Drawings	67
Appendix B – Feasibility Report	68
Appendix C – BCR Technical Note	69
Appendix D – Social and Distributional Impacts Appraisal Report	70
Appendix E – Monitoring and Evaluation Report	71
Appendix F – Risk Register	72
Appendix G – Communications Strategy	73
Appendix H – Appraisal Methodology	74
Appendix I – Delivery Programme	75
Appendix J – WebTAG Worksheets	76
Appendix K – BwDBC Growth and Development Programme	77
Appendix L – Organogram	78
Appendix M – Gateway Review	79

Executive Summary

Introduction

This business case has been completed by Capita on behalf of Blackburn with Darwen Borough Council (BwDBC) in regard to the proposed North Blackburn GD3 scheme. The scheme is seeking approval from the LEP and funding towards its £2.6 million cost. In line with the LEP's Accountability Framework, this business case is required in order to seek approval and draw down funds.

Scheme Overview

The Brownhill Roundabout forms a key intersection between the Ribble Valley, Blackburn town centre and Blackburn's major employment zones at Whitebirk, enabling wider connectivity to the M6, M65 and M66 motorways. A number of designated housing sites are in the vicinity to the junction.

At present, there is a high volume of traffic passing through the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, whilst the A6119 Ramsgreave Drive currently experiences one of the highest traffic volumes amongst all roads in Blackburn. The on-site observations and junction capacity assessment results demonstrate that the Brownhill Roundabout and Whalley Old Road junction currently operate close to capacity and the situation is likely to deteriorate with addition of the forecasted traffic growth.

It has been also confirmed by the Traffic Team of BwDBC that at the Brownhill Roundabout the signal controller's life has expired, whilst the signal aspects are sun washout. There is an outstanding cable fault at the Pleckgate junction. At the Whalley Old Road junction the cables date from 1967 and are failing; the existing signal equipment has no residual life left and there is a considerable risk of an unrepairable failure.

Furthermore, it has been noted during numerous site visits that pedestrian crossing facilities, road surfacing and road markings at all three junctions within the study area require an upgrade.

In view that all three junctions identified within the study area are currently not operating efficiently, without any measures undertaken, the existing highway network would not be capable to cater for the 2019 and 2034 future year background traffic growth.

It is envisaged that the proposed signal timings optimisation and the associated highways improvements would reduce total junction delay, tackle the existing and forecasted future congestion issues, and result in the associated improvements of air quality and noise. In addition, optimisation of the junctions along the A6119 Ramsgreave Drive/Brownhill Drive corridor would help accelerate and unlock new areas of land for potential development.

Value for Money

The North Blackburn scheme overall will deliver significant journey-time saving benefits, amounting to a **PVB of £16,634,206** (2010 Prices, discounted over 60 years). The scheme also demonstrates 'Very High' value for money based on a traditional transport **BCR of 7.92** in its entirety.

The scheme also has the potential to generate approximately £287,073 per annum of Gross Value Added (GVA) benefits averaged over a 60-year appraisal period (2010 prices, based on locally adjusted GVA values), which (in line with DfT guidance) have not been incorporated into the BCR but demonstrate the scheme's positive contribution to the wider economy.

Economic Output Comparison

Economic Output	Pennine Gateway Forecast Total	Furthergate	North Blackburn
Housing units	870	Nil	427
Private sector investment	£125m	£40m	-
Jobs	3,750	438	-
Commercial floor space	64,000 sq m	17,500 sq m	-
GVA	£414.7m	£236m	£17m

A yearly cumulative total for how these outputs will be achieved is provided below.

Year	Houses			Jobs			GVA
	Scheme Dependent	Accelerated	TOTAL	Scheme Dependent	Accelerated	TOTAL	
2021	-	-	-	-	-	-	£0
2025	427	-	427	-	-	-	£2,857,121
2026	427	-	427	-	-	-	£3,833,836
2027	427	-	427	-	-	-	£4,777,522

1. Strategic Case

The strategic case helps to determine the need for a scheme. It must demonstrate the case for change, presenting a clear rationale for making an investment against the strategic objectives of the organisation proposing it and other relevant Government objectives. It provides important evidence and sets out robust assumptions at an early stage in the development of a business case and explains how various options have been sifted and distilled into a preferred scheme.

1.1 Strategic Context

Please explain the wider strategic context for the proposed scheme by describing the aims and objectives of the promoting organisation. Consider what is driving the need for change at a strategic level, including external factors such as new legislation, technology.

Introduction

The proposed North Blackburn scheme is one of three infrastructure packages, which altogether comprise the Growth Deal 3 “Pennine Gateways” project, aimed to support the sustainable delivery of new homes, new business and jobs in the three growth areas of the Borough of Blackburn and Darwen whilst contributing to alleviating congestion.

The Pennine Gateways project will deliver key transport infrastructure improvements to unlock new housing and employment growth in one of England's most deprived areas. Delivered via three separate projects namely Furthergate, North Blackburn and South East Blackburn.

The “Pennine Gateways” project has been approved in principle by the Lancashire Enterprise Partnership (LEP) for funding and was given “Programme Entry” in spring 2017 as part of Central Government’s Growth Deal 3 announcement. Majority funding for delivery comes via the LEP with physical and financial completion required by March 2021.

The LEP has secured £320 million from the Government's Local Growth Fund to support economic growth in the area through the Growth Deal. The Lancashire Growth Deal as agreed with Government aims to realise the growth potential of the whole of Lancashire, building on key local economic assets and high-value business clusters.

The deal will help to:

- Create up to 11,000 jobs and 3,900 new homes
- Attract £1.2 billion of new private sector investment to Lancashire

The “Pennine Gateways” project contributes significantly to the “Releasing Growth Potential” priority of the LEP, through essential transport improvements to motorway junctions and railway lines as well as building new roads which support job creation and enable the release of more land for homes and businesses.

Scheme Proposal

The Growth Deal 3 North Blackburn scheme proposal comprises three civil engineering packages as follows:

- Upgrade of the A6119 Brownhill Drive/A6119 Ramsgreave Drive/A666 Whalley New Road/Pleckgate Road five-arm signalised roundabout junction, known as the Brownhill Roundabout, including intelligent traffic signal equipment, geometry, resurfacing and Whalley New Road parking amendments and bus stop formalisation;
- Junction improvement at the Pleckgate Road/Ramsgreave Drive four-arm signalised junction (further referred to as Pleckgate junction in this report), including new traffic signal equipment; and
- Capacity upgrade at the A6119 Brownhill Drive/A6119 Whitebirk Drive/Whalley Old Road staggered signalised junction (further referred to as Whalley Old Road junction), including increases to the northbound “stacking” lane on the Whitebirk Drive arm of the junction and new signal equipment.

The proposal includes associated sustainable transport improvements for walking and cycling (complementing and enhancing the Weaver’s Wheel), junction profiling, alignment and infrastructure, associated highway signage, street lighting, drainage, surfacing, lining and soft/hard landscaping. There is also a potential to include ducting for future variable message signs (VMS).

The location of the aforementioned three junctions, which form part of the North Blackburn scheme are shown in Figure 1.1.1 and Figure 1.1.2.

Figure 1.1.1. North Blackburn Study Area

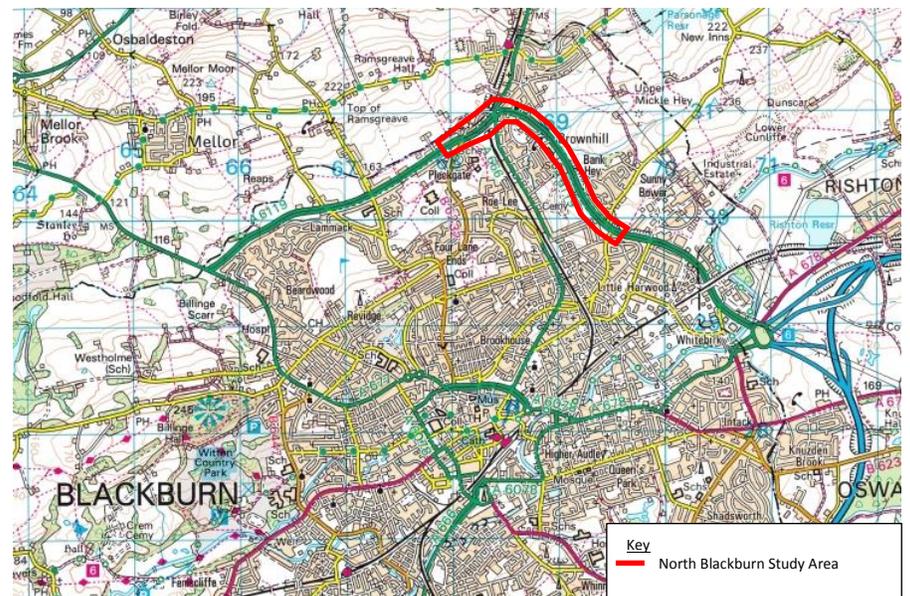
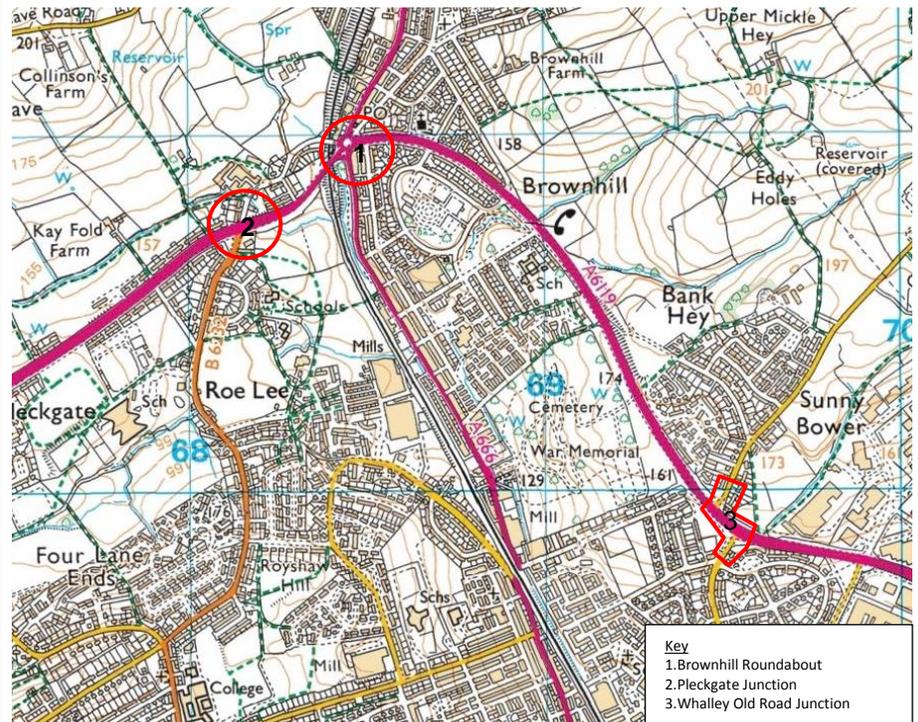


Figure 1.1.2. Scheme Locations



The proposed North Blackburn scheme drawings are included in Appendix A.

Need for Change

The Brownhill Roundabout forms a key intersection between the Ribble Valley, Blackburn town centre and Blackburn's major employment zones at Whitebirk, enabling wider connectivity to the M6, M65 and M66 motorways. A number of designated housing sites are in the vicinity to the junction.

At present, there is a high volume of traffic passing through the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, whilst the A6119 Ramsgrave Drive currently experiences one of the highest traffic volumes amongst all roads in Blackburn.

The junction capacity assessment results (see Section 3.7 of the BCR Technical Note) demonstrate that the Brownhill Roundabout and Whalley Old Road junction currently operate close to capacity in the AM peak hour, within capacity in the IP peak hour and over-capacity in the PM peak hour. The Pleckgate junction currently operates within capacity throughout the day.

The overall network results show a Degree of Saturation (DoS) of 93.1% and a Total Delay of 113.6 pcuHr for the AM peak hour, a DoS of 58.7% and a Total Delay of 47.6 pcuHr for the IP peak hour and a DoS of 129.8% and a Total Delay of 208.3 pcuHr for the PM peak hour.

The modelling results correlate with the numerous on-site observations, demonstrating that in the PM peak hour the Whalley New Road northern arm experiences heavy demand on both lanes, as shown in Figure 1.1.3.

Figure 1.1.3. Whalley New Road Northern Arm, PM Peak Hour



It has been observed during the site visits, that the A6119 Ramsgreave Drive arm of the roundabout also experiences long queues in the PM peak hour, which sometimes extend to the Pleckgate junction.

The highest DoS of 93.1%, Mean-Max Queue (MMQ) of 29.3 pcu and Delay of 10.5 pcuHr are observed at the Whalley Old Road junction during the AM peak hour and occur on the dedicated right turn lane onto the Whalley Old Road western arm of the junction. During the PM peak hour, the highest DoS (129.8%), MMQ (89.9 pcu) and Delay (83 pcuHr) values are observed on the dedicated right turn lane onto the Whalley Old Road eastern arm of the junction.

During several site visits it was observed that the dedicated right turn lane for a right turn onto Whalley Old Road northern arm of the junction is being fully blocked by traffic originating from the Whalley Old Road western arm of the junction before the green time is allocated to the A6119 Whittebirk Drive approach (see Figure 1.1.4).

Figure 1.1.4. Right Turn Lane Fully Blocked



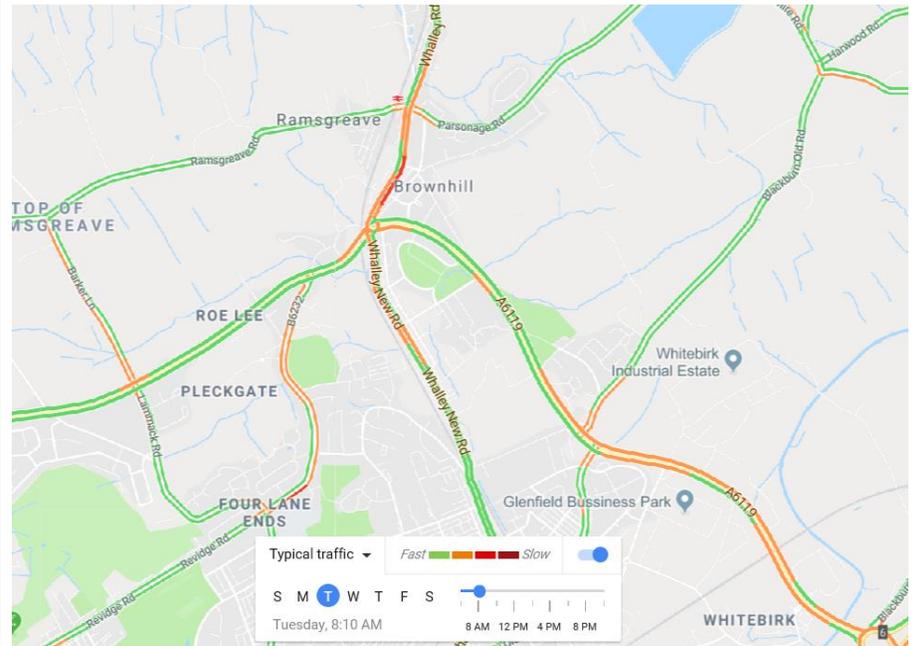
Long queues are therefore formed along the A6119 Whitebirk Drive approach and instead of turning right at this location, traffic therefore proceeds straight through the junction and makes a right turn at the Brownhill Roundabout (see Figure 1.1.5).

Figure 1.1.5. Queues Along the A6119 Whitebirk Drive



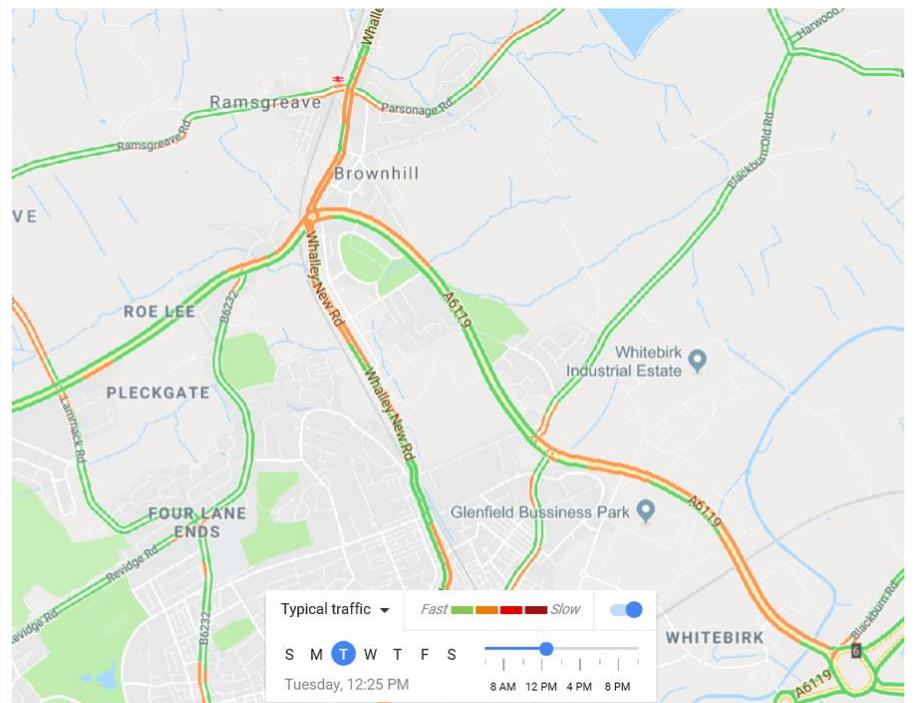
The junction capacity assessment results also correlate with the typical traffic speed plots from Google Maps presented in Figure 1.1.6 for the AM peak hour, Figure 1.1.7 for the IP peak hour and Figure 1.1.8 for the PM peak hour.

Figure 1.1.6. Typical Traffic Speed Plots, AM Peak Hour



As can be seen from Figure 1.1.6 and as confirmed by the junction capacity assessments, all three junctions (Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction) currently experience slow moving traffic in the AM peak hour.

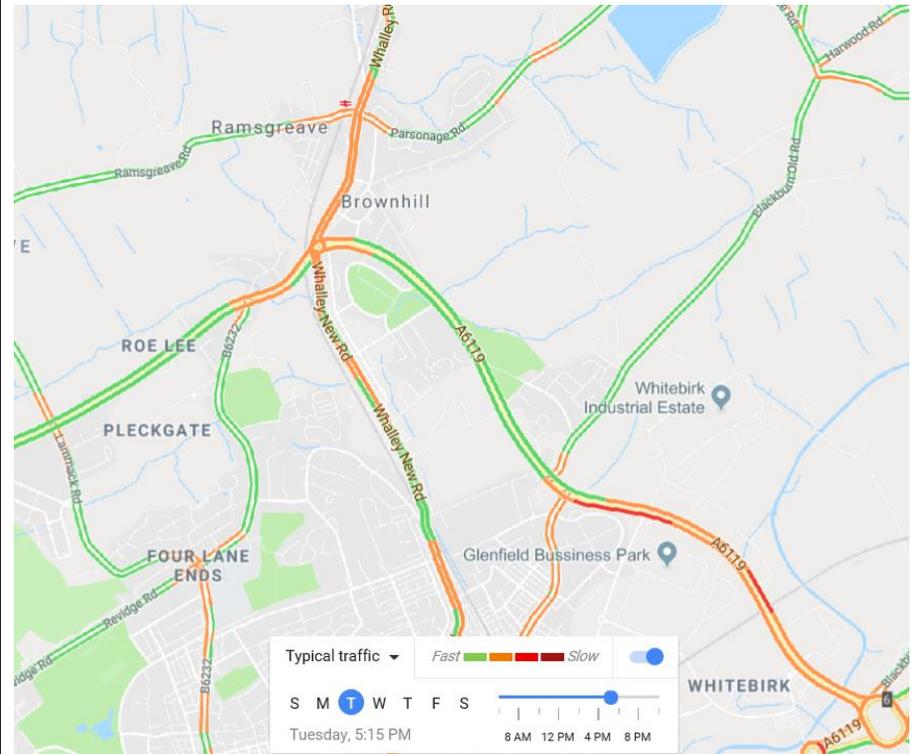
Figure 1.1.7. Typical Traffic Speed Plots, IP Peak Hour



Although it has been demonstrated by the junction capacity modelling that all three junctions currently operate within capacity in the IP peak hour, it can be seen

from Figure 1.1.7 that traffic is moving slowly along all arms of the Brownhill Roundabout, Pleckgate junction and Whalley Old Road, which has also been observed during the site visits.

Figure 1.1.8. Typical Traffic Speed Plots, PM Peak Hour



As can be seen from Figure 1.1.8 and confirmed by the junction capacity assessments, the Brownhill Roundabout and Whalley Old Road junction currently experience capacity issues in the PM peak hour.

Queues currently form on the Whalley New Road northern arm of the Brownhill Roundabout and the A6119 Ramsgreave Drive with slow moving traffic on all arms. At the Whalley Old Road junction, long queues form on the dedicated right turn lane towards the Whalley Old Road eastern arm of the junction, with slow moving traffic on all arms of the junction and queues forming on the Whalley Old Road western arm of the junction.

A Transport Feasibility Report (see Appendix B) has been previously prepared by Capita to understand the existing operational capacity of the Brownhill Roundabout and Pleckgate junction and to consider the potential options for improvements (see Section 1.7 of this SOBC). The need for the Feasibility Study arose due to forecasted traffic growth as a result of the submission of a number of planning applications for housing developments within north of Blackburn. In view of Policy CS6: Housing Targets of the Blackburn with Darwen Borough Council (BwDBC), a total of 9,365 additional dwellings are required to be achieved between 2011 and 2026.

The junction capacity assessments have therefore been carried out for the 2019 and 2034 future years (see Section 3.7 of the BCR Technical Note), taking into account the background traffic growth (through application of TEMPro growth factors) and the committed developments.

The junction capacity assessment results demonstrate that with addition of the background traffic growth, the highway network would operate closer to its capacity. In the 2019 scheme opening year, the overall network DoS would increase from 93.1% in the 2018 to 94.1% in the 2019, and a Total Delay would grow from 113.6 pcuHr to 117.6 pcuHr in the AM peak hour. In the IP peak hour the DoS would increase from 58.7% in the 2018 to 60.2% in the 2019 and a Total Delay would grow from 47.6 pcuHr in the 2018 to 48.3 pcuHr in the 2019. In the PM peak hour the DoS would increase from 129.8% to 131.6% and the Total Delay would grow from 208.3 pcuHr to 237.5 pcuHr respectively.

The performance of all junctions would further deteriorate in the 2034 (with addition of the background traffic growth only), with the overall network DoS increasing from 94.1% in the 2019 to 111.2% in the 2034, and a Total Delay growing from 117.6 pcuHr in the 2019 to 335.6 pcuHr in the 2034, in the AM peak hour. In the IP peak hour the DoS would increase from 60.2% in the 2019 to 73% in the 2034 and a Total Delay would grow from 48.3 pcuHr in the 2019 to 60.1 pcuHr in the 2034. In the PM peak hour the DoS would increase from 131.6% to 157% and the Total Delay would grow from 237.5 to 524.4 pcuHr respectively.

With addition of the committed development traffic flows (North Blackburn Phase 1 Whinney Lane, Parsonage Road development, Whitebirk Strategic Employment Site and Roe Lee development site), the performance of all junctions would deteriorate in the 2019 scheme opening year, with the overall network DoS increasing to 94.3% and a Total Delay growing to 125 pcuHr in the AM peak hour. In the IP peak hour the DoS would increase to 62% and a Total Delay would grow to 50 pcuHr respectively. In the PM peak hour the DoS would increase to 132.4% and the Total Delay would grow to 259.5 pcuHr respectively. In the 2034 future year, the Brownhill Roundabout would operate over capacity in the AM and PM peak hours, the Pleckgate junction would operate over capacity in the AM peak hour and at capacity in the PM peak hour, and the Whalley Old Road junction would operate over capacity in both AM and PM peak hours.

It has therefore been demonstrated that the need for change is critical to ensure a smooth operation of the network in the future years, with the traffic growth forecasted.

It is envisaged that the proposed highway network improvements and signal timings optimisation would reduce the existing congestion issues at three junctions along the A6119, resulting in delay reduction and ensuring the efficient operation of the local highway network. As a result, it is expected that the scheme will generate journey time savings for motorists and that the resulting user benefits will be a key element which will underpin the business case.

Inspection of the site signal controllers specifications indicate that the Whalley Old Road junction currently operates with fixed time control and fixed green times applied throughout the day.

It is apparent from numerous site visits that the operation of the Brownhill Roundabout is directly impacted by transferred right-turners from the Whalley Old Road junction in the PM peak hour. A consideration has therefore been given to reprogramming the existing controllers and adjusting the existing signal timings at all three junctions within the study area. Due to old signal equipment it is however deemed not possible to reprogram the existing controllers.

It has been confirmed by the Traffic Team of BwDBC that at the Brownhill Roundabout the signal controller's life has expired, whilst the signal aspects are sun washout. There is an outstanding cable fault at the Pleckgate junction. At the Whalley Old Road junction the cables date from 1967 and are failing; the existing signal equipment has no residual life left and there is a considerable risk of an unrepairable failure.

Furthermore, it has been noted during numerous site visits that pedestrian crossing facilities, road surfacing and road markings at all three junctions within the study area require an upgrade.

In view that all three junctions identified within the study area are currently not operating efficiently, without any measures undertaken, the existing highway network would not be capable to cater for the 2019 and 2034 future year background traffic growth. The existing congestion issues would result in significantly increased total journey times along the A6119 Ramsgreave Drive/Brownhill Drive corridor, which in turn would affect the strategic road network (i.e. connection to the M65 motorway).

It is envisaged that the proposed signal timings optimisation and the associated highways improvements would reduce total junction delay, tackle the existing and forecasted future congestion issues, and result in the associated improvements of air quality and noise. In addition, optimisation of the junctions along the A6119 Ramsgreave Drive/Brownhill Drive corridor would help accelerate and unlock new areas of land for potential development.

Wider Strategic Context – Policy Review

The proposals are strongly aligned to various National, Regional and Local policies, helping to achieve both their immediate goals and contribute to longer-term aims. Details of these policies and the scheme's contributions are presented below.

NATIONAL POLICY

National Planning Policy Framework (NPPF)

The revised NPPF was published on 24 July 2018 and sets out the government's planning policies for England and how these are expected to be applied. The revised NPPF replaces the previous NPPF published in March 2012.

The purpose of the planning system is to contribute to the achievement of sustainable development. Achieving sustainable development means that the planning system has three overarching objectives, which are interdependent and need to be pursued in mutually supportive ways (so that opportunities can be taken to secure net gains across each of the different objectives):

- a) ***“an economic objective – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;***
- b) ***a social objective – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities’ health, social and cultural well-being; and***
- c) ***an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.”***

Central to the NPPF is a “*presumption in favour of sustainable development*”, which for plan-making means that:

- d) *Plans should positively seek opportunities to meet the development needs of their area, and be sufficiently flexible to adapt to rapid change;*
- e) *Strategic policies should, as a minimum, provide for objectively assessed needs for housing and other uses, as well as any needs that cannot be met within neighboring areas, unless:*
 - i. *The application of policies in this Framework that protect areas or assets of particular importance provides a strong reason for restricting the overall scale, type or distribution of development in the plan area;*
or
 - ii. *Any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.*

For decision-taking this means:

- f) *Approving development proposals that accord with an up-to-date development plan without delay; or*
- g) *Where there are no relevant development plan policies, or the policies which are most important for determining the application are out-of-date, granting permission unless:*
 - i. *The application of policies in this Framework that protect areas or assets of particular importance provides a clear reason for refusing the development proposed; or*

- ii. *Any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole.*

With regards to maintaining effective cooperation, the NPPF states in paragraph 24 that local planning authorities and county councils (in two-tier areas) are under a duty to cooperate with each other, and with other prescribed bodies, on strategic matters that cross administrative boundaries.

Transport issues should be considered from the earliest stages of plan-making and development proposals, so that (see paragraph 102):

- a) *the potential impacts of development on transport networks can be addressed;*
- b) *opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;*
- c) *opportunities to promote walking, cycling and public transport use are identified and pursued;*
- d) *the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and*
- e) *patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.*

Paragraph 109 states: *“Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.”*

It further states, that *“The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”*

Department for Transport: Single Departmental Plan (Published 14 December 2017, updated 23 May 2018)

The Single Departmental Plan for the Department for Transport (DfT) sets out the government’s strategic objectives to 2020 and the plans for achieving them. The overall mission is to create a safe, secure, efficient and reliable transport system that works for the people who depend on it; supporting a strong, productive economy and the jobs and homes people need.

The DfT has a full programme of delivery designed to support six major objectives:

1. *“Support the creation of a stronger, cleaner, more productive economy*
2. *Help to connect people and places, balancing investment across the country*
3. *Make journeys easier, modern and reliable*
4. *Make sure transport is safe, secure and sustainable*
5. *Prepare the transport system for technological progress, and a prosperous future outside the EU*
6. *Promote a culture of efficiency and productivity in everything we do”*

The North Blackburn scheme contributes to the delivery of the key DfT’s objectives within the Single Departmental Plan by improving journey times along one of the busiest routes in Blackburn the A6119, whilst addressing the existing and future congestion issues, the associated air quality and noise issues, and unlocking/accelerating new areas of land for potential development.

Highways England

While it is not anticipated that the scheme will have a perceptible impact on the Strategic Route Network (SRN), the North Blackburn highway interventions are expected to improve journeys along the A6119 Ramsgreave Drive/Brownhill Drive leading to and from the M65 motorway. The main aims of Highways England (HE), the responsible authority for the SRN, can be found at the following link: <https://www.gov.uk/government/organisations/highways-england/about>

The North Blackburn scheme is considered to support a number of HE’s key aims, including ensuring the road network is free flowing, safe and serviceable, accessible and integrated. Furthermore, the scheme would contribute to further aim to *“support economic growth with a modern and reliable road network that reduces delays, creates jobs, helps business and opens up new areas for development”* and *“ensure our activities result in a long term and sustainable benefit to the environment”*.

REGIONAL POLICY

Lancashire Strategic Economic Plan 2014

The Lancashire Strategic Economic Plan (SEP) sets out the growth ambitions for the next 10 years, with a focus on realising the potential of the whole of Lancashire. The SEP identifies key priorities and programmes which command local support and funding commitments.

In regards to East Lancashire, the SEP recognises the issues around *“...connectivity and access...to and from the M65”*, which is the main route connecting East Lancashire with the M6 and M61 near Preston: *“It [M65] therefore plays an essential role in the economy of this part of the country, connecting people and business internally as well as providing the primary means of access to the M6.”* (paragraph 7.148).

In this respect, the North Blackburn scheme will provide a high quality link to the M65 and the wider network, as well as relieving local congestion.

Tackling the existing and future capacity issues at three key junctions on the A6119 would optimise and improve the journey times on the local highway network. This would ensure spare capacity exists to cater for additional traffic generated by potential new development. As a result, the unlocked land for new development with strong connections to SRN would create a potential to boost the region's economy.

East Lancashire Highways & Transport Masterplan.

The East Lancashire Highways & Transport Masterplan was adopted in February 2014, and aims to align economic and transport objectives across East Lancashire. The Masterplan is designed around five core principles, all of which will be supported either directly or indirectly by the implementation of the proposed North Blackburn scheme.

These five principles are:

- Support the economic development of East Lancashire and of the country as a whole;
- Work to address deprivation;
- Promote community resilience;
- Increase healthy behavior; and
- Reduce our carbon footprint.

The Masterplan identifies the North Blackburn and Pennine Gateway area, which forms a gateway into the town of Blackburn, as those expected to see redevelopment. The document further states on page 28: *“The HA [Highways Agency] has an integral role in assisting growth in East Lancashire by ensuring that the strategic corridors of the M66/A56 (T) and M65 operate effectively and efficiently and integrate fully with the local highway network.”* The North Blackburn scheme would therefore contribute in the joint effort to improve the East Lancashire's gateway by optimising the operation of the three junctions on the A6119, which connect the northern part of Blackburn to the M65 motorway.

Furthermore, on page 41, the Masterplan recognises the existing capacity issues along the A6119 and states: *“capacity issues mean that the A6119/A677 route to the north of Blackburn, between the A59 at Samlesbury and Whitebirk, currently provides a second crucial link to the Enterprise Zone and the M6, both for Blackburn and for the wider East Lancashire area”.*

LOCAL POLICY

Local Plan Part 2 (2015)

BwDBC recognises the need for future investment in transport infrastructure to accommodate pressure from new development, and to unlock areas for development to take place.

The Core Strategy sets out a housing requirement over the plan period 2011-2026 of 9,365 net additional dwellings, the delivery of which is phased as follows:

- 2011-2016: 530/year net additional dwellings

- 2016-2021: 625/year net additional dwellings
- 2021-2026: 720/year net additional dwellings

Along the route of the A6119, the following two housing sites have been identified:

- Site 16/2 – North Blackburn Development Site, estimated number of houses is 450, of which 140 are expected to be delivered by March 2019
- Site 16/3 – Roe Lee Development Site, estimated number of houses is 220, of which 185 are expected to be delivered by March 2019

Site 4/1 has been identified within Policy 4 Land for Development Beyond the Plan Period, which states *“Within the area identified as Land for Development Beyond the Plan Period on the Adopted Policies Map, planning permission will not be granted for permanent development. Land will only be released for permanent development following a Local Plan review which proposes the development”*.

In view of the existing capacity issues at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, it is critical to ensure that the local highway network would be capable to cater for the potential future residential developments. The North Blackburn scheme would therefore help to unlock the potential development sites, which in turn would help to boost the local economy and meet the housing targets.

Blackburn with Darwen Core Strategy (2011)

The Blackburn with Darwen (BwD) Core Strategy sets out the priorities for the future planning and development of the Borough for the next 15 to 20 years: how much and what types of development there should be, where it should be focused, when it is likely to take place, and how it will be delivered.

The Core Strategy forms part of the statutory Local Development Plan.

The Core Strategy presents 11 Strategic Objectives. While the proposed North Blackburn scheme will indirectly influence a number of these, the effects will be most pronounced when considering the following objectives:

- *D) Improve the quality of the local environment and the Borough’s physical setting*
- *E) Increase levels of demand both for existing housing stock and for new development in inner urban area*

Blackburn with Darwen Local Transport Plan 3 (2011-2021)

Blackburn with Darwen Borough Council’s Third Local Transport Plan (LTP3) is a long term strategic document covering the period 2011-2021, and is the key mechanism for articulating and delivering transport policy at a local level. The plan highlights a number of key issues within the borough to be addressed over the lifespan of the plan, including:

- *The borough’s young population and its relationship to the growth of car use and road accidents;*

- *Peak time congestion and traffic levels;*
- *The impact on and the effects of the changing climate;*
- *Chronic health issues;*
- *Poor localised air quality and intrusive noise;*
- *Car dependence;*
- *The effects of long standing deprivation;*
- *The ongoing requirement to generate jobs, improve wage and skill levels; and*
- *The need to create sustainable communities through economic restructuring and regeneration.*

The proposed North Blackburn scheme will meet four goals described within the LTP3:

- *Support the Economy;*
- *Tackle Climate Change; and*
- *Promote quality of life, health and the natural environment.*

In ‘*supporting the economy*’, the scheme will achieve the majority of the associated objectives: reducing congestion and delay; improving the condition and attractiveness of the transport infrastructure; ensuring good accessibility for the new developments; working with partners to develop economic growth and bring forward new development.

The LTP3 priority within the aforementioned goal is to “*Improve access to areas of regeneration and economic growth*”. Part of achieving this comes through the “*greater coordination of transport and land use planning*”, ensuring that the transport infrastructure is capable of fully supporting the expected growth both in the current year and the future.

The North Blackburn scheme supports the LTP’s goal to ‘*tackle climate change*’ by helping to develop and maintain an efficient and sustainable transport system.

The LTP3 priority within this goal is to: “*Reduce carbon emissions; reduced delay and fuel consumption should improve emissions from vehicles, which should result in a corresponding improvement in air quality. Improved air quality brings better health; an improved environment and encourages physical activity by creating more walkable, enjoyable public space.*”

The LTP3 priority within ‘*promote quality of life, health and the natural environment*’ is to “*Maintain our transport assets in good condition*”. A well-maintained infrastructure is essential to meet the travel needs of people and the transport needs of industry.

Through this analysis of key documents and policy, it is clear that there is a strong evidence base for the implementation of the North Blackburn scheme. The proposed scheme is aligned with all the relevant local, regional and national policy, and will further the strategic aims for the Borough, County and Country.

<p>1.2 Challenge or Opportunity to be addressed</p> <p><i>Please describe the key characteristics of the challenge to be addressed and the opportunity presented. Provide an overview of the evidence supporting this and the impact of not progressing the proposed scheme.</i></p>	<p>The Main Challenge and Opportunity</p> <p>The main challenge, which the North Blackburn scheme aims to address is to reduce the existing congestion issues within the study area through reduction of junction delay at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction. It is envisaged that delay reduction would result in travel time savings and aid the efficient operation of the local highway network.</p> <p>In addition, investment in the scheme would contribute to economic growth by releasing the potential for a number of strategic residential sites along the route that would help to attract new developers and accelerate projects that are already planned. Bringing forward new housing would also help the borough to meet its Local Plan and Prosperity Plan targets for new business, jobs and homes.</p> <p>Not only would the project encourage development of adjacent sites, but would also help improve air quality for residents who live in the vicinity of the A6119, promote sustainable transport, reduce severance and improve road safety.</p> <p>Overview of Evidence</p> <p>A Transport Feasibility Report has been previously prepared to identify a preferred option for improvements at the Brownhill Roundabout and Pleckgate junction. The Transport Feasibility Report identified that the highway network within the study area experiences congestion at the existing junctions, which are approaching and in some places exceeding capacity in future year scenarios. The results of the junction modelling undertaken showed that the existing highway network would struggle to accommodate the increased levels of traffic forecasted in the future years.</p> <p>Although at the initial stage the Feasibility Report considered only the Brownhill Roundabout and the Pleckgate junction, numerous site visits have confirmed that operation of the Whalley Old Road junction has an impact on the aforementioned two junctions. The Whalley Old Road junction currently operates with a fixed timing of the signal controller and has capacity issues. A dedicated right turn lane for a right turn onto Whalley Old Road northern arm becomes fully blocked by traffic originating from Whalley Old Road southern arm before the green time is allocated to the A6119 Whitebirk Drive approach. Traffic originating from the A6119 Whitebirk Drive instead of turning right at this location therefore proceeds straight through the junction and makes a right turn at the Brownhill Roundabout.</p> <p>Numerous options have been considered (including low cost signal optimisation and high cost geometric changes to layout) to achieve performance improvements at all three junctions. Based on the fact that the life of the existing signal controllers at all three junctions has expired, junction capacity assessment results, costs involved and wider user benefits, a conclusion has been made that a low-cost option to replace signal equipment, upgrade signal controllers and pedestrian/cycle facilities would be a preferable option for all three junctions.</p>
---	--

	<p>The value of travel time savings is one of the most important parameters of transport planning and cost benefit analysis. With reference to “Valuation of Time Savings” report prepared by University of Leeds, within developed countries travel time savings can often account for up to 80% of overall benefits arising from investment in transport infrastructure.</p> <p>Current junction delays have been calculated at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, based on junction capacity modelling and sense checked against on-site observations. The existing junction delays have then been compared with the potential delays following optimisation of the signal controllers and the associated changes to the junction design. The evidence of reduction in delay therefore supports the opportunity to tackle the main challenge to reduce the existing congestion issues.</p> <p>With regards to economic growth and regeneration, a number of new plots have already been identified within the Local Plan (Site 16/2 and Site 16/3) for future housing development along the corridor.</p> <p>Impact of Not Progressing</p> <p>The impact of not progressing would be detrimental on both local and strategic highway network, particularly accessibility to and from the main gateway of East Lancashire (i.e. M65) and numerous villages located the north of Blackburn.</p> <p>The existing highway network currently operates close to capacity and the situation is likely to deteriorate in the nearest future. The modelling exercise undertaken (junction modelling outputs are provided within the BCR Technical Note report included as Appendix C of this document) supports this, demonstrating that in the 2034 future year, the Brownhill Roundabout would operate over capacity in the AM and PM peak hours, the Pleckgate junction would operate over capacity in the AM peak hour and at capacity in the PM peak hour, and the Whalley Old Road junction would operate over capacity in both AM and PM peak hours.</p> <p>On the one hand, the North Blackburn Development Site 16/2 and the Roe Lee Development Site 16/3 would suffer from not progressing the scheme, as having a direct access onto the already heavily congested highway network and as a result becoming unattractive for development. On the other hand, if the sites are to be delivered, the impact on the local highway network is envisaged to be significant, with junctions forecasted to operate significantly over capacity. This in turn would result in increased air quality and noise issues along the A6119 and exacerbation of severance.</p>
<p>1.3 Strategic Objectives <i>Please present the SMART (specific, measurable, achievable, realistic and time-bound) objectives that will resolve the challenge or opportunity identified in Section 1.2 and explain how these contribute towards</i></p>	<p>In considering the local policy context and the issues the scheme is intended to address, it is considered that the following objectives will sufficiently address these issues:</p> <ul style="list-style-type: none"> • Aid Optimisation of the Local Network <p><u>Specific:</u> Optimisation relates to ensuring the transport network operates as smoothly as possible, in terms of average traffic speeds and minimum delays. The</p>

achieving the wider context set out in Section 1.1.

scheme is expected to reduce the delay at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, therefore improving total journey times along the A6119 corridor between Pleckgate junction and Whalley Old Road junction.

Measurable: Change in journey time between Pleckgate junction and Whalley Old Road junction can therefore be measured (i.e. average speed of vehicles on links plus junction delays) and compared for the pre-scheme and post-scheme scenarios.

Achievable: In terms of optimisation, modelling of the average speed of vehicles on the network and junction delay will determine if this objective is achievable.

Relevant: The concern is that no action taken to optimise operation of the three junctions within the study area will have a negative impact on accessibility of both the M65 motorway, north Blackburn and numerous villages located further to the north of Blackburn.

Time Related: This objective is anticipated to be realised within five years after scheme opening, by 2024. The objective is related to the 60 years appraisal period.

- ***Improve the Reliability of Journey Times***

Specific: This objective seeks to reduce delays and congestion along the A6119 by optimising signal controller equipment at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction. Implementation of TROs and on-street parking restrictions along Whalley New Road (north of the Brownhill Roundabout), would result in further improvements in reliability of journey times on the local highway network.

Measurable: As reliability is closely related to the levels of congestion, the number of hours lost due to travel being slower than speed achieved along the A6119 (particularly at the three junctions identified within the study area), when traffic is flowing freely, would therefore provide an appropriate measure of congestion.

Achievable: The detailed modelling of the three junctions with existing and proposed signal timing have determined that this objective is achievable.

Relevant: The concern is that without optimising the junction performance further severe delays are envisaged in the future years along the existing corridor, which exacerbates the existing issues with accessing the strategic road network and numerous villages located to the north of Blackburn.

Time Related: This objective is anticipated to be realised within five years after scheme opening, by 2024. The objective is related to the 60 years appraisal period.

- ***Support Economic Growth and Regeneration***

Specific: Local policies seek to promote economic development within the area and improve strategic access to key economic hubs. Optimising operation of the junctions located on the local highway network creates an opportunity to unlock

new areas of land for potential development with strong connections to SRN, boosting the region's economy.

Measurable: The 'impact' sites in the vicinity of the A6119 have been identified within the Local Plan Part 2. The delivery of new developments would be monitored through the planning application submissions and compared with the actual number of new developments built (i.e. housing units per sqm).

Achievable: Two sites have already been identified within the Local Plan Part 2, which are likely to benefit from their proximity to the A6119 corridor. The developments identified (the North Blackburn Development Site 16/2 and the Roe Lee Development Site 16/3) would provide residential uses.

Relevant: Through the achievement of this objective, the scheme will facilitate the wider aims of the LEP and the BwD Local Development Plan by unlocking land for future developments, and therefore meeting the housing targets.

Time Related: This objective is anticipated to be realised by 2028. The objective is related to the 60 years appraisal period.

- ***Improving Local Air Quality***

Specific: Reduced vehicle emissions from reduction in delay and queueing on the local highway network shall improve air quality in the local Air Quality Management Area.

Measurable: air quality indices can be measured in the vicinity of the scheme for the pre-scheme and post-scheme scenarios, compared and monitored.

Relevant/Achievable: In nose-to-tail traffic, tailpipe emissions are four times greater than they are in free flow traffic (see Environmental Factors in Intelligent Transport Systems, IEE Proceedings, M.C. Bell 2006). There is therefore an undoubted link between congestion and pollution, and the importance of speeding up traffic flows to reduce emissions. Even if the scheme could induce demand and increase driving through the congestion relief, the demand could not possibly increase by four times. Currently experienced emissions (in the existing congested conditions) would therefore be higher than post-scheme implementation. Currently experienced emissions (in the existing congested conditions) would therefore be higher than post-scheme implementation.

Time Related: This objective is anticipated to be realised within five years after scheme opening, by 2024. The objective is related to the 60 years appraisal period.

- ***Improve Road Safety***

Specific: The main aim of the scheme to reduce the existing delays at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction would have a positive impact on the ability to respond to the road accidents, as well as actually reducing the number of accidents through reduced congestion. Upgrading pedestrian and cycle facilities, road surfacing and markings at the junctions would ensure the potential for road accidents is brought to a minimum.

	<p>Reduced traffic volumes would reduce potential for conflict between vehicles and vulnerable users, and would consequently attract more cyclists, pedestrians and public transport users along the road.</p> <p><u>Measurable:</u> Accident appraisal processes are undertaken following the guidance in WebTAG Unit A4.1.</p> <p><u>Achievable:</u> Accident appraisal has been undertaken, whilst the outputs are presented in Appendix D Social and Distributional Impacts Appraisal Report.</p> <p><u>Relevant:</u> Safe systems is considered to be international best practice in road safety by the World Health Organisation and the Organisation of Economic Cooperation and Development. Both organisations recommend that all countries, regardless of their level of road safety performance, follow a safe systems approach. Safe systems has not been adopted by the UK government as a whole. However, Highways England has a safe systems approach at its heart, focusing its strategy on "safer vehicles, safer roads for safer people". In traditional road safety policy, the major approach is being reactive to incidents, which is an incremental approach to reduce the problem. In comparison, a safe system's approach is systematic, which considers proactively target and treat risk to build a safe road system. Although accident rates at the junctions in question were not identified as a problem, numerous site visits have revealed substandard pedestrian and cycle facilities within the study area, as well as issues with road surfacing, markings and signal equipment. The proposed scheme would therefore target and treat the potential risks to reduce the probability of accident occurring and ensuring a safe road system.</p> <p><u>Time Related:</u> This objective is anticipated to be realised within five years after scheme opening, by 2024. The objective is related to the 60 years appraisal period.</p>
<p>1.4 Achieving Success <i>Please describe how the success of the proposed scheme will be assessed and/or quantified.</i></p>	<p>The outcomes from the scheme will be assessed and monitored as detailed in the Monitoring and Evaluation report provided as Appendix E. This will assess the performance of the scheme against the scheme objectives outlined above.</p>
<p>1.5 Delivery Constraints <i>Please describe any high level internal/external constraints or other factors that present a material risk to the delivery of this scheme.</i></p>	<p>A full Risk Register is available in Appendix F. The key delivery constraints for the scheme are highlighted below:</p> <ul style="list-style-type: none"> • Delays to gaining funding approval from the LEP. Any delays to the release of funding will delay the realisation of the economic benefits to the project; • Delivery of the scheme within timeframe allocated however this has been mitigated through the development of a strong Management and Commercial case, presented within this document; • Delays to programme associated with signage design being not confirmed; • Delays associated with Town Centre Movement strategy, which is currently being under review;

	<ul style="list-style-type: none"> • Delays in phasing and timing of site works and statutory undertakers works could result in delays to the programme if works clash logistically; • Delays related to programme dates not being confirmed as a result of lack of project control and measurement of progress against milestone programme; • Inability to deliver the construction phase resulting in programme delay and procurement exercise to be carried out again; • Delays in obtaining Traffic Regulation Orders could result in working on the highway illegally, abortive works and reputational damage; • Inadequate/outdated highway infrastructure – reduced function efficiency of road network plus additional maintenance costs or down time; • Capacity of existing drainage network; • Costs associated with designing the protection of any statutory services during or in advance of the works, implementation and liaison with statutory service providers; • Weather – works to be undertaken over winter period and issues with weather may lead to additional and cost.
<p>1.6 Stakeholders</p> <p><i>Please outline the main stakeholder groups/organisations and their relevance or involvement in the development of the scheme. Identify any specific requirements, constraints or conflicts between stakeholders.</i></p>	<p>Residents Feedback and Comments</p> <p><u>Information Event for Residents and Business – February 2018</u></p> <p>An information event (public consultation) for residents and business took place on Tuesday 20th February 2018 in relation to the North Blackburn scheme. A summary of the comments made is provided in Appendix G, whilst the major issues raised are summarised below:</p> <ul style="list-style-type: none"> • <i>“Make the Brownhill Roundabout more pedestrian friendly;</i> • <i>Proper road markings. There currently are a lack of these;</i> • <i>Correct traffic light information to drivers. Currently the traffic light located on Ramsgreave Drive, adjacent to the Railway bridge, when the amber/green lights show they are upright arrows (and not full circular lights). This indicates according to the highway code that traffic can only proceed in the direction of the arrow i.e. straight on. When in fact traffic may also turn sharp left up Pleckgate Road or bear left into Whalley New Road. I hope that with the new junction that this will be corrected alleviating confusion to strangers visiting the area;</i> • <i>Currently traffic coming from Whitebirk direction on Brownhill Drive and wishing to turn right on Whalley New Road towards Clitheroe does not always get a green in the sequence that the lights change. This sometimes causes traffic making this manoeuvre to obstruct other traffic coming across the junction. Traffic making the above manoeuvre should always get a green allowing them to clear the junction. There is considerable amount of traffic making the Brownhill Drive/Whalley New Road right turn</i>

especially at peak times. Well worth watching when a cyclist, horse or bus does not trigger the transponder buried in the carriageway;

- *Speeding traffic from and to the roundabout onto Whalley New Road. Poor road signage and line condition currently;*
- *Confusing lane markings & signals on approaches to the roundabout;*
- *Could we use the limited spare land around the roundabout to increase capacity i.e. Brownhill Plantation + island on Brownhill Drive;*
- *Potential bottle-neck at Four Lanes End.”*

The Council will ensure that residents are kept informed at every stage of the development and will prepare a newsletter which will be published at key stages as the project is delivered.

Information Event for Residents and Business – September 2018

An information event for residents and businesses took place at St Gabriel’s Church Hall, Brownhill Drive, Blackburn, BB1 9BA on Wednesday 5th September 2018, 4pm - 7pm. Over 100 people attended the information event which was advertised by:

- BwD Council Roads Facebook page (15,000 friends)
- BwD Council Neighbourhoods Facebook page
- Text to residents who have signed up for the service via Neighbourhoods and Ward Solutions meetings
- BwD Council Twitter
- Lancashire Telegraph story 2nd September 2018:
<https://www.lancashiretelegraph.co.uk/news/16682908.multi-million-brownhill-roundabout-scheme-plans-to-go-on-show/>
- PR via the Shuttle e-Newspaper 30th August 2018:

<https://theshuttle.org.uk/new-gateways-gearing-up-to-boost-business-and-housing-in-north-blackburn/?highlight=brownhill>

The document summarising the comments made by the general public and how the Council intends to respond to them is included as Appendix G and has also been uploaded on the Council’s website and information portal for the scheme at:

<http://www.blackburn.gov.uk/Pages/growthdeal.aspx>

The summary of the main comments made by general public is provided below:

- What is the main reason behind the scheme?
- Where are the future employment and housing opportunities which will be released by the scheme?
- What previous consultation has been undertaken with local people?
- What stage is the project at?
- What are the benefits for residents?
- How the scheme is going to be funded?

Communications Strategy

A Communications Strategy has been prepared by BwDBC, provided in Appendix G, which is targeted towards general public, residents and businesses in the study area.

The Communications Strategy states that during the planning and implementation stages, a variety of channels will be used to deliver the Communications Strategy and get information on programme and milestones to local residents, businesses and visitors.

An information portal on the Council's website at <https://www.blackburn.gov.uk/Pages/growthdeal.aspx> will give ongoing information to local residents, businesses, Councillors and MPs. Social media will all be used to ensure the success of the PR side of the project and get information to local people.

A regular newsletter shall be produced which would provide updates on project delivery, disruption and timescales for completion etc. This will emanate from the main contractor and will be issued via the Council.

A notification letter shall be delivered to adjacent properties to notify the local residents of works commencing.

The Communications Action Plan for the scheme has been prepared and is included in Appendix G.

The Communications Strategy shall be monitored through the Communications Activity Report, which would detail the completed activities. The most recent Communications Activity Report is provided in Appendix G.

Consultation with BwDBC Officers and Local Councilors

The Council has explored a number of scheme options which range from the preferred signals upgrade scheme, to starting from scratch and removing all the "roundabout" structure, to shortening the right turn from Ramsgreave Drive into Whalley New Road. As a result of extensive discussions with BwDBC officers and councilors, the preferred option has been selected, as one which delivers the best value for money. Discounted schemes were significantly more costly due to the amount of utilities which are in the highway.

1.7 Strategic Assessment of Alternative Option(s)

<i>The DfT's Early Assessment and Sifting Tool (EAST) can aid this process. EAST and guidance on using it can be found on the DfT website.</i>		Option 1	Option 2 (Low Cost)	Option 3	Option 4	Option 5
Option Name <i>Please insert the name by which the option is known</i>		Without Scheme Case	Old Signal Equipment Reprogramming	Sustainable Transport Corridor	Bus Priority Corridor	Highway Capacity Improvement
Infrastructure Type <i>Please provide if different from the proposed scheme.</i>		Maintaining the existing infrastructure and no changes to the existing traffic signal controllers.	Reprogramming the existing traffic signal controllers at each of the three junctions (Brownhill Roundabout, Pleckgate junction and Whalley Old Road).	As the A6119 is a dual carriageway, and the majority of residential dwellings fronting the road are gaining an access not directly off the A6119 but off side roads, one of the carriageways would be converted to a cycleway.	Converting the A6119 into a bus corridor by providing a dedicated road space (i.e. bus lanes) and traffic signal priority to buses.	A package of highway improvement measures to improve the capacity of the local highway network.
Variation from Proposed Scheme <i>What are the key differences (characteristics) between the proposed scheme and this option? How is it different?</i>		Maintaining the existing infrastructure and no changes to the existing traffic signal controllers.	This option provides reprogramming of the existing traffic signal controllers.	This option provides converting of one of the carriageways to a cycleway.	This option provides bus lanes.	This is the proposed scheme.
Technical Assessment & Appraisal <i>Please describe the level of technical appraisal or assessment undertaken – including previous studies and relevant data – to assess this option, including application of the Early Assessment and Sifting Tool.</i>		Junction capacity assessments have been carried out which demonstrate that the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction currently operate close to capacity. With addition of the background traffic growth and the committed development traffic flows in the 2034 future year, the existing Brownhill Roundabout would operate over capacity in the AM and PM peak hours, the Pleckgate junction would operate over capacity in the AM peak hour and at capacity in the PM peak hour, and the Whalley Old Road junction would operate over capacity in both AM and PM peak hours.	This option has been eliminated at the initial stage of the sifting process and no detailed technical assessments or appraisals have been carried out.			In developing this option a number of junction capacity assessments have been undertaken, as provided in Appendix H Transport Feasibility Report. A number of highway capacity improvement options have been considered at each of the junctions within the study area including upgrading traffic signal equipment, traffic signal phasing and staging changes and geometric changes.
Consultation <i>Please explain the extent of any stakeholder or wider consultation on the option and summarise the key findings.</i>		During initial discussions with the key stakeholders from BwDBC this option has been eliminated due to the junctions already operating close to capacity and the existing network being incapable to cater for future traffic growth. This option has been also eliminated due to issues raised by the local residents (at the public consultation) regarding poor pedestrian facilities, road markings, sun washed-out signal lights and failures of signal equipment.	During initial discussions with the key stakeholders from BwDBC this option has been eliminated as the Brownhill Roundabout junction has aged with signal equipment being old and not suitable for “intelligent” traffic signal programming. Furthermore, numerous site visits and public comments have identified that pedestrian and facilities provided at the Brownhill Roundabout do not meet current standards and improvements are needed to be considered.	During initial discussions with the key stakeholders from BwDBC this option has been eliminated due to very high costs associated with the improvements, whilst providing no solution to the existing congestion issues.	During initial discussions with the key stakeholders from BwDBC this option has been eliminated due to low demand for bus services along the route of the A6119, whilst providing no solution to the existing congestion issues.	This option has been developed in consultation with key stakeholders from BwDBC as well as representatives of relevant industry organisations. Throughout the consultation it was clear that the need for intervention was required and a do nothing approach was not appropriate.
Indicative Cost (£M) & Economic Appraisal <i>Please provide indicative costs if known or provide information on the likely affordability against the headings ‘high’ ‘medium’ or ‘low.’ Also explain any economic appraisal undertaken, including benefit/cost analysis</i>		High cost option due to the cost of increased delay, accidents, severance, security, reduced journey quality, reduced accessibility and affordability, etc.	Very Low cost option, as no geometrical changes to the junctions, or pedestrian/cycle improvements are considered.	High cost option as requires conversion of one of the carriageways to a cycle way and the associated highways works at all three junctions.	High cost as new bus lane road markings and geometrical changes to the junctions would be required.	Variable costs, based on the design option considered.
Impact against Strategic Objectives <i>Please describe how this option delivers against the strategic objectives set out in Section 1.3. Make reference to the outputs of the Early Assessment and Sifting Tool process</i>	Aid Optimisation of the Local Network	This option would not address this strategic objective, as involves no actions towards optimisation of the network.	This option could potentially provide sufficient optimisation of the operation of the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction. Due to old signal equipment, any reprogramming is however deemed not possible.	This option provides additional infrastructure to facilitate pedestrians and cyclists, however gives no consideration to tackling the existing and forecasted future congestion issues.	This option provides infrastructure to give priority to buses, however fails to address the existing and forecasted future congestion issues. Furthermore, by giving a priority to buses as opposed to general traffic could potentially exacerbate the forecasted congestion issues even further.	This option provides capacity improvements on the local highway network through the upgrade of traffic signal equipment to include mode controllers compatible with MOVA and SCOOT systems and geometric changes to junctions were appropriate. The inclusion of improvements to walking and cycling facilities is also included where possible.
	Improve the Reliability of Journey Times	This option would not address this strategic objective, as involves no actions towards improvement of the reliability of journey times.	This option could potentially improve the reliability of journey times by reducing the delay at the three junctions within the study area. Due to old signal equipment, any reprogramming and further	This option could potentially improve the reliability of journey times on foot and by cycle. This option would however result in no improvements to vehicle journey times.	This option could potentially improve the reliability of journey times by public transport, particularly by bus. This option would however result in no	The consideration of highway capacity improvements will reduce congestion and address current issues on the network which are known to impact on journey time

The DfT's Early Assessment and Sifting Tool (EAST) can aid this process. EAST and guidance on using it can be found on the DfT website .		Option 1	Option 2 (Low Cost)	Option 3	Option 4	Option 5
			assessment is however deemed not possible.		improvements to vehicle journey times.	reliability during the network peak periods.
	Support Economic Growth and Regeneration	This option would not address this strategic objective, as involves no actions towards supporting economic growth and regeneration.	This option could potentially support economic growth and regeneration however due to old signal equipment, any reprogramming and further assessment is however deemed not possible.	Provision of a new sustainable transport corridor could attract new residential developers in the area and particularly accelerate the North Blackburn Development Site 16/2 and the Roe Lee Development Site 16/3. However, this option does not include any measures to tackle the existing congestion and delay issues at the junctions on the A6119. In view that both residential sites would potentially gain an access onto the A6119, this option would support economic growth and regeneration only partially.	Provision of a bus priority corridor could potentially attract new developers in the area and accelerate the North Blackburn Development Site 16/2 and the Roe Lee Development Site 16/3. However, this option does not include any measures to tackle the existing congestion and delay issues at the junctions on the A6119. In view that both residential sites would potentially gain an access onto the A6119, this option would support economic growth and regeneration only partially. Without addressing the Additional traffic generated by the potential new developments would however have further detrimental impact on already congested highway network.	Replacing signal equipment and upgrading the signal controllers and pedestrian and cycle facilities would improve the reliability of journey times and as a result ensure that the local highway network is capable to cater for additional traffic associated with the new development sites.
	Improving Local Air Quality	This option would not address this strategic objective, as involves no actions towards reducing carbon emissions and promoting sustainable transport.	No detailed assessments have been carried out as realisation of this option is deemed to be impossible.	On the one hand this option would support the goal to reduce carbon emissions and promote sustainable travel by offering a sustainable travel corridor, which would potentially encourage more people to switch to sustainable travel modes. On the other hand however this option does not tackle the existing congestion issues at the junctions within the study area. This option would therefore meet the objective only partially	On the one hand this option would support the goal to reduce carbon emissions and promote sustainable travel by offering a bus priority corridor, which would potentially encourage more people to switch to public transport. On the other hand however this option does not tackle the existing congestion issues at the junctions within the study area. This option would therefore meet the objective only partially	The proposed scheme would form part of a wider local means of tackling the air pollution. Reduced vehicle emissions from reduction in delay and queueing on the local highway network shall improve air quality in the local Air Quality Management Area. Improved pedestrian crossing facilities shall promote walking in the area.
	Improve Road Safety	This option would not address this strategic objective, as involves no actions towards improving road safety. Furthermore, the number of accidents could increase due to exacerbated traffic conditions, existing poor pedestrian facilities, poor road marking, aging and failing signal equipment.	This option could improve road safety through reduction of congestion. Due to old signal equipment the realisation of this option is however deemed impossible.	No detailed road safety assessment has been undertaken for this option. By providing a sustainable transport corridor, pedestrians and cyclists would be segregated from the general traffic. This could potentially result in reduced number of accidents. As this option incorporates no measures to address the existing congestion issues, it is deemed that the objective would be met only partially.	As this option incorporates no measures to address the existing congestion issues, it is deemed that the objective would not be met.	No road safety assessment has been undertaken for this option. Due to forecasted capacity and delay issues at the Brownhill Roundabout the 'improve road safety' objective is therefore considered to be met only partially.
Key Risks Please identify the key technical, funding and delivery risks associated with this option.		The following significant risks have been identified: -Already congested highway network would become even more congested as the background traffic flows are predicted to grow in the future years; -The existing old signal equipment could fail; -The existing poor pedestrian provision and road markings may result in road accidents; -Due to existing and future congestion issues, there is a risk of new developments not being progressed.	Significant risk of old signal equipment not being capable to respond to reprogramming. Even if the old signal equipment could respond to reprogramming, it would not be capable of supporting the intelligent signal controllers, which adjust green times based on demand. A significant risk therefore exists that already congested network would become even more congested. This in turn could potentially result in road accidents and new developments in the area not being progressed.	The option runs the risk of sustainable transport demand (i.e. walking and cycling) not matching expectations, leading to a new high quality design sustainable transport corridor being unused. As this option does not include measures to tackle the existing congestion issues a significant risk therefore exists that already congested network would become even more congested. As a result, there is also a risk of new residential sites not being progressed due to difficulties to provide an access onto congested road network	The option runs the risk of sustainable transport demand (i.e. public transport) not matching expectations, leading to a new bus corridor being unused. As this option does not include measures to tackle the existing congestion issues a significant risk therefore exists that already congested network would become even more congested. As a result, there is also a risk of new residential sites not being progressed due to difficulties to provide an access onto congested road network	A risk exists to gaining funding approval from the LEP as well as delivery of the scheme within timeframe allocated.

<i>The DfT's Early Assessment and Sifting Tool (EAST) can aid this process. EAST and guidance on using it can be found on the DfT website.</i>	Option 1	Option 2 (Low Cost)	Option 3	Option 4	Option 5
<p>Rationale for Rejection Please explain why this specific option has been rejected in favour of the proposed scheme.</p>	<p>During initial discussions with the key stakeholders from BwDBC this option has been eliminated due to:</p> <ul style="list-style-type: none"> - junction capacity assessments demonstrating that the existing highway network would not be capable to cater for the forecasted traffic growth in the future; -the need to upgrade the existing sub-standard pedestrian and cycle facilities; -the need to address the existing failures of traffic signal equipment; -this option would not accelerate potential future developments in the area. 	<p>During initial discussions with the key stakeholders from BwDBC this option has been eliminated due to:</p> <ul style="list-style-type: none"> -the existing signal equipment being old and not capable to handle reprogramming or installation of an intelligent signal controller; -no provisions made to upgrade the existing pedestrian and cycle facilities. 	<p>This option does not provide any measures to tackle the existing and future congestion issues.</p>	<p>This option does not provide any measures to tackle the existing and future congestion issues.</p>	<p>This is the proposed scheme.</p>

Having identified that a highway capacity improvement scheme was the preferred option as regards meeting the strategic objectives, a feasibility study was undertaken to test a variety of highway capacity improvement options. These included:

Pleckgate Junction

- Pleckgate Junction Option 1: new signal equipment with revised signalisation to include vehicle actuation signal control for the Pleckgate Road northern approach; existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards; Pleckgate Road northern arm green time to be called on demand only.
- Pleckgate Junction Option 2: a three-arm signalised junction with Pleckgate Road northern arm becoming a priority junction onto the A6119 Ramsgreave Drive restricting the right turn or straight through movements from the A6119 Ramsgreave Drive north; relocation of the Pleckgate Road southern arm approximately 2m to the west, provision of a left-turn lane from the Ramsgreave Drive east onto Pleckgate Road south, and including of signalised pedestrian crossings with central refuges across each of the three arms.
- Pleckgate Junction Option 3: changes to provide a roundabout junction, Pleckgate Road northern arm becomes a priority junction onto the A6119 Ramsgreave Drive, with a left-in and left-out permitted movements only, the junction would be relocated approximately 5m to the west of the existing junction arrangement, two lanes provided on the A6119 Ramsgreave Drive eastern and western approaches and one lane provided on the Pleckgate Road southern approach, and a shared footway/cycleway lane provided along the A6119 Ramsgreave Drive and Pleckgate Road southern arm of the junction.

Brownhill Roundabout

- Brownhill Roundabout Option 1: new signal equipment with revised signalisation and existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards;
- Brownhill Roundabout Option 2: reduce central reserve width along Brownhill Drive to provide three lanes on the approach; provision of a dedicated right-turn lane on the Ramsgreave Drive approach; provision of cycle lanes through the junction; existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards.
- Brownhill Roundabout Option 3A: removal of a the central island within the junction and stop lines moved forward; reduce central reserve width along Brownhill Drive to provide three lanes on the approach with a dedicated right-turn lane; provision of three lanes on the Ramsgreave Drive approach, with a dedicated right-turn lane; provision of cycle lanes on the approaches to the junction with advance stop lines; existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards; maintains two ahead lanes on the Whalley New Road south approach with a two lane exit with merge in turn to a single lane; the Whalley New Road northern approach has two lanes.
- Brownhill Roundabout Option 3B: same as Option 3A, with reduced ahead movement allocation on Whalley New Road southern approach to single lane. The Whalley New Road northern approach has three lanes as there is no longer need for a merge section on Whalley New Road northern exit lane.

Whalley Old Road

- Whalley Old Road Junction Option 1 (Sensitivity Test for Brownhill Roundabout): Upgrading of traffic signal controller equipment (optimised signal timings) to improve the efficiency of the junction over the current fixed time operation.

Preferred Option

The findings of the Feasibility Report culminated in the identification of a preferred scheme for the corridor which comprises of Pleckgate Junction Option 1, Brownhill Roundabout Option 1 and Whalley Old Road Option 1. The feasibility study had arguably identified Brownhill Roundabout Option 2 as the best performing option in that location. However, having considered the impacts of the reduced right turners sensitivity test, the cost estimates for each option and the risks (and associated costs) particularly in relation to statutory undertakers diversions for each of the options it was determined that Brownhill Roundabout Option 1 would make it into the package of measures which would make up the 'preferred' option. The preferred option seeks to minimise any geometric changes with these being limited to the new island and existing island extensions included in the Whalley Old Road scheme.

Low Cost Option

In the event of an overspend, elements of the proposed works would be cut from the scheme with the Pleckgate junction improvements likely to be sacrificed. Where possible any overspend shall be underwritten by the Council to ensure full delivery of the scheme. If this is not possible, the Council shall seek to deliver the full scheme in the future through any developer contributions from local housing schemes once these have been accrued.

High Cost Option

A number of high cost options have been considered as part of the Feasibility Report, including Option 2, Option 3 and Option 3B at the Brownhill Roundabout and Option 2 and Option 3 at the Pleckgate junction. These options have been discounted on the basis of present affordability. BwDBC may seek to use developer contributions from future local plan developments to deliver a high cost option towards the end of the Local Plan period. However, it is considered unlikely that such developments would be forthcoming in the event that no intervention was carried out at the present time on account of the identified network performance issues. Such an upgrade would only occur towards the end of the scheme appraisal period and as such would not significantly affect the appraisal of the preferred option.

Strategic Case Summary

The proposed North Blackburn scheme is one of three infrastructure packages, which altogether comprise the Growth Deal 3 “Pennine Gateways” project, aimed to support the sustainable delivery of new homes, new business and jobs in the three growth areas of the Borough whilst contributing to alleviating congestion.

The “Pennine Gateways” project has been approved in principle by the Lancashire Enterprise Partnership (LEP) for funding and was given “Programme Entry” in spring 2017 as part of Central Government’s Growth Deal 3 announcement. Majority funding for delivery comes via the LEP with physical and financial completion required by March 2021.

The Growth Deal 3 North Blackburn scheme proposal comprises three civil engineering packages as follows:

- Upgrade of the A6119 Brownhill Drive/A6119 Ramsgreave Drive/A666 Whalley New Road/Pleckgate Road five-arm signalised roundabout junction, known as the Brownhill Roundabout, including intelligent traffic signal equipment, geometry, resurfacing and Whalley New Road parking amendments and bus stop formalisation;
- Junction improvement at the Pleckgate Road/Ramsgreave Drive four-arm signalised junction (further referred to as Pleckgate junction in this report), including new traffic signal equipment; and
- Capacity upgrade at the A6119 Brownhill Drive/A6119 Whitebirk Drive/Whalley Old Road staggered signalised junction (further referred to as Whalley Old Road junction), including increases to the northbound “stacking” lane on the Whitebirk Drive arm of the junction and new signal equipment.

The proposal includes associated sustainable transport improvements for walking and cycling, junction profiling, alignment and infrastructure, associated highway signage, street lighting, drainage, surfacing, lining and soft/hard landscaping. There is also a potential to include ducting for future variable message signs (VMS). The proposals are strongly aligned to various National, Regional and Local policies, helping to achieve both their immediate goals and contribute to longer-term aims.

The main challenge, which the North Blackburn scheme aims to address is to reduce the existing congestion issues and delay at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, resulting in travel time savings and aiding optimisation of the highway network as a whole. In addition, investment in the North Blackburn scheme would contribute to economic growth by releasing the potential for a number of strategic residential sites along the route of the A6119 that would help to attract new developers and accelerate projects that are already planned. Bringing forward new housing would also help the borough to meet its Local Plan and Prosperity Plan targets for new homes. Not only would the project encourage development of adjacent sites, but would also help improve air quality for residents who live in the vicinity of the A6119, promote sustainable transport and improve road safety.

The following key strategic objectives have been identified for the scheme:

- Aid Optimisation of the Local Network
- Improve the Reliability of Journey Times
- Support Economic Growth and Regeneration
- Improving Local Air Quality
- Improve Road Safety

The impact of not progressing would be detrimental on both local and strategic highway network, particularly accessibility to and from the main gateway of East Lancashire (i.e. M65) and north of Blackburn, where numerous villages are located. In addition, the North Blackburn Development Site 16/2 and the Roe Lee Development Site 16/3, as well as other potential sites may suffer from not progressing the scheme, as having an access onto the heavily congested highway network. If the sites are however delivered, the impact on the local highway network is envisaged to be significant, with junctions forecasted to operate over capacity. This in turn would result in increased air quality issues along the A6119.

2. Economic Case

The Economic Case assesses options to identify all their impacts and the resulting value for money. This is a key requirement in fulfilment with HM Treasury's requirement for appraisal. In line with HM Treasury's appraisal requirements, the impacts considered are not limited to those directly impacting on the measured economy, nor to those which can be monetised. The economic, environmental, social and distributional impacts of a proposal are all examined, using qualitative, quantitative and monetised information. In assessing value for money, all of these are consolidated to determine the extent to which a proposal's benefits outweigh its costs.

2.1 Value for Money

Please describe to what extent the proposed scheme has been assessed in terms of value for money. Also explain how this will be developed through the Outline Business Case to provide accurate benefit-cost ratio information.

Where applicable, please include details of all options that have been appraised.

VfM should also include reference to the proposed scheme's economic, social, environmental and public accounts impact. (in line with the DfT's Transport Appraisal Framework)

[The Transport Appraisal Process](#)

Introduction

A Benefit Cost Appraisal (BCA) and Gross Value Added (GVA) analysis have been undertaken to assess the economic benefits of the North Blackburn scheme. The BCA and formulation of a Benefit-Cost Ratio (BCR) will form the main focus of economic appraisal of the scheme in line with WebTAG guidance.

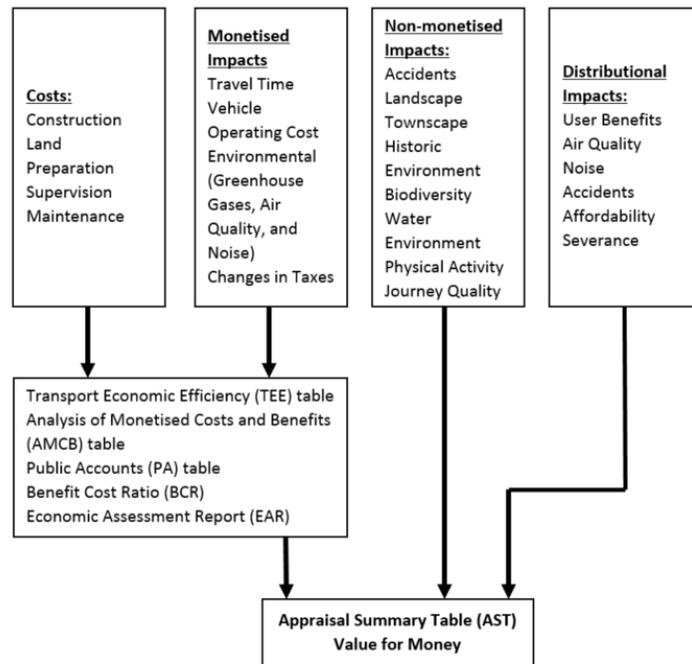
Whilst the calculation of BCR is the traditional approach to assessing the merit of transport schemes, GVA analysis seeks to complement standard transport appraisals where these have already been produced. GVA measures the total value of goods and services; i.e. economic activity. In its simplest terms, it is therefore GDP at a local/regional level, minus indirect taxation. The wider economic impacts of the proposed transport schemes are particularly important to understand in terms of the potential benefits for the locality, and in the context of supporting the funding bid for the scheme as well as the Government's economic growth agenda and the Lancashire SEP objectives.

In line with the LEP's Accountability Framework a proportionate approach has been adopted for the assessment of the economic benefits of the scheme. The modelling and economic appraisal methodology is detailed in the Value for Money (VfM) Methodology report which can be found in Appendix H.

Value for Money (VfM) Overview

Figure 2.2.1 shows the diagram which details the methodology for the VfM assessment of the North Blackburn scheme.

Figure 2.1.1. VfM Assessment Process



The VfM assessment is a staged process, which includes appraisal of the scheme’s economic, environmental, social, distributional and fiscal impacts using qualitative, quantitative and monetised information.

It starts with analysis of monetised costs and benefits and calculation of the Benefit Cost Ratio (BCR) of the scheme. The next stage is to capture and analyse those impacts which cannot be monetised but can be presented as qualitative information. Finally, it looks at how the impacts of the scheme are distributed across different social groups – the Distributional Impacts Analysis. The monetised impacts are summed to construct an Initial BCR – that is the amount of benefit being bought for every £1.00 of cost,

Analysis of Monetised Impacts and Costs

The summary of the monetised information, along with the BCR, is presented in the standard Analysis of Monetised Costs and Benefits (AMCB) Table, part of the North Blackburn BCR Technical Note Appendix C.

The details of scheme cost estimates are provided within the BCR Technical Note.

Prior to preparation of the BCR Technical Note, the appraisal methodology has been established based on the Department for Transport (DfT)’s Transport Appraisal Guidance (WebTAG) and has been agreed with Jacobs, acting on behalf of Lancashire Enterprise Partnership.

All costs and benefits that are monetised in CBA have been considered

following the principles outlined in TAG Unit A1.1 Cost-Benefit Analysis, which can be summarised as follows:

- The impacts of the scheme have been based on the difference between forecasts of the without-scheme (Do-Minimum) and with-scheme (Do-Something) cases;
- Given that the scheme is a technology scheme (as only involves changing of signal control systems and does not materially impact the structure of the highway network), the impacts have been assessed over a 15 years appraisal period;
- The magnitude of impacts has been interpolated and extrapolated over the appraisal period drawing on forecasts for two future years of the 2019 opening year and the 2034 future year;
- The values placed on impacts are in the perceived costs, factor costs and market prices unit of account, converted as appropriate from factor costs using the indirect tax correction factor;
- The values are in real prices, in the Department's base year, accounting for the effects of inflation;
- The streams of costs and benefits are in present values, discounted to the Department's base year;
- The results have been presented in the appropriate cost-benefit analysis metrics, a Benefit-Cost Ratio (BCR); and
- Sensitivity testing has been undertaken to reflect uncertainty.

Scheme cost estimates have been provided by Capita in October 2018 as a result of contractor tender submissions. Three contractors (EWCE, Casey's and I&H Brown) have submitted their proposals on time. Based on the cost and quality of the submissions, EWCW is to be appointed imminently.

A split of costs provided by EWCW is shown below:

Table 2.1.1. Costs Submitted by EWCW

Series	Brownhill Roundabout	Pleckgate Junction	Whalley Old Road Junction	Scheme Overall
Series 100 - Preliminaries	£309,423.28	£0.00	£0.00	£309,423.28
Series 200 - Site Clearance	£20,901.64	£7,475.31	£13,499.35	£41,876.30
Series 400 - Road Restraint Systems	£0.00	£0.00	£0.00	£0.00
Series 500 - Drainage and Service Ducts	£45,207.19	£55,283.79	£52,542.98	£153,033.96
Series 600 - Earthworks	£11,969.15	£3,895.63	£13,125.24	£28,990.02
Series 700 - Pavements	£175,798.14	£107,520.32	£220,131.56	£503,450.02
Series 1100 - Kerbs, Footways and Paved Areas	£37,851.29	£26,114.87	£14,222.87	£78,189.03
Series 1200 - Traffic Signs and Road Markings	£239,278.67	£160,869.55	£328,355.15	£728,503.37
Series 1300 - Road Lighting Columns and Brackets	£969.10	£2,440.32	£7,471.63	£10,881.05
Series 1400 - Electrical Work for Road Lighting and Traffic Signs	£50.21	£100.42	£16,504.36	£16,654.99
Series 2400 - Brickwork, Blockwork and Stonework	£5,713.25	£1,450.70	£11,426.50	£18,590.45
Series 2700 - Accommodation Works, Works or Statutory Undertakers, provisional Sums and Prime Cost Items	£798.95	£0.00	£2,310.40	£3,109.35
Series 3000 - Landscape and Ecology	£19,175.71	£0.00	£0.00	£19,175.71
GRAND TOTAL	£867,136.58	£365,150.91	£679,590.04	£1,911,877.53

The base cost estimates are provided in Table 2.1.2.

Table 2.1.2. Costs Submitted by EWCW

Cost	Brownhill Roundabout	Pleckgate Junction	Whalley Old Road Junction	North Blackburn Scheme Overall
Construction	£867,136.58	£365,150.91	£679,590.04	£1,911,877.53
Design Fee	£55,935.25	£23,554.32	£43,837.43	£123,327.00
Commissioning	£3,729.02	£1,570.29	£2,922.50	£8,221.80
Supervision	£34,685.46	£14,606.04	£27,183.60	£76,475.10
Planning	£8,219.28	£3,461.13	£6,441.59	£18,122.00
Project Risk	£182,554.83	£76,873.77	£143,071.40	£402,500.00
Surveys	£26,668.88	£11,230.26	£20,900.87	£58,800.00
Total	£1,178,929.30	£496,446.71	£923,947.42	£2,599,323.43

The scheme costs shall occur in three financial years, as per the project delivery programme, provided in Appendix I. The base cost estimates have therefore been profiled over four years, as shown in Table 2.1.3.

Table 2.1.3. Base Cost Estimates

	2017/2018	2018/2019	2019/2020	Total
Brownhill Roundabout				
Construction		£173,427.32	£693,709.26	£867,136.58
Preparation	£22,677.62	£71,874.81		£94,552.42
Supervision		£6,937.09	£27,748.37	£34,685.46
Risk	£4,304.83	£46,565.04	£131,684.96	£182,554.83
Total	£26,982.45	£298,804.25	£853,142.59	£1,178,929.30
Pleckgate Junction				
Construction		£73,030.18	£292,120.73	£365,150.91
Preparation	£9,549.54	£30,266.46		£39,815.99
Supervision		£2,921.21	£11,684.83	£14,606.04
Risk	£1,812.76	£19,608.52	£55,452.49	£76,873.77
Total	£11,362.30	£125,826.37	£359,258.05	£496,446.71
Whalley Old Road Junction				
Construction		£135,918.01	£543,672.03	£679,590.04
Preparation	£17,772.84	£56,329.54		£74,102.38
Supervision		£5,436.72	£21,746.88	£27,183.60
Risk	£3,373.77	£36,493.83	£103,203.79	£143,071.40
Total	£21,146.62	£234,178.10	£668,622.71	£923,947.42
North Blackburn Scheme Overall				
Construction		£382,375.51	£1,529,502.02	£1,911,877.53
Preparation	£50,000.00	£158,470.80		£208,470.80
Supervision		£15,295.02	£61,180.08	£76,475.10
Risk	£9,491.37	£102,667.39	£290,341.24	£402,500.00
Total	£59,491.37	£658,808.72	£1,881,023.35	£2,599,323.43

The effects of inflations have been taken into account by applying a Gross Domestic Product (GDP) deflator, which reflects the prices of all domestically produced goods and services in the economy. To convert the nominal prices (when inflation is not taken into account) to 'real' prices (when inflation is taken into account) in the Department's price base year, which is currently 2010, the following formula has been applied:

$$Real\ Price_y = Nominal\ Price_y * GDP\ deflator_{base} / GDP\ deflator_y$$

The relevant growth rates, including forecast increases in GDP per capita and per household have been obtained from the TAG Data Book.

In line with the WebTAG Unit A1.1 section 2.7 'Present values and discounting', the scheme's costs have been discounted to reflect people's preferences for current consumption over future consumption. A 'discount rate', which represents the extent to which people prefer current over future consumption, is applied to convert future costs and benefits into their 'present value', the equivalent value of a cost or benefit in the future occurring today. A discount rate of 3.5% has been applied from the A1.1.1: Green Book Discount Rates, for the 2017/2018, 2018/2019 and 2019/2020 financial years. A discount rate of 3.5% has also been applied for the years between the current year of 2018 and the base year of 2010.

As the North Blackburn GD3 project is a minor scheme, the business case (which this Technical Note informs) should be considered, as a full business case, as the BCR is calculated based on tendered costs. In line with TAG

Unit A1.2 Scheme Costs, the optimism bias at 3% have therefore been used.

Summing up the stream of discounted costs results in the 'present value of costs' (PVC), the value of a cost in the base year equivalent to the stream of estimated costs. The detailed estimates of the PVC are shown in Appendix D of the BCR Technical Note and summarised as follows:

- Brownhill Roundabout £953,156
- Pleckgate Junction £401,374
- Whalley Old Road Junction £747,005
- North Blackburn GD3 Overall £2,101,534

The scheme's benefits have been calculated based upon the delay reduction associated with the signal timings optimisation at the Brownhill Roundabout, Whalley Old Road junction and Pleckgate junction, derived by comparing the Do-Minimum (DM) and the Do-Something (DS) scenarios. The benefits have been calculated at a disaggregate level (i.e. attributable to each junction) as well as at a scheme level (i.e. for all three junctions).

Each scenario has been compared for the 2019 opening year and the 2034 future year for the AM peak, Inter Peak (IP) and PM peak hours.

The DM scenario considers junction delay for the Brownhill Roundabout, Whalley Old Road junction and Pleckgate junction operating with the existing signal timings, however taking into account the associated 2019 and 2034 future years' background traffic growth and the associated committed developments.

The DS scenario considers the delay for the Brownhill Roundabout, Whalley Old Road junction and Pleckgate junction operating with the optimised signal timings and taking into account the associated 2019 and 2034 future years' background traffic growth and the associated committed developments.

Delay reduction has been derived for the calculated demand in the 2019 opening year and the 2034 future year and then monetised. Following this, annual transport benefits have been calculated and forecasted over a 60-year appraisal period in line with the WebTAG recommendations and standard values. Finally, sensitivity testing has been undertaken around the core scenario.

LinSig has been used to assess the operational capacity of the signal junctions, which is a current recognised industry standard software for assessing signal junctions. The key operational parameters of the LinSig computer program are the Degree of Saturation (DoS), the Mean Max Queue (MMQ) and Total Delay. Junction modelling outputs are provided in Section 3.7 of the BCR Technical Note report included as Appendix C of this document.

The derived journey time savings have been monetised by splitting them by each user class and journey purpose (sourced from the WebTAG Databook, May 2018) and applying expansion factors to annualise the scheme derived benefits. Although it is recognised that expansion factors are typically used to growth traffic totals for analysis rather than benefits, the methodology applied is consistent with other BCR TNs prepared in support of business cases for similar sized schemes in Lancashire and elsewhere. Furthermore, there are currently no permanent monitoring sites in BwD that could be used to derive robust annualisation factors.

Annual transport benefits have been calculated (based on a 12-hour weekday only) and forecasted over a 60-year appraisal period in line with the WebTAG recommendations and standard values.

In line with the TAG Unit A1.1, the appraisal results are presented in the appropriate cost-benefit metrics. The two most commonly used metrics are the 'benefit-cost ratio' (BCR) and the 'net present value' (NPV).

The BCR is given by PVB/PVC and therefore indicates how much benefit is obtained for each unit of cost, with a BCR greater than 1 indicating that the benefits outweigh the costs. As per DfT guidance, the BCR determines the Value for Money (VfM) category the scheme falls within, as defined below:

- Less than 1.0 – 'poor' VfM
- Between 1.0 and 1.5 – 'low' VfM
- Between 1.5 and 2.0 – 'medium' VfM
- Between 2.0 and 4.0 – 'high' VfM
- Greater than 4.0 – 'very high' VfM

The NPV is calculated as the sum of future discounted benefits minus the sum of future discounted costs: PVB-PVC. A positive NPV means that discounted benefits outweigh discounted costs. BCR and NPV for the core scenario are summarised in Table 2.1.4.

Table 2.1.4. Appraisal Results

Cost	Brownhill Roundabout	Pleckgate Junction	Whalley Old Road Junction	North Blackburn Scheme Overall
PVC	£953,156	£401,374	£747,005	£2,101,534
PVB	£6,907,584	£504,201	£9,300,941	£16,634,206
BCR	7.25	1.26	12.45	7.92
NPV	£5,954,428	£102,827	£8,553,936	£14,532,672

WebTAG worksheets for the core scenario are provided in Appendix J.

Analysis of Non-Monetised Impacts and Costs

The second stage of a Value for Money assessment builds on the initial monetised costs and benefits and considers qualitative and quantitative information on those impacts which cannot be monetised and how these

contribute to the Value for Money of the scheme.

Although a detailed appraisal of non-monetised impacts has been scoped out, using qualitative information a qualitative assessment score has been given to each of the impacts Environmental and Social impacts.

The results of non-monetised impacts are summarised within the AST.

Analysis of Distributional Impacts

Finally to understand the impacts of the scheme on different social groups, including those which are potentially more vulnerable to the effects of transport the Distributional Impacts (DI) appraisal has been undertaken. The DI analysis is mandatory in the scheme appraisal process and as a minimum is required for the following five impacts: User Benefits, Noise, Air Quality, Accidents and Personal Affordability.

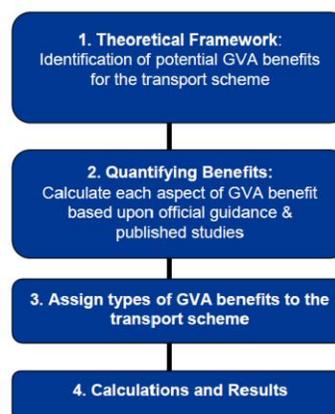
Full details of the methodology and results for each DI impact are given within the Social and Distributional Impacts Appraisal Report and included as Appendix D. The results of the DI Appraisal are also reported within the AST.

GVA Assessment

The GVA analysis seeks to complement standard transport appraisals. The wider economic impacts of the proposed transport schemes are particularly important to understand in terms of the potential benefits for the locality and the Government's economic growth agenda.

The analysis of potential GVA benefits has been undertaken in the following stages, as summarised in Figure 2.1.2.

Figure 2.1.2. Theoretical GVA Framework



The GVA analysis seeks to complement standard transport appraisals. The wider economic impacts of the proposed transport schemes are particularly important to understand in terms of the potential benefits for the locality

and the Government's economic growth agenda.

GVA measures the total value of goods and services, i.e. economic activity. In its simplest terms, it is therefore GDP at a local/regional level minus indirect taxation.

Unlike standard transport appraisals, there is not a single methodology for estimating the impacts of a scheme on GVA, employment or similar measures of the performance of the real economy. Methodologies often vary considerably across studies.

Different methods have particular strengths and weaknesses, and thus there is no single definition of what GVA is or how it should be quantified in the context of transport appraisal.

In this context, a bespoke methodology has been developed to provide a consistent theoretical framework for assessing additional economic benefits. This ensures that the scheme is subject to a standard process and quantification of benefits; albeit using local variations in GVA per job, and local transport capacity constraints overcome.

In this context, a bespoke methodology has been developed to provide a consistent theoretical framework for assessing additional economic benefits. This ensures that the scheme is subject to a standard process and quantification of benefits; albeit using local variations in GVA per job, and local transport capacity constraints overcome.

Not all elements of GVA benefits are applicable for every type of scheme. The change as a result of unlocked development has been considered appropriate for the North Blackburn scheme and has subsequently been assessed.

A total of 427 houses would be scheme dependent, comprising 272 dwellings at the North Blackburn Development site and 155 dwellings at the Roe Lee site. A letter from Planning Manager of BwDBC confirming the North Blackburn Development site being dependent on the scheme is provided in Appendix J of the BCR TN. A Planning Committee report relating to the Roe Lee site is also provided in Appendix J of the BCR TN.

It is considered that following realisation of BwDBC's aspirations for growth and further development of the Local Plan, there is a potential for a number of housing developments within north Blackburn (identified by BwDBC within the Growth and Development Proposals for North Blackburn, shown in Appendix G) to be accelerated and benefit from the scheme. It is anticipated that a further 4,944 houses and 763 jobs would be accelerated by the scheme. Based on Jacobs' request, the accelerated houses and jobs were however excluded from the GVA calculations.

Sites identified as being scheme dependent are summarised in Table 2.1.5.

Table 2.1.5. Scheme Dependent Developments

Development	Area (Ha)	No. of Housing Units/Jobs	GVA	Base Case Year (without scheme)	Scheme Case Year (with scheme)
North Blackburn - Phase 1 Whinney Lane	14.86	272	£2,766,240	Scheme dependent	2024
Roe Lee - Phase 1 North Site	9.66	155	£1,576,350	Scheme dependent	2022

Benefits generated by dependent housing are quantified by multiplying the number of houses by GVA benefits per new house, which is £10,170¹.

Benefits generated by dependent employment are quantified by multiplying the number of jobs by GVA benefits per employee, which is £20,340.

The benefits over the 25 year period have been discounted using a 3.5 per cent discount rate as defined in the WebTAG. This is in line with Treasury Green Book guidance and is applicable to years 1 to 30 where appropriate.

The following results have been obtained from the GVA analysis:

- Base Case 'Without Scheme' Discounted Total GVA 60 years (2010 prices): £0
- Base Case 'Without Scheme' Discounted Total Adjusted (39%) GVA 60 years (2010 prices): £0
- Scheme Case Discounted Total GVA 60 years (2010 prices): £44,165,229
- Scheme Case Discounted Total Adjusted GVA 60 years (2010 prices): £17,224,439
- 'With Scheme' minus 'Without Scheme' Discounted Total GVA 60 years (2010 prices): £44,165,229
- 'With Scheme' minus 'Without Scheme' Discounted Adjusted Total GVA 60 years (2010 prices): £17,224,439
- Average GVA per annum (2010 prices discounted adjusted): £287,073

Given an investment of £2.4m, this would be returned within eight years of the scheme opening. However, this figure represents an average over the appraisal period of the scheme and gives the profiling of benefits, which may not be recouped for several years.

These benefits have not been incorporated within the published BCRs set out in Section 4.1, but it should be noted that the scheme meets the criteria for investment as set out by the LEP, without the GVA addition to the case.

The details of the GVA assessment are provided as Appendix J of the BCR

¹ <https://www.ons.gov.uk/economy/grossvalueaddedgva/datasets/regionalgrossvalueaddedincomeapproach>

Technical Note.

A sensitivity test has been carried out to ensure the GVA benefits calculated are not overestimated and are in line in those initially submitted to the Local Enterprise Partnership (LEP). As the values submitted previously have not been discounted, Appendix J of the BCR Technical Note includes the undiscounted GVA benefits, which are in line with those previously submitted to LEP:

- ‘With Scheme’ minus ‘Without Scheme’ Undiscounted Total GVA 60 years (2010 prices) - £1,644,828

AMCB Table

The Analysis of Monetised Costs and Benefits (AMCB) table is an industry standard table published by the DfT for the presentation of all monetised impacts of a scheme considered sufficiently robust for inclusion in the NPV and BCR.

Table 2.1.6 summarises the outputs of the BCA for the North Blackburn scheme core scenario (for the scheme overall and for each junction separately). All TAG worksheets are provided in Appendix J.

Table 2.1.6. AMCB Table

	Brownhill Roundabout	Pleckgate Junction	Whalley Old Road Junction	North Blackburn GD3
Noise	-	-	-	-
Air Quality	-	-	-	-
Greenhouse Gases	-	-	-	-
Journey Quality	-	-	-	-
Physical Activity	-	-	-	-
Accidents	-	-	-	-
Economic Efficiency: Consumer Users (Commuting)	£1,445,305	£174,888	£2,227,192	£3,820,884
Economic Efficiency: Consumer Users (Other)	£2,890,172	£151,892	£3,647,357	£6,665,399
Economic Efficiency: Business Users and Providers	£2,572,107	£177,421	£3,426,392	£6,147,924
Wider Public Finances (Indirect Taxation Revenues)	-	-	-	-
Present Value of Benefits (PVB)	£6,907,584	£504,201	£9,300,941	£16,634,206
Broad Transport Budget	£953,156	£401,374	£747,005	£2,101,534
Present Value of Costs (PVC)	£953,156	£401,374	£747,005	£2,101,534
Net Present Value (NPV)	£5,954,428	£102,827	£8,553,936	£14,532,672
Benefit to Cost Ratio (BCR)	7.25	1.26	12.45	7.92

	<p>With a BCR of 7.92 and NPV of £14,532,672, the scheme represents a 'very high' VfM meeting the threshold for approval for funding from LEP as per LEP Accountability Framework.</p>
<p>2.2 Economic Assumptions <i>Please describe any economic assumptions made or that will be made as part of future appraisal work and the development of the Outline Business Case.</i></p>	<p>Overview</p> <p>This section summarises the key assumptions supporting the Value for Money analysis. This includes the assumptions set out in WebTAG as well as further assumptions specific to the scheme.</p> <p>Time Periods</p> <ul style="list-style-type: none"> To establish the baseline traffic, Manual Classified Count (MCC) surveys have been undertaken at the Brownhill Roundabout and Pleckgate junction on Thursday 28th June 2018, between 7:30am and 9:30am to cover the morning peak hour, between 11am and 1pm to cover the IP peak hour and between 3pm and 6pm to cover the evening peak hour. MCC counts have been also carried out at the Whalley Old Road junction on Friday 13th October 2017 between 8am and 9am and between 5pm and 6pm. In addition, seven day 24hrs Automatic Traffic Count (ATC) survey has been undertaken at the A6119 Ramsgreave Drive, recording both traffic flows and speeds. The ATC survey has commenced on Thursday 18th June 2018 and terminated on Wednesday 4th July 2018. From the MCC survey, it was determined that the weekday AM peak hour of the highway network is 7:45am to 8:45am, the IP peak hour is 11:45am to 12:45pm and the weekday PM peak hour is 4:45pm to 5:45pm. <p>Traffic Growth</p> <ul style="list-style-type: none"> Two future years have been considered, the 2019 scheme opening year (based on current delivery programme) and the 2034 future forecast year (15 years following scheme implementation). TEMPro version 7.2 has been used to establish traffic growth factors from 2018 to 2019 and from 2018 to 2034. Traffic growth factors, adjusted by the National Trip End Model (NTEM) have been derived for BwD local authority area. <p>Committed Developments</p> <ul style="list-style-type: none"> Growth and development proposals have been reviewed for North Blackburn, based on the BwD Growth Programme shown within Appendix K. The following four developments have been considered as

committed developments, with the detailed trip generation and distribution provided in Section 3.4 of the BCR Technical Note:

- North Blackburn Phase 1 Whanne Lane – a residential development comprising 272 homes (planning application reference: 10/17/0578);
 - Parsonage Road – a residential development comprising 85 dwellings (planning application reference: 10/14/0547);
 - Whitebirk Strategic Employment Site – a mixed employment use comprising industrial and logistics floor space, together with a drive-through hot food take-away, pub/restaurant, a hotel and a petrol filling station, including a forecourt shop (planning application reference: 11/15/0154); and
 - Roe Lee Development Site – a residential development comprising 155 dwellings (planning application reference: 10/18/0895).
- Although not all developments listed within the BwD Growth Programme (shown within Appendix K) have been considered as committed, the possible traffic growth associated with them has been taken into account through application of the background traffic growth (i.e. TEMPro growth factors).

Scenarios

- The Do-Nothing (DN) scenario demonstrates junction capacity modelling for the existing fixed signal timings at the junctions in the 2018 base year and the 2019 and 2034 future years with the background traffic growth only (i.e. through application of TEMPro growth factors).
- The Do-Minimum (DM) scenario demonstrates junction capacity modelling for the existing signal timings at the junctions, taking into account both the future 2019 and 2034 years' background traffic growth (i.e. through application of TEMPro growth factors) and the committed developments.
- The Do-Something (DS) scenario demonstrates junction capacity modelling by 15min intervals, to replicate the efficiency of MOVA installation, and uses the same traffic flows as per the DM scenario.

Junction Modelling

- The Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction have been modelled as a network rather than individual junctions to ensure the impact of each junction on each other is covered within the modelling (i.e. the queue from one junction extending to another).
- Based on the discussions with BwDBC and the BwD Growth

Programme, an access to the Roe Lee site has been considered as a priority junction in the 2019 scheme opening year and as a signalised junction in the 2034 future year.

Junction Delay

- The DM scenario demonstrates total junction delay by one-hour intervals.
- The DS scenario demonstrates junction delay by 15min intervals, to replicate the efficiency of MOVA installation. The total delay has then been calculated for the AM, IP and PM peak hours respectively.
- The delay savings are represented as a difference between DM and DS scenarios.
- As the delay results from the LinSig model are presented in pcuHr values, the PCU to Vehicle conversion factor has therefore been applied to the AM peak, PM peak and IP hour traffic flows, derived from the MCC counts.

Appraisal Period

- Given the scheme is a technology scheme, which does not materially impact the structure of the highway network a shorter appraisal period has been considered rather than 60 years. The annual transport benefits have therefore been interpolated and projected over a 15-year appraisal period.
- Two future years have been considered, the 2019 scheme opening year (based on current delivery programme) and the 2034 future forecast year (15 years following scheme implementation).

Benefits Capture and Annualisation

- The derived total junction delay savings have been monetised by splitting them by each user class and journey purpose (sourced from the WebTAG Databook, May 2018) and applying expansion factors to annualise the scheme derived benefits.
- Although it is recognised that expansion factors are typically used to growth traffic totals for analysis rather than benefits, the methodology applied is consistent with other BCR technical reports prepared in support of business cases for similar sized schemes in Lancashire and elsewhere. Furthermore, there are currently no permanent monitoring sites in BwD that could be used to derive robust annualisation factors.
- The peak hour to peak period factors have been calculated based on the Automatic Traffic Count (ATC) survey and are summarised as follows:

	<ul style="list-style-type: none"> • AM Peak Hour to Peak Period – 2.49 • PM Peak Hour to Peak Period – 2.75 • IP Peak Hour to Peak Period – 6.73 • The working day to working year factor applied is 253. • The annual transport benefits shown have been interpolated and projected over a 15-year appraisal period. Appropriate growth in the value of time for each year of the appraisal has been sourced from the WebTAG Databook and applied to each year across the 15 year appraisal period. 																								
<p>2.3 Sensitivity & Risk Profile <i>If applicable, please describe how changes in economic, environmental and social factors could affect the impact of the proposed scheme in terms of its benefit and costs.</i></p>	<p>In line with the TAG Unit A1.1, sensitivity testing should be undertaken to reflect uncertainty. The following sensitivity tests have therefore been conducted deviating from the core scenario to test the robustness of the economic forecast to potentially unrealised benefits:</p> <ul style="list-style-type: none"> • Sensitivity Test One (ST1)- A zero traffic growth following the 2019 opening year <p>ST1 is based on the assumption of a zero traffic growth following the 2019 opening year. This sensitivity test has been carried out to ensure no overestimation of the future traffic demand occurs.</p> <ul style="list-style-type: none"> • Sensitivity Test Two (ST2) – A low traffic growth <p>To account for uncertainty in demographic changes, WebTAG Unit M4 recommends formulating high and low growth scenarios. This recommendation is to apply an adjustment of $\pm 2.5\%$ multiplied by the square root of the number of years forecast into the future to each forecast matrix. The low growth applied in the two forecast years is shown in Table 2.2.1.</p> <p>Table 2.2.1. Low Growth Factors</p> <table border="1" data-bbox="656 1354 1479 1438"> <thead> <tr> <th></th> <th>AM Peak Hour</th> <th>IP Peak Hour</th> <th>PM Peak Hour</th> </tr> </thead> <tbody> <tr> <td>2109 Opening Year</td> <td>0.9892</td> <td>0.9900</td> <td>0.9884</td> </tr> <tr> <td>2034 Future Year</td> <td>1.1086</td> <td>1.1114</td> <td>1.1019</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Sensitivity Test Three (ST3) – A high traffic growth <p>ST3 is based on the assumption of high traffic growth following the recommendations described in the WebTAG Unit M4. The high growth applied in the two forecast years is shown in Table 2.2.2.</p> <p>Table 2.2.2. High Growth Factors</p> <table border="1" data-bbox="656 1696 1479 1780"> <thead> <tr> <th></th> <th>AM Peak Hour</th> <th>IP Peak Hour</th> <th>PM Peak Hour</th> </tr> </thead> <tbody> <tr> <td>2109 Opening Year</td> <td>1.0392</td> <td>1.0400</td> <td>1.0384</td> </tr> <tr> <td>2034 Future Year</td> <td>1.2386</td> <td>1.2414</td> <td>1.2319</td> </tr> </tbody> </table> <ul style="list-style-type: none"> • Sensitivity Test Four (ST4) – Reduced right turn traffic flows at the Brownhill Roundabout 		AM Peak Hour	IP Peak Hour	PM Peak Hour	2109 Opening Year	0.9892	0.9900	0.9884	2034 Future Year	1.1086	1.1114	1.1019		AM Peak Hour	IP Peak Hour	PM Peak Hour	2109 Opening Year	1.0392	1.0400	1.0384	2034 Future Year	1.2386	1.2414	1.2319
	AM Peak Hour	IP Peak Hour	PM Peak Hour																						
2109 Opening Year	0.9892	0.9900	0.9884																						
2034 Future Year	1.1086	1.1114	1.1019																						
	AM Peak Hour	IP Peak Hour	PM Peak Hour																						
2109 Opening Year	1.0392	1.0400	1.0384																						
2034 Future Year	1.2386	1.2414	1.2319																						

A sensitivity test ST4 has been carried out to reflect the reduced right turn traffic flows at the Brownhill Roundabout during the PM peak hour. It should be noted that a level of uncertainty exists in respect to determining the exact percentage vehicles turning right at the Whalley Old Road junction instead of the Brownhill Roundabout. To determine the exact number of diverting vehicles extensive surveys would be required. In view that the actual delay at the junctions is disproportionate to the value of the scheme, a sensible assumption has therefore been made (i.e. 50%). It should be also noted that due to this uncertainty, the reduced right turn traffic flows at the Brownhill Roundabout are actually considered as a sensitivity test instead of being a core scenario.

Sensitivity Test variations on the whole scheme PVC, PVB and BCR and each junction intervention are shown in Table 2.2.3.

Table 2.2.3. Appraisal Results, Core and Sensitivity Tests

	Core	ST1	ST2	ST3	ST4
Brownhill Roundabout					
PVC	£953,156	£953,156	£953,156	£953,156	£953,156
PVB	£6,907,584	£2,254,441	£5,105,993	£10,677,663	£13,493,340
BCR	7.25	2.37	5.36	11.20	14.16
NPV	£5,954,428	£1,301,285	£4,152,837	£9,724,507	£12,540,184
Pleckgate Junction					
PVC	£401,374	£401,374	£401,374	£401,374	£401,374
PVB	£504,201	-£254,768	-£154,272	£1,449,449	£504,201
BCR	1.26	-0.63	-0.38	3.61	1.26
NPV	£102,827	-£656,141	-£555,645	£1,048,075	£102,827
Whalley Old Road Junction					
PVC	£747,005	£747,005	£747,005	£747,005	£747,005
PVB	£9,300,941	£5,948,110	£7,649,047	£10,922,331	£4,416,054
BCR	12.45	7.96	10.24	14.62	5.91
NPV	£8,553,936	£5,201,105	£6,902,042	£10,175,326	£3,669,049
North Blackburn Growth Deal 3 Overall					
PVC	£2,101,534	£2,101,534	£2,101,534	£2,101,534	£2,101,534
PVB	£16,634,206	£7,858,452	£12,516,208	£22,960,111	£18,335,076
BCR	7.92	3.74	5.96	10.93	8.72
NPV	£14,532,672	£5,756,918	£10,414,674	£20,858,577	£16,233,541

WebTAG worksheets for the core scenario and sensitivity tests are provided in Appendix J.

In view of the above positive findings, which include a 'very high' and 'high' VfM for the scheme overall, it can be concluded that the proposed North Blackburn scheme should be taken forward.

2.4 Value for Money Statement

Using the Appraisal Summary Table (AST) (see section 2.5), please include a summary of the conclusions from the Value for Money assessment. The statement should provide a concise summary of the proposed scheme's economic, environmental, social and public accounts impact.

The appraisal results for the core scenario of the North Blackburn scheme demonstrate a BCR of 7.92 and NPV of £14,532,672, which means a 'very high' VfM. Sensitivity testing has been carried out, for four scenarios, three of which still demonstrate a 'very high' VfM and one demonstrates a 'high' VfM.

In view of the positive findings, it has been concluded that the proposed North Blackburn scheme should be taken forward.

In addition, a GVA analysis has been undertaken using an evidence-led, theoretically consistent framework approach, based on available studies and parameters (in absence of commonly recognised and adopted methodology).

A total of 427 houses would be scheme dependent, comprising 272 dwellings at the North Blackburn Development site and 155 dwellings at the Roe Lee site. The dependent housing would amount to additional £17,224,439 GVA benefits for the local economy.

A net GVA over the appraisal period of £287,073 per annum averaged over a 60-year appraisal period has been calculated based on the locally adjusted GVA values (in 2010 discounted prices).

The assessment is based on information provided by the Growth Team. It is understood that the Growth Team has been liaising with the developers and shaped the list of future developments in line with the local plan allocations and developer aspirations.

The scheme is expected to have a slight beneficial impact against the majority of social impacts, including physical activity, journey quality, accidents, air quality, security and accessibility. Large benefits are expected on reliability impact on commuting and other users as a result of reduced congestion and delay at the intervention junctions. The impact on affordability is considered as neutral, which the impact on severance and option and non-use values would not be applicable.

The scheme is expected to have a neutral impact on the majority of environmental impacts.

In view of the positive findings, it has been concluded that the proposed North Blackburn scheme should be taken forward.

Economic Output Comparison

Economic Output	Pennine Gateway Forecast Total	Furthergate	North Blackburn
Housing units	870	Nil	427
Private sector investment	£125m	£40m	-
Jobs	3,750	438	-
Commercial floor space	64,000 sq m	17,500 sq m	-
GVA	£414.7m	£236m	£17m

A yearly cumulative total for how these outputs will be achieved is provided below.

	Houses			Jobs			GVA
	Scheme Dep.	Accel.	Total	Scheme Dep.	Accel.	Total	
2021	-	-	-	-	-	-	£0
2025	427	-	427	-	-	-	£2,857,121
2026	427	-	427	-	-	-	£3,833,836
2027	427	-	427	-	-	-	£4,777,522

2.5 Appraisal Summary Table

Date produced: December 2018

Contact:

Name of scheme:		Growth Deal 3 North Blackburn				Name		Mike Cliffe		
Description of scheme:		The scheme proposal includes signal equipment upgrade with installation of intelligent signal controllers to adjust green times based on demand (MOVA), resurfacing, road markings improvements and pedestrian and cycle provision improvements at the following three junctions: <ul style="list-style-type: none"> - The A6119 Brownhill Drive/A6119 Ramsgreave Drive/A666 Whalley New Road/Pleckgate Road five-arm signalised roundabout junction, known as the Brownhill Roundabout; - The Pleckgate Road/Ramsgreave Drive four-arm signalised junction (Pleckgate junction); and - The A6119 Brownhill Drive/A6119 Whitebirk Drive/Whalley Old Road staggered signalised junction (Whalley Old Road junction). 				Organisation		BwDBC		
						Role		Project Sponsor		
Impacts						Summary of key impacts		Assessment		Monetary £(NPV)
				Quantitative		Qualitative				
Economy	Business users & transport providers	At present, there is a high volume of traffic passing through the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, whilst the A6119 Ramsgreave Drive currently experiences one of the highest traffic volumes amongst all roads in Blackburn. The existing highway network currently operates close to capacity and the situation is likely to deteriorate in the nearest future. It is envisaged that the proposed highway network improvements and signal timings optimisation would reduce the existing congestion issues at three junctions along the A6119, resulting in travel time savings and aiding optimisation of the network as a whole. As a result, it is expected that the scheme will generate delay reduction for motorists represented by business users and transport providers.		Value of journey time changes (£)		£6,147,924		N/A		
	Net journey time changes (£)									
	0 to 2min			2 to 5min	> 5min					
		N/A	N/A	N/A			£6,147,924		N/A	
	Reliability impact on Business users	As a result of reduced congestion and delay at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road, during the critical PM peak hour, the reliability impact on business users is expected to be positive with an increased capacity, reduced junction delay, reduced total journey time and delays caused by accidents. No formal quantification of journey time reliability has however been undertaken.		N/A		Large Beneficial		N/A		
	Regeneration	Regeneration impact has been assessed as part of the GVA benefit analysis, which considered acceleration of housing and employment sites as a result of the scheme. The impact on regeneration is therefore expected to be positive.		5,281 houses and 763 jobs		Large Beneficial		N/A		
	Wider Impacts	The scheme is expected to generate over GVA benefits of £58,563,441 over 60 years (discounted total GVA in 2010 prices) through accelerated development and increase in productivity which shows that the North Blackburn scheme will have wider impacts strongly supporting local economic activity. This represents an annual average benefit of £976,057 (in 2010 prices) to the Blackburn with Darwen economy. Approximately 5,281 houses and 763 jobs will be accelerated by the scheme.		N/A		Large Beneficial		N/A		
Environmental	Noise	No noise quality assessment has been required. The impact of the scheme on noise is therefore considered as neutral and has not been assessed.		N/A		Neutral		N/A		
	Air Quality	Reduced vehicle emissions from reduction in delay and queuing on the local highway network shall improve air quality in the local Air Quality Management Area. In view of a proportionate approach being adopted, a qualitative assessment only has been carried out which concluded only slight benefits on air quality.		N/A		Slight Benefits		N/A		
	Greenhouse gases	The scheme is likely to have a negligible impact on Greenhouse Gasses, and therefore further assessment has not been carried out.		Change in non-traded carbon over 60y (CO2e) N/A		Neutral		N/A		
			Change in traded carbon over 60y (CO2e) N/A							
		Landscape	The scheme involves signal equipment upgrade, resurfacing, road markings improvements and pedestrian and cycle provision improvements within the boundaries of the existing highway network. The scheme would therefore have no conflict with government policy towards protection of the countryside, and would have no impact on landscape. A detailed impact assessment on the landscape has therefore been scoped out.		N/A		N/A		N/A	
		Townscape	The scheme would have no impact on the townscape, as it involves signal equipment upgrade, resurfacing, road markings improvements and pedestrian and cycle provision improvements within the boundaries of the existing highway network. The scheme has no conflict with government policy of enhancing urban environments and maintains existing townscape character.		N/A		N/A		N/A	
		Historic Environment	The scheme would have no impact on the historic environment, particularly buildings of architectural or historic significance, areas (such as parks, gardens, other designated landscapes or public spaces), remnant historic landscapes and archaeological complexes, and sites (e.g. ancient monuments, places with historical associations such as battlefields, preserved evidence of human effects on the landscape, archaeological sites and so on). A detailed impact assessment has therefore been scoped out.		N/A		N/A		N/A	
	Biodiversity	The scheme involves signal equipment upgrade, resurfacing, road markings improvements and pedestrian and cycle provision improvements within the boundaries of the existing highway network. The scheme would therefore have no impact on the biodiversity and water environment. A detailed impact assessment has therefore been scoped out.		N/A		Neutral		N/A		
	Water Environment			N/A		N/A		N/A		

Social	Commuting and Other users	At present, there is a high volume of traffic passing through the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction, whilst the A6119 Ramsgrave Drive currently experiences one of the highest traffic volumes amongst all roads in Blackburn. The existing highway network currently operates close to capacity and the situation is likely to deteriorate in the nearest future. It is envisaged that the proposed highway network improvements and signal timings optimisation would reduce the existing congestion issues at three junctions along the A6119, resulting in travel time savings and aiding optimisation of the network as a whole. As a result, it is expected that the scheme will generate delay reduction for motorists represented by commuters and other users.	Value of journey time changes (£)		£10,486,282	N/A	£10,486,282	N/A
			Net journey time changes (£)					
			0 to 2min	2 to 5min	> 5min			
			N/A	N/A	N/A			
	Reliability impact on Commuting and Other users	As a result of reduced congestion and delay at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road, during the critical PM peak hour, the reliability impact on impact on commuters and other users is expected to be positive with an increased capacity, reduced junction delay, reduced total journey time and delays caused by accidents. No formal quantification of journey time reliability has however been undertaken.	N/A			Large Beneficial	N/A	
	Physical activity	Although cycle lanes would be provided through the junctions and pedestrian crossing facilities would be improved, the scheme is not designed to have any impact on physical activity, and is purely focussed on reducing junction delays and reducing congestion at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction. Reducing congestion may however have a positive impact by changed environment in the vicinity of the junctions, which would be friendlier for cyclists and pedestrians. It is therefore envisaged, that there would be a slight benefit to physical activity. Any further analysis would however be disproportionate to the scale of the project.	N/A			Slight Benefits	N/A	
	Journey quality	Given the scale of the North Blackburn scheme, it is considered that there will be a slight beneficial impact on journey quality by reduced travellers stress and frustration. By reducing junction delay and congestion, drivers would be able to make a good progress, avoiding the delay previously experienced. The overall impact on journey quality is likely to be slightly beneficial. Any further analysis would however be disproportionate to the scale of the project.	N/A			Slight Benefits	N/A	
	Accidents	A qualitative impact assessment has been undertaken as the number of casualties on the affected links within the study area is not more than 50 over a five-year period. Slight benefits can be expected to road safety by upgrading the existing signal equipment at the signal junctions, resurfacing, upgrading road markings, and providing cycle and pedestrian facilities. It is envisaged that number of accidents would reduce and the potential for conflict between traffic and vulnerable groups (children, older people and pedestrians, young males and motorcyclists) would be reduced. An overall impact on road safety would be slightly beneficial.	N/A			Slight Benefits	N/A	Slight Benefits to vulnerable population groups.
	Security	The North Blackburn scheme will have a minor beneficial impact on security, by reducing the need to stop vehicles or travel at low speeds, as a result of reduced congestion at the three junctions identified within the study area. It is therefore considered that the scheme will have minor beneficial impact on security. Any further analysis would however be disproportionate to the scale of the project.	N/A			Slight Benefits	N/A	N/A
	Access to services	The scheme is likely to have slight benefits on accessibility between the M65 motorway and north of Blackburn, as well as the accelerated residential developments along the route of the A6119, by reducing congestion at the junctions and providing improvements to pedestrian crossing facilities and cycle facilities. The overall impact on accessibility is therefore likely to be slightly beneficial. Any further analysis would however be disproportionate to the scale of the development.	N/A			Slight Benefits	N/A	N/A
	Affordability	Slight benefits are envisaged on car fuel costs, due to reduced congestion and reduced delay at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction. Due to the scale of the project, no further assessment has however been carried out and the impact on affordability is therefore considered as neutral.	N/A			Neutral	N/A	N/A
	Severance	Although improved pedestrian crossing facilities would be provided at the junctions within the study area, the scheme is not designed to have any impact on severance and is purely focussed on reducing junction delays and congestion at the Brownhill Roundabout, Pleckgate junction and Whalley Old Road junction. It is therefore considered that the scheme will have no impact on severance.	N/A			N/A	N/A	N/A
	Option and non-use values	No option and non-use assessment has been undertaken as part of this appraisal.	N/A			N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The scheme is to be funded through a combination of Growth Deal and Local Transport Plan funds with a total cost of £2,101,534 (in 2010 prices).	N/A			N/A		
	Indirect Tax Revenues	N/A	N/A			N/A		N/A

Economic Case Summary

A Benefit Cost Appraisal and Gross Value Added analysis have been undertaken to assess the economic benefits of the North Blackburn scheme.

The Value for Money assessment is a staged process which includes appraisal of the scheme's economic, environmental, social, distributional and fiscal impacts using qualitative, quantitative and monetised information.

The scheme's benefits have been calculated based upon the delay savings associated with the scheme implementation and have been derived by comparing the total junction delay for the 'with-scheme' and the 'without-scheme' scenarios.

The North Blackburn scheme appraisal demonstrates a 'very high' value for money—and meets the threshold for approval for funding from LEP as per the LEP Accountability Framework—based on a traditional transport BCR of 7.92 for the scheme. When considering each junction improvements individually, the intervention at the Brownhill Roundabout would provide a 'very high' value for money, the intervention at the Pleckgate junction would provide a 'low' value for money, whilst the intervention at the Whalley Old Road junction would provide a 'very high' value for money.

Sensitivity testing has been carried out, for four scenarios, three of which still demonstrate a 'very high' value for money and one demonstrates a 'high' value for money for the North Blackburn scheme overall.

In addition, a GVA analysis has been undertaken using an evidence-led, theoretically consistent framework approach, based on available studies and parameters (in absence of commonly recognised and adopted methodology).

The GVA benefits have been calculated based on the 'without scheme' GVA subtracted from the 'with scheme' GVA.

The scheme will generate additional £17,224,439 GVA benefits for the local economy. A net GVA over the appraisal period of £287,073 per annum averaged over a 60-year appraisal period has been calculated based on the locally adjusted GVA values (in 2010 discounted prices). The net GVA benefit has been calculated based upon development of 427 scheme dependent dwellings.

Further qualitative analysis has been undertaken on those environmental impacts which cannot be monetised and how these contribute to the Value for Money of the scheme. A neutral impact is envisaged on the majority of environmental impacts.

Finally, in order to understand the impacts of the scheme on different social groups (including those which are potentially more vulnerable to the effects of transport) a Distributional Impacts appraisal has been undertaken. The Distributional Impact analysis is mandatory in the scheme appraisal process and as a minimum is required for the following five impacts: User Benefits, Noise, Air Quality, Accidents, and Personal Affordability. The scheme is expected to have a slight beneficial impact against the majority of social impacts and a large beneficial impact on journey time reliability on commuting and other users.

3. Financial Case

The Financial Case concentrates on the affordability of the proposal and its funding arrangements. It presents the financial profile of the proposed scheme and any associated risks. It determines the project costs per year and over its lifespan.

3.1 Affordability Assessment

Please explain how the affordability of the proposed scheme has been assessed.

The Lancashire Growth Deal aims to realise the growth potential of the whole of Lancashire. Improving transport connectivity through new roads, improved junctions and public transport to support growth in jobs and homes is a key component of the growth deal.

Scheme cost estimates have been provided by Capita in October 2018 as a result of contractor tender submissions. Three contractors (EWCE, Casey's and I&H Brown) have submitted their proposals on time. Based on the cost and quality of the submissions, EWCW is to be appointed imminently.

The split of costs for the project is summarised as follows:

- Construction: £1,911,877.53
- Preparation fees: £208,470.80
- Supervision fees: £76,475.10
- Total confirmed cost: £2,196,823.43
- Risk adjusted base cost: £2,599,323.43

The total confirmed cost is to be funded as follows:

- Growth Deal 3 (LEP): £2,300,000 (88%)
- BwDBC local contribution: £300,000 (12%)
- Total funding: £2,600,000

As all works associated with the scheme would be carried out within the existing highway boundary, there are no land costs associated with the project. No ongoing maintenance costs are also associated with the scheme.

BwDCB shall seek to reduce the local contribution by using the S106 contributions from the Roe Lee development site (155 dwellings) where these are received and available in time.

3.2 Financial Costs

Please provide details of the Whole Life Costs of the proposed scheme and a profile of the costs over the period shown.

See [Scheme Costs Guidance](#)

Whole Life Costs (£m)

Year	2017/2018	2018/2019	2019/2020
Profile	0.06	0.66	1.88

3.3 Financial Cost Allocation

Please illustrate how the Whole Life Costs (WLC) will be allocated between the organisations involved in the delivery of the proposed scheme. Also provide a cost profile of the costs allocated to each organisation over the period shown.

Local Growth Fund, LEP (£m)

Profile	0.00	0.4	1.9
---------	------	-----	-----

Private Sector (£m)

Profile	0.00	0.00	0.00
---------	------	------	------

Other Public Sector, BwDBC (£m)

Profile	0.05	0.25	0.00
---------	------	------	------

<p>3.4 Financial Risk</p> <p><i>Please provide details of any financial risks associated with the delivery of the proposed scheme. Explain how these have been assessed and quantified. Have funds been committed? Identify any known shortfall in funding and provide evidence of how this shortfall will be addressed.</i></p>	<p>A detailed risk register is provided in Appendix F. A risk value of £402,500 has been allowed. Key financial risks are summarised below:</p> <ul style="list-style-type: none"> • Public Sector Engagement – agreements over the strategic direction of the scheme from local business; wider public acceptability to follow with more detailed consultations; • Ground conditions contamination or ground gasses; • Town centre movement strategy not being confirmed; • Statutory undertakers and impact upon existing services; • Phasing and timing of site works and statutory undertakers works; • Signage design not confirmed; • Adequacy of public consultation to include local business, leading to public opposition to the project; • Untimely delivery of information leading to abortive work and overrun of stated project period; • Inability to deliver the construction phase resulting in programme delay and procurement exercise to be carried out again; • Delays in obtaining Traffic Regulation Orders; • Designing the protection, implementation and liaison with statutory service providers; • Capacity of existing drainage network; • Weather; • Contractors’ capacity to deliver work.
<p>3.5 Financial Risk Management</p> <p><i>Please provide details of any risk allowance or contingency built into the Whole Life Costs of the project. Explain the rationale for the level of risk/contingency allocated and how this will be managed.</i></p>	<p>Risk associated with this scheme has been estimated at £402,500, which is based on the Risk Register provided in Appendix F.</p> <p>Scheme cost estimates have been provided by Capita in September 2018 as a result of contractor tender submissions. Three contractors (EWCE, Casey’s and I&H Brown) have submitted their proposals on time. Based on the cost and quality of the submissions, EWCW is to be appointed imminently.</p>
<p>3.6 Financial Accountability</p> <p><i>Please explain who will be responsible for managing the finances of the project. What arrangements are in place to ensure diligent financial management is in place?</i></p>	<p>The overall scheme cost will be monitored by the Blackburn with Darwen / Capita Design Team and regularly reviewed in terms of finances by the Project Manager.</p> <p>Regular liaison and cost reviews will take place with the scheme’s main contractor EWCE and the Council’s project team with technical input provided by the Council’s strategic partner, Capita. The overall cost of the works will be reviewed and confirmed, with the works costs assessed every 4 weeks.</p>

Financial Case Summary

The Lancashire Growth Deal aims to realise the growth potential of the whole of Lancashire. Improving transport connectivity through new roads, improved junctions and public transport to support growth in jobs and homes is a key component of the growth deal.

The North Blackburn scheme is looking for Growth Deal funding of £2,300,000, accounting for 88% of the total scheme cost. The remaining funding (12%) will be provided by BwDBC.

The overall scheme cost estimate is therefore £2,600,000 with an overall package BCR of 7.92.

Risk associated with this scheme have been estimated at £402,500. This is based on an analysis of the project risks as set out in the Risk Register based on scheme specific contributory factors related to cost and programme risk.

The overall scheme cost will be monitored by the BwD / Capita Design Team and regularly reviewed in terms of finances by the Project Manager.

4. Commercial Case

The Commercial Case provides evidence on the commercial viability of the proposed scheme and the procurement strategy. It should clearly set out the financial implications of the procurement strategy. It presents evidence on risk allocation alongside implementation timescales and details of the capability and skills of the delivery team.

4.1 Commercial Viability

Please outline the approach taken to assess commercial viability.

The commercial viability of the North Blackburn scheme has been assessed under the headings:

- Procurement Strategy;
- Identification of Risk;
- Risk Allocation; and
- Contract Management

4.2 Procurement Strategy

Please summarise potential procurement options available (e.g. partnership, framework, new competitive tender). Details of the intended procurement strategy and the rationale behind selecting it should be provided.

Blackburn with Darwen Borough Council are mindful of the need to secure best quality and best value for money when developing the procurement strategy for the North Blackburn scheme.

All works required to deliver the scheme are contained within the footprint of the adopted highway.

The overall package of works is estimated to cost £2.6m.

The scheme has been procured through the Blackburn with Darwen Contractor & Development Framework. The framework has previously been tendered resulting in the appointment of 5 delivery partners comprising Barnfield Construction, Case'y, Eric Wright Group (EWCW), I&H Brown and Seddon to help deliver development, infrastructure projects and capital programmes across the borough.

The Framework includes all activities necessary to deliver completed developments, buildings and infrastructure, including acquisition or disposal of land for development, development or project finance; obtaining statutory permissions including planning permission; supply chain procurement and management, design services, construction works, marketing and sales.

The procurement exercise has now been concluded and there is a preferred main contractor to deliver the scheme (EWCW). The framework mini-competition yielded three tender returns which have been evaluated on a quality / price basis. Formal approval for appointing the main contractor is delegated through the provisions contained within the Framework. Contract acceptance documentation will be issued on 23rd January 2019 following confirmation of Full Approval from the LEP on 22nd January 2019.

<p>4.3 Identification of Risk <i>Please outline the main commercial risks associated with the scheme (e.g. at-risk funding (capital and revenue)) and what strategy is in place to monitor and review these risks.</i></p>	<p>The risk management strategy is outlined in Section 5.7. There is a detailed risk register (see Appendix F). There is no land acquisition associated with the scheme.</p>
<p>4.4 Risk Allocation <i>Please describe how the risks identified in section 4.3 will be apportioned and shared to demonstrate that risks are allocated to the organisation / body best placed to manage them to ensure cost effective delivery.</i></p>	<p>Blackburn with Darwen Borough Council has been identified as the body best placed to manage the risks and deliver the project, given their close involvement in the development and delivery of the schemes. As such it will carry most of the risk. Where appropriate risks will be allocated to its delivery partner Capita.</p> <p>The Project Board has overall responsibility for governance and risk associated with the delivery of the scheme and will meet on a quarterly basis. The Project Executive is responsible for managing and overseeing the Risk Management Strategy and where appropriate agreeing and undertaking actions to mitigate key risks. The Project Manager is responsible for maintaining and updating a Quantified Risk Register and undertaking actions to mitigate the risks that do not require escalation to the Project Executive.</p> <p>The project governance structure, as outlined in Section 5.1, includes arrangements for decision making and approvals, and information on roles and responsibilities such that responsibilities with regard to risk are well defined. In line with PRINCE2 principles a clear management, reporting and delivery structure is in place utilising the experienced design and operations teams within Blackburn with Darwen Borough Council.</p>

4.5 Contract Management

Please explain the contractual arrangements for delivering the proposed scheme. A high level overview of the implementation timescales should be included (append MS Project Programme, if preferred).

Projects to be undertaken through the Blackburn with Darwen Contractor & Development Framework are classified under three work categories as indicated below:-

Work Category Reference	Work Category Title	Work Category Scope (Brief description ²)
1.	Civil Engineering Projects (using NEC3 Contract documents)	a) Delivery of civil engineering schemes including new roads/junctions, road/junction improvements, car parks, flood or drainage schemes, site remediation, site public realm/landscape schemes, traffic calming schemes, section 278 schemes and associated professional services. b) Delivery of planned and reactive highway maintenance works supporting the Council's Direct Service Organisation (DSO) and associated professional services.
2.	Construction Projects (using JCT Contract documents)	a) Delivery of new build schemes as part of the Council's Capital, Growth and Education Programme and associated professional services. b) Delivery of refurbishment/remodelling schemes as part of the Council's Capital, Growth & Education Programme and associated professional services.
3.	Development Projects (using Development Contract documents)	a) Delivery of speculative commercial or residential developments including the disposal of Council owned land, either leasehold or freehold, as identified on the Council's Growth Programme. b) Delivery of non-speculative commercial or residential developments including the disposal of Council owned land, either leasehold or freehold, as identified on the Council's Growth Programme.
¹ Reference the CPV codes identified in the OJEU for a full description of the scope of works and services.		

As this scope of works for this project falls within the 'civil engineering project' category the scheme has been procured under the terms of the ECC New Engineering Contract (NEC 3) Option B (Priced Contract with Bill of Quantities).

Close working between the scheme designer and the direct works supervisor will ensure value for money and will enable a flexible approach to implementation as well as managing the allocation of sufficient resources.

Performance against programme and cost will be monitored by the Project Manager and will be reported to the board at regular intervals. The project programme is attached at Appendix I.

Commercial Case Summary

BwDBC are mindful of the need to secure best quality and best value for money when developing the procurement strategy for the North Blackburn scheme.

The scheme has been procured through the Blackburn with Darwen Contractor & Development Framework. The procurement exercise has now been concluded and there is a preferred main contractor to deliver the scheme. The framework mini-competition yielded three tender returns which have been evaluated on a quality / price basis. The Council's Executive Board will approve the main contractor and a letter of intent will be issued. Contract acceptance documentation will be issued on 23rd January 2019 following confirmation of Full Approval from the LEP on 22nd January 2019.

Blackburn with Darwen Borough Council has been identified as the body best placed to manage the risks and deliver the project, given their close involvement in the development and delivery of the schemes. As such it will carry most of the risk. Where appropriate risks will be allocated to its delivery partner Capita.

Close working between the scheme designer and the direct works supervisor will ensure value for money and will enable a flexible approach to implementation as well as managing the allocation of sufficient resources.

Performance against programme and cost will be monitored by the Project Manager and will be reported to the board at regular intervals. A provisional project programme is attached at Appendix N.

5. Management Case

The Management Case assesses whether a proposal is deliverable by reviewing the project planning, governance structure, risk management plan, communication and stakeholder management. The Management Case should be clearly defined, concise and sufficiently robust to enable cost-effective delivery.

5.1 Governance

Please describe the Project Governance arrangements in relation to the Project Team; Project Sponsor/Project Manager; Project Board/Executive and their suitability to the role based on previous programmes of work.

A project specific governance structure has been created based on established and operating governance arrangements for schemes currently being delivered by Blackburn with Darwen Borough Council, adapted to reflect the specific requirements of devolved Local Major Scheme governance.

The governance structure includes the following levels of management:

Corporate / Programme Management

The Lancashire Local Enterprise Partnership (LEP) will adopt the corporate / programme management role. The LEP is a creative collaboration of leaders from business, universities and local councils, who direct economic growth and drive job creation.

Lancashire's LEP is led by a Board of 16 directors who contribute a wide range of expertise. The majority are from the private sector, representing major employers and small and medium enterprises, while the public sector is represented by experts from higher education and political leaders from local authorities.

Project Board

Blackburn with Darwen Borough Council has established a Project Board and Project Working Groups to support the delivery of schemes seeking Growth Deal funding. That Board will take ownership of this particular scheme, and also report progress to the LEP.

The Project Board consists of the Project Executive, Senior Users and Senior Supplier. Representatives for each role have been selected based upon their previous project experience. The makeup of the project board and their responsibilities are described in Table 5.1.1.

Table 5.1.1 Project Board and Responsibilities

Role	Representative	Responsibility
Project Executive (Senior Responsible Owner)	Timo Murphy, Project Director Design Delivery, Capita	Will have overall responsibility for delivering the scheme. Ensures that the project / programme meets its objectives, delivers the projected benefits, maintains its business focus and is well managed with clear authority, context and control of risk.

Senior Users	BwD Growth and Development (Andrew Turner, Ghazala Sulaman-Butt)	Work with the Project Executive and Project Board to ensure that the specification for the scheme will meet the needs of its users within the constraints of the business case.
Senior Suppliers	BwD Growth and Development. Transport Strategy / Programmes and Highways Sections. (Jon Higgins, Walter Aspinall, Tabatha Boniface, Paul Pennington, Dan Vipham, Jim Huyton, Trevor James, Chris Pearson, John Bryan)	Agree a design and work programme with the Project Board which minimises environmental impact, inconvenience to residents and road user impacts. Accountable for the quality of products delivered by the supply chain and has the authority to commit or acquire the necessary supplier resources.

An organogram detailing the individuals undertaking each role within the Project Board is provided as Appendix L.

Blackburn with Darwen Borough Council have delivered a number of major transport projects costing over £5m in the last 5 years. A summary of these projects is provided below. Further details can be provided if required.

Pennine Reach – a £40m DfT funded capital scheme to provide quality bus infrastructure, technology and improved bus services across Pennine Lancashire. Completed in Spring 2017 the project included new roads and junctions, two new bus stations, bus shelters and customer information systems. Some delays and cost overruns due to the Blackburn bus station main contractor going out of business mid-project and a new contractor having to be appointed. Delays were also experienced due to unidentified and uncharted utilities.

Wainwright Way – an £11m DfT and Council funded scheme to deliver a new stretch of the Town Centre Orbital Route and open up new employment sites. Completed in Spring 2016 the project was complex and involved demolition of a listed building, demolition and replacement of a church, demolition of an older people’s home and sensitive excavation and professional archaeology of a former Victorian churchyard with reburial of over 2000 sets of human remains. Estimating the numbers of remains within this unique project for the Borough proved difficult due to incomplete records and discovery of multiple burials in single plots. Archaeology and related costs increased and were borne by the Council.

M65 Junction 5 / Haslingden Rd Growth Corridor Pinch Point – a £5m joint project with DfT and Highways England (funded from LA and HE Pinch Point funding) the scheme enabled carriageway widening from M65 Junction 5 into Blackburn and also signalling and carriageway works on Junction 5 itself. The

	<p>project involved land purchase and the use of sensitive traffic management techniques on a busy part of the Strategic Highway network. The scheme was completed on time and to budget.</p>
<p>5.2 Go/No-Go & Decision Milestones <i>Please describe any outstanding Go/No-Go processes and Decision Milestones in relation to the progression of the proposed scheme.</i></p>	<p>The key go/no-go date for the scheme will follow the SOBC submission to Jacobs on 10th October 2018, and then Jacobs to submit to the LEP in 8th November 2018, when final approval will be sought.</p>
<p>5.3 Project Programme <i>Please set out an indicative delivery programme, including key milestones. Any programme / project dependencies should be referenced. If applicable, please explain how the programme is aligned to relevant delivery strategies and plans.</i></p>	<p>An indicative programme for the delivery of the North Blackburn Scheme is appended as Appendix I.</p> <p>Key dates are as follows:</p> <ul style="list-style-type: none"> - Procurement process for the works between 9th July 2018 and 3rd October 2018 - Final Business Case submission on 10th October 2018 - Business case approval from TfL 10th January 2019 - Construction work begin on 24th January 2019 - Completion of works on 29th November 2019
<p>5.4 Assurance and Approvals Plan <i>Please document any key assurance and approval milestones (including any independent assurance).</i></p>	<p>An overall framework has been adopted at the Corporate / Programme Management level, which defines an assurance role to oversee the governance and working arrangements of the LEP. The framework sets out that, as the accountable body for the LEP, LCC provide the overall assurance role. The purpose of this role is to ensure that:</p> <ul style="list-style-type: none"> • All decisions and activities comply with legal requirements; • The use of all funds is accounted for and reported; • Appropriate records of decisions and proceedings are published; and • The assurance framework is being adhered to. <p>Given that Blackburn with Darwen Borough Council are the promoter and applicant for the scheme, an independent local audit of the business case work which guides investment decisions is also being carried out, by independent consultants, prior to the approval decision by the LEP.</p> <p>Blackburn with Darwen Borough Council and Capita have undertaken their own Gateway Review on 17th July 2018.</p> <p>The Gateway Review report undertaken is provided in Appendix M.</p>
<p>5.5 Communications & Stakeholder Management <i>Please explain how key stakeholders will be engaged throughout the delivery of the scheme, including details of proposed consultation events.</i></p>	<p>The scheme's stakeholder Communications Strategy including Action Plan and Activity Report to support the communication and engagement process required for the delivery of the North Blackburn scheme is included as a supporting document in Appendix G. The communications plan will broadly follow the timetable of the delivery of the scheme, specific action plans developed at each stage (planning through to construction), enabling key audiences to be engaged with in a timely and effective manner.</p>

	<p>Key project milestones will be communicated more widely via the Council's website and the dedicated project portal:</p> <p>http://www.blackburn.gov.uk/Pages/growthdeal.aspx</p>
<p>5.6 Programme / Project Reporting <i>Please describe the proposed reporting and approvals process. This must cover technical, financial, commercial and management elements.</i></p>	<p>The Project Executive will report to the Project Board according to a defined and regular programme of meetings. During these meetings, key highlights, risks, programme and the financial position of the project will be discussed. The Project Executive will be supported by the Project Manager at these meetings as appropriate. Any corrective actions or decisions will be agreed by the Project Board and cascaded to Team Leaders via the Project Manager.</p> <p>Interdisciplinary Review (IDR) meetings have completed a preliminary, departure assessment and pre-tender stages. The IDR included a full cost, programme and risk review for the scheme to progress to the next stage.</p> <p>A schedule of future meeting dates as well as historic meeting minutes will be developed in line with the Project's Assurance Framework. Future meetings will include:</p> <ul style="list-style-type: none"> - Project Team Meeting - Weekly - Project Board Meeting – Every 2 Weeks - Onsite Project Progress Meetings – Every 4 Weeks - NEC Risk Review Meetings – Every 4 Weeks (and as and when required under the contract)
<p>5.7 Risk Management Strategy <i>Please describe the scope of the Risk Management Strategy for the proposed scheme. Include details of the key risks including organisational accountabilities.</i></p>	<p>Risks associated with the overall delivery of the LEP's investment programme will be managed according to the overall monitoring responsibilities set out in the LEP's Accountability Framework. This framework requires risk registers to be produced, maintained and updated each month for individual schemes, once approved.</p> <p>The Project Board will have overall responsibility for governance and risk associated with the delivery of the scheme. The Project Executive will be responsible for managing and overseeing the Risk Management Strategy and, where appropriate, agreeing and undertaking actions to mitigate key risks. The Project Manager will be responsible for maintaining and updating a Quantified Risk Register and undertaking actions to mitigate the risks that do not require escalation to the Project Executive. The project governance structure, as outlined in Section 5.1, will include arrangements for decision making and approvals, and information on roles and responsibilities such that responsibilities with regard to risk will be well defined.</p> <p>Risk management activities and risk registers are already in place as part of ongoing Blackburn with Darwen Borough Council's scheme delivery work. These are informed by regular meetings and risk workshops which are aligned to key programme design and delivery phases. The membership of these meetings will vary and will be dependent upon the particular project phase. For example, engagement with statutory undertakers is already taking place to capture risks associated with potential disruption to their equipment at</p>

preliminary and detailed design stages.

These risk workshops would draw up and review risk registers to identify the range and extent of risks that could adversely affect the delivery of the scheme. These sessions would identify the likelihood of each risk occurring and the relative quantifiable impact in terms of cost and programme. The risk register(s) will be maintained throughout the project as a live document and reviewed on an ongoing basis. The most significant risks will have Risk Management Plans developed. Risks can also be identified at any time outside of these formal lines of communication and should be highlighted to the project manager if this occurs.

The latest scheme risk register is included as Appendix F.

5.8 Monitoring and Evaluation

Please summarise outline arrangements for monitoring and evaluating the performance of the proposed scheme.

In line with current DfT standard detailed in the Monitoring and Evaluation Framework for Local Authority Major Schemes, the scheme promoters are required to monitor their scheme's progress against a set of standard measures, which include the following shown in Table 5.8.1.

Table 5.8.1. Standard Measures to Monitor Scheme's Progress

Item	Stage	Data Collection Timing	Rationale
Scheme build	Input	During delivery	Knowledge
Delivered scheme	Output	During delivery/post opening	Accountability
Costs	Input	During delivery/post opening	Accountability
Scheme Objectives	Output/ Outcome/Impact	During delivery/post opening (up to 5 years)	Accountability
Travel Demand	Outcome	During delivery/post opening (up to 5 years)	Accountability/ Knowledge
Travel Times and Reliability	Outcome	During delivery/post opening (up to 5 years)	Accountability/ Knowledge
Impact on Economy	Impact	Pre or during delivery/ Post opening (up to 5 years)	Accountability/ Knowledge
Carbon	Impact	Pre or during delivery/ Post opening (up to 5 years)	Accountability/ Knowledge

A requirement of the LEP Accountability Framework, and for reporting back to Government (in line with DfT's Monitoring and Evaluation Framework for Local Authority Major Schemes), is that each scheme will have a monitoring and evaluation plan produced prior to Full Approval being granted for a scheme.

The DfT will provide feedback on the monitoring and evaluation plan, giving advice on best practice and agreeing data collection, analysis and reporting. Agreed monitoring and evaluation plan will be published on the BwDBC's website for the purposes of local accountability and transparency. The Department may also make reference to these in discussions with other promoters and on its own website. The timing for reporting will be agreed as part of the monitoring and evaluation plan, but in most cases, is expected to be as follows:

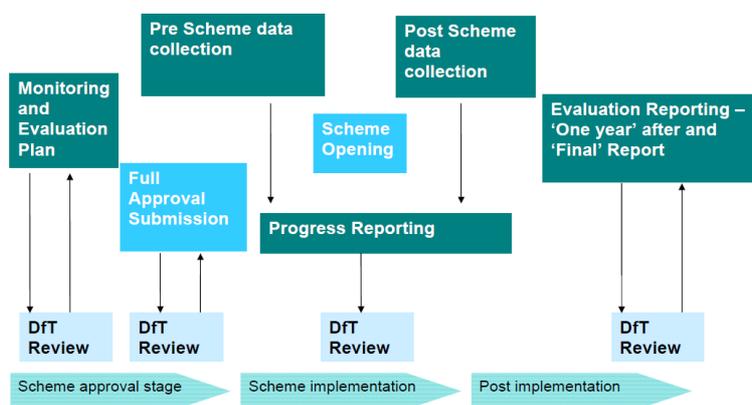
- An initial report based on data collected at least one year (but less than two years) after scheme opening; with a report published within two years of scheme opening;
- A final report based on both 'one year after' data and further data collected approximately five years after scheme opening; with a

report published within six years of scheme opening.

The success of the schemes will be measured by the Growth Deal monitoring and evaluation indicators which have been selected for the scheme and confirmed by the DfT.

Figure 5.8.1 shows the steps in the engagement process.

Figure 5.8.1. Monitoring and Evaluation Engagement Process



The following metrics (as stated within the LEP's Monitoring and Evaluation Framework) will be assessed as part of the Monitoring and Evaluation of the North Blackburn scheme (subject to DfT's confirmation):

- **Expenditure (quarterly):** scheme expenditure will be collected from the Council's CIVICA system, summarised and reported to the LEP quarterly. Expenditure will be split by the following categories: Construction (Main Contractor fees), Statutory Undertakers' Diversions, Preparation fees, Supervision fees.
- **Funding breakdown (quarterly):** identified through Council internal programme monitoring (LTP and capital projects) with split between the LEP and BwDBC contributions. Compared to SOBC split as shown in sections 3.2 and 3.3.
- **In-kind resources (quarterly):** to be identified and reported to the LEP quarterly.
- **Jobs connected to the intervention (annual):** rate of delivery to be monitored and reported.
- **Commercial floorspace constructed (annual):** rate of delivery to be monitored and reported.
- **Housing unit starts (annual):** rate of delivery to be monitored and reported.
- **Housing unit completed (annual):** rate of delivery to be monitored and reported.
- **Total length of resurfaced roads (quarterly):** length of road for which works have been completed and now open for public use will be reported.
- **Total length of newly built roads (quarterly):** none connected with the scheme.
- **Total length of new cycle ways (quarterly):** none connected with the scheme.
- **Type of infrastructure delivered (biannual):** the length of cycle lanes for which works have been completed and now open for public use will be reported.

	<ul style="list-style-type: none"> • Type of service improvement delivered (biannual): none connected with the scheme. • Follow on investment at site (annual): none connected with the scheme. • Commercial floor space occupied (annual): none connected with the scheme. • Commercial rental values (annual): none connected with the scheme. • Average daily traffic and by peak/non-peak periods (biannual) / Average AM and PM peak delay at the junctions – (biannual) / Day-to-day travel time variability (biannual): data sources include queue length surveys at the three junctions identified within the study area, Manual Classified Counts (MCCs) at the junctions within the study area, average speed along the A6119 to report traffic congestion statistics and average journey times. Statistics will be collated reported to LEP. • Average annual CO2 emissions (biannual): air quality indices can be measured in the vicinity of the scheme for the pre-scheme and post-scheme scenario. • Accident rate (biannual) / Casualty rate (biannual): STATS19 or CrashMap collision data at the three junctions within the study area. Statistics will be collated and reported to LEP. • Annual average daily and peak hour passenger boardings (biannual): none connected with the scheme. • Pedestrian counts on new / existing routes: none connected with the scheme. <p>The results of the monitoring and evaluation exercise will be published on the LEP’s website with development and air quality information being supplied by the relevant Council Departments. The Benefits Realisation, Monitoring and Evaluation Plan is included as a supporting document in Appendix E.</p>
<p>5.9 Project Management <i>Please summarise the overall approach for project management at this stage of the project.</i></p>	<p>The project will be managed in line with the principles of PRINCE2, which has been used effectively on the Council’s recent major transport projects.</p> <p>PRINCE2 is a de facto process-based method for effective project management. Used extensively by the UK Government, PRINCE2 is also widely recognised and used in the private sector, both in the UK and internationally.</p> <p>To ensure consistency with the principles of PRINCE2, a defined organisation structure for the project management team has been agreed. In addition, the project has been divided into manageable and controllable stages.</p> <p>A suite of project processes and delivery methodologies has been implemented to support in the successful management and delivery of North Blackburn project. Robust tools and systems have been adopted to enable a proactive programme management to deliver the project on time and on budget.</p> <p>Project Execution Plan has been developed to ensure that all project team members and stakeholders are aware of the project structure, requirements and processes. It sets a clear route through the project and provides a benchmark upon which the programme will be measured against.</p>

Management Case Summary

A project specific governance structure has been created based on established and operating governance arrangements for schemes currently being delivered by Blackburn with Darwen Borough Council, adapted to reflect the specific requirements of devolved Local Major Scheme governance.

The Lancashire Local Enterprise Partnership (LEP) will adopt the corporate / programme management role.

Blackburn with Darwen Borough Council has established a Project Board and Project Working Groups to support the delivery of schemes seeking Growth Deal funding. The Board will take ownership of the North Blackburn scheme, and also report progress to the LEP. The Board will also have overall responsibility for governance and risk associated with the delivery of the scheme.

The Project Executive will be responsible for managing and overseeing the Risk Management Strategy and where appropriate agreeing and undertaking actions to mitigate key risks. The Project Manager will be responsible for maintaining and updating a Quantified Risk Register and undertaking actions to mitigate the risks that do not require escalation to the Project Executive.

The key go/no-go date for the scheme will be the 16th October 2018 for the TfL board meeting and the 6th November 2018 for the LEP meeting when the scheme will seek full approval for funding for the North Blackburn scheme.

As the accountable body for the LEP, LCC will provide the overall assurance role, in order to ensure that decisions and activities comply with legal requirements, the use of funds is accounted for and reported, that appropriate records of decisions and proceedings are published and that the assurance framework is being adhered to.

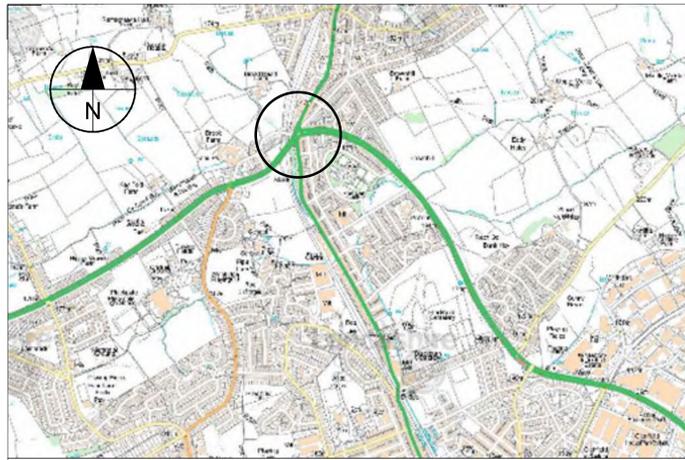
Risks associated with the overall delivery of the LEP's investment programme will be managed according to the overall monitoring responsibilities set out in the LEP's Accountability Framework. This framework requires risk registers to be produced, maintained and updated each month for individual schemes, once approved. A number of key risks (that could add significant cost or delay to the scheme) have already been identified as part of the appraisal process, along with possible mitigating measures.

Risk management activities and risk registers are already in place as part of ongoing Blackburn with Darwen Borough Council's scheme delivery work.

A Benefits Realisation, Monitoring and Development Plan has been developed to provide a framework for monitoring and evaluation, fulfilling the requirements of the LEP Accountability Framework and necessary for reporting to central government.

The project will be managed in line with the principles of PRINCE2.

Appendix A – Proposed Scheme Drawings



LOCATION PLAN
Not to scale



NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF CAPITA.
2. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.
3. ALL DIMENSIONS IN METRES UNLESS OTHERWISE STATED.

KEY:

- SITE BOUNDARY
- PROPOSED CARRIAGEWAY RESURFACING
- PROPOSED FOOTWAY RESURFACING / LANDSCAPING
- FOOTWAY OVERLAY
- PROPOSED LANDSCAPE MATERIALS. SEE DRAWING BROW-CAP-ELS-00-DR L-15-1100
- PROPOSED LANDSCAPE MATERIALS. SEE DRAWING BROW-CAP-ELS-00-DR L-15-1100

Rev	DR	DV	CHKD	APPRD	DESCRIPTION	DATE

Purpose of Issue
D1 - ISSUE FOR COSTING

Classification
COMMERCIAL IN CONFIDENCE

Client
**BLACKBURN WITH DARWEN B.C
TOWN HALL
BLACKBURN BB1 7DY**

Project
**GROWTH DEAL 3 -
NORTH BLACKBURN**

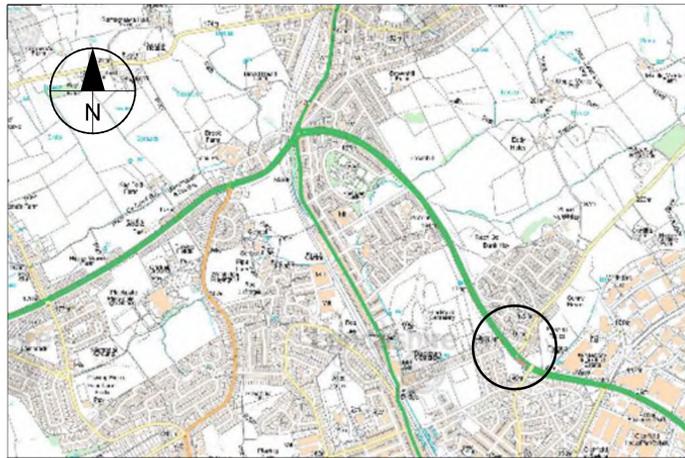
Drawing
**BROWNHILL
GENERAL ARRANGEMENT**

Scale	Drawn	Checked	Approved
1:500	DR	DV	APN

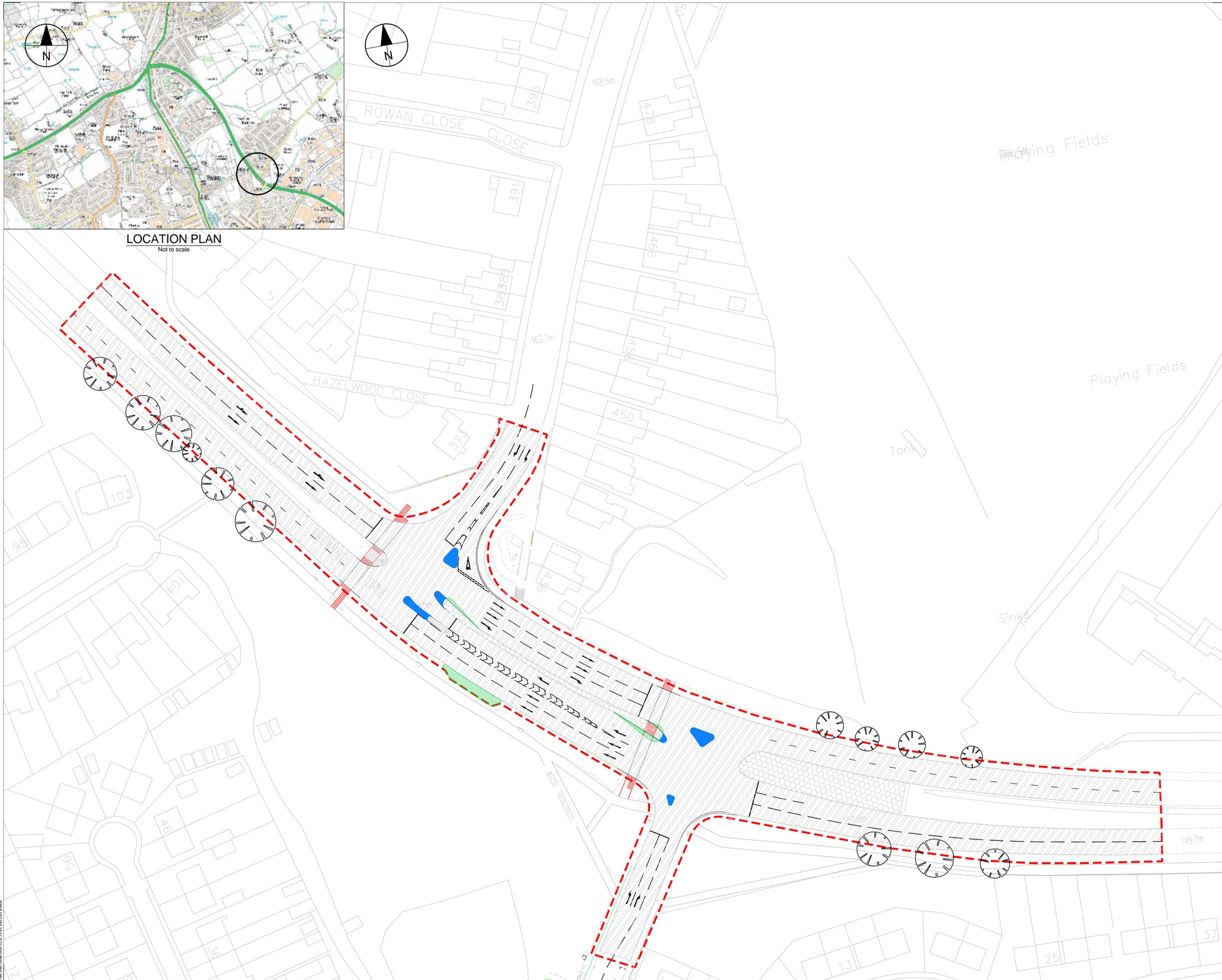
Project No.	Date
CS/093641	18/04/2018

Drawing Identifier	Revision
BROW-CAP-HGN-00-DR-CH-0100	P01

CAPITA
Highways
CastleWay House, 17 Preston New Road, Blackburn, BB2 1AU
01254 273000
www.capitaproperty.co.uk
Capita Property and Infrastructure Ltd.



LOCATION PLAN
Not to scale



NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS. ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF CAPITA.
2. ALL DIMENSIONS TO BE CHECKED BEFORE COMMENCEMENT OF WORK ON SITE.
3. ALL DIMENSIONS IN METRES UNLESS OTHERWISE STATED.

KEY:

- SITE BOUNDARY
- PROPOSED CARRIAGEWAY RESURFACING
- PROPOSED FOOTWAY RESURFACING
- NARROW WIDENING
- FOOTWAY OVERLAY
- TACTILE PAVING
- PROPOSED LANDSCAPE MATERIAL. SEE DRAWING: WOR-CAP-ELS-00-DR-L-15-1200

Rev	DR	DV	TENDER	APPROVAL	DATE
1	DR	DV			JULY 18

Purpose of Issue
D1 - ISSUE FOR TENDER

Classification
COMMERCIAL IN CONFIDENCE

Client
**BLACKBURN WITH DARWEN B.C
TOWN HALL
BLACKBURN BB1 7DY**

Project
**GROWTH DEAL 3 -
NORTH BLACKBURN**

Drawing
**WHALLEY OLD ROAD
GENERAL ARRANGEMENT**

Scale	Drawn	Checked	Approved
1:500	DR	DV	APN

Project No.	Date
CS/093641	16/07/2018

Drawing Identifier	Revision
WOR-CAP-HGN-00-DR-CH-0100	P01

CAPITA
Highways
CastleWay House, 17 Preston New Road, Blackburn, BB2 1AU
01254 273000
www.capitaproperty.co.uk
Capita Property and Infrastructure Ltd.

Plot Plan: 16/06/2018 13:19:30 BY: DR: CAP: R:MMH
 © Capita Property and Infrastructure Ltd. S:\PROJECTS\CS093641 - Brownhill roundabout (BR00)\03 Delivery\HGN HeavyGreen\03 Drawings\0 Whalley Old Road final drawings\WOR-CAP-HGN-00-DR-C-0100 GA Whalley Old Road.dwg

Appendix B – Feasibility Report

North Blackburn GD3 Transport Feasibility Report November 2017



Quality Management

Job No	CS/093641-03		
Project	North Blackburn GD3		
Location	Blackburn		
Title	Transport Feasibility Report		
Document Ref	RLFS-CAP-XX-RP-T-010	Issue / Revision	Draft/RevA
File reference	S:\Transport_Planning\Transport Planning Jobs\CS093641-03 - Roe Lee Transport Feasibility\05 Record\04 Reports\RLFS-CAP-XX-RP-T-010 - Roe Lee Feasibility Report.docx		
Date	November 2017		
Prepared by 1	Katie Knight	Signature (for file)	KK
Prepared by 2	Calum Brown	Signature (for file)	CB
Prepared by 3		Signature (for file)	
Checked by	Kateryna Krychkavych	Signature (for file)	KK
Checked by 1		Signature (for file)	
Authorised by	Walter Aspinall	Signature (for file)	WA

Revision Status / History

Rev	Date	Issue / Purpose/ Comment	Prepared	Checked	Authorised
A	11/17	Draft for Comments	KK/CB	KK	WA

Contents

2. Introduction	1
2.1 Overview	1
2.2 Background	2
2.3 Purpose of the Report	4
2.4 Structure of the Feasibility Report	5
3. Baseline Conditions	6
3.1 Brownhill Roundabout	6
3.2 Pleckgate Junction	8
3.3 Site Visit	11
3.4 Summary of Site Constraints	18
4. Accident Analysis	20
4.1 Overview	20
4.2 Accident History	20
4.3 Conclusion	24
5. Option Identification	25
5.1 Overview	25
5.2 Brownhill Roundabout	25
5.3 Pleckgate Junction	27
6. Junction Modelling	29
6.1 Modelling Software	29
6.2 Traffic Flows	29
6.3 Modelling Approach	29
6.4 Brownhill Roundabout	30
6.5 Sensitivity Test	30
6.6 Pleckgate Junction	32
7. Summary & Recommendation	34
7.1 Summary	34
7.2 Recommendations	34

Figures

Figure 1-1 Extent of Feasibility Report	1
Figure 1-2 Yew Tree Drive Access Locations	2
Figure 1-3 Parsonage Road Development Access Locations	3
Figure 1-4 Roe Lee Site Access Location	4
Figure 2-1 Extent of Brownhill Roundabout	6
Figure 2-2 Extent of the Pleckgate Junction	9
Figure 2-3 Educational Facilities in the Vicinity of Pleckgate Road	10
Figure 2-4 HGV blocking A666 Whalley New Road Exit	11
Figure 2-5 On-Street Parking Available on the A666 Whalley New Road (N)	12
Figure 3-6 Incorrect Tactile Paving on Brownhill Roundabout	13
Figure 2-7 On - Street Parking Narrowing the Carriageway	13

Figure 2-8 Vehicle Turning Right onto Haston Lee Avenue	14
Figure 2-9 Heavy Right Movement on Brownhill Drive	15
Figure 2-10 Whalley Old Road Junction Location	16
Figure 2-11 Storage Capacity for Right Movement onto Whalley Old Road (N)	17
Figure -12 Queues Along the A6119 Whitebirk Drive	18
Figure 2-13 Constraint Locations	18
Figure 3-1 Accident Data at Brownhill Roundabout	20
Figure 3-2 Accident Data for the Pleckgate Junction	22
Figure 3-3 Accident Data for the Whalley Old Road Staggered Junction	23

Tables

Table 2-1 Summary of Constraints	19
Table 3-1 Accident Data History - Brownhill Roundabout	21
Table 3-2 Accident Data History - Whalley Old Road Junction	23
Table 5-1 Brownhill Roundabout Option Modelling Results	30
Table 5-15 Whalley Old Road Junction - 2023 (Five Year Assessment)	31
Table 5-17 Brownhill Roundabout – 50% Adjustment (2023)	32
Table 5-9 Pleckgate Junction Option Modelling Results	32

Appendices

Appendix A - Brownhill Roundabout Option Drawings
Appendix B – Pleckgate Junction Option Drawings
Appendix C - Traffic Flow Diagrams
Appendix D - Modelling Reports

2. Introduction

2.1 Overview

Capita Real Estate and Infrastructure Limited (Capita) has been commissioned by Blackburn with Darwen Borough Council (BwDBC) to produce a Feasibility Report to identify a preferred option for improvements at the following two junctions located in North Blackburn:

- 1 – A6119 Brownhill Drive and Ramsgreave Drive / A666 Whalley New Road signalised roundabout (Brownhill Roundabout)
- 2 - Pleckgate Road / A666 Ramsgreave Drive signalised junction (Pleckgate Junction)

The location of the junctions is illustrated in Figure 2-1 below.

Figure 2-1 Extent of Feasibility Report



2.2 Background

Policy CS 6: Housing Targets of the BwDBC Core Strategy (adopted January 2011) sets out to provide a total of 9,365 net additional dwellings between 2011 and 2026.

To achieve the additional dwelling requirement, planning applications for the following three sites located within North Blackburn have been submitted:

- Land adjacent to the A6119 Ramsgreave Drive and Yew Tree Drive, a total of 575 dwellings (Awaiting Decision - Ref: 10/17/0578) ;
- Land adjacent to Parsonage Road, Wilpshire, a total of 85 dwellings (Application Approved - Ref : 10/14/0547); and
- Land at the Roe Lee Site, a total of 200 additional dwellings.

2.2.1 Yew Tree Drive Development

The Yew Tree Drive development site is split into two parcels of land both located to the north of the A6119 Yew Tree Drive and the A6119 Ramsgreave Drive. It is proposed that up to 575 residential dwelling would be development at the site. The western portion of the site would take access from Whinney Lane and a new access on the A6119 Yew Tree Drive. The eastern portion of the site would take access from a new access on the A6119 Ramsgreave Drive. The access locations are illustrated in Figure 2-2 below.

Figure 2-2 Yew Tree Drive Access Locations



2.2.2 *Parsonage Road Development Site*

The Parsonage Road development site is located north of Parsonage Road in Wilpshire. A total of 85 residential dwellings would be development at the site. The primary access to the site would be taken from Parsonage Road, and a secondary 'low key' access would be taken from Belvedere Road. Access locations are illustrated in Figure 2-3 below.

Figure 2-3 Parsonage Road Development Access Locations



2.2.3 *Roe Lee Development Site*

The Roe Lee development site is located to the south of the A6119 Ramsgreave Drive between the Brownhill Roundabout and the Pleckgate Junction, as shown in Figure 2-4 overleaf. A Transport Assessment (TA) has been previously prepared by Capita to assess the potential traffic impact of the Roe Lee development on the local highway network. The TA included capacity assessment of the adjacent Brownhill Roundabout and Pleckgate Junction, considering the residential development for 575 dwellings (land adjacent to the A6119 Ramsgreave Drive and Yew Tree Drive) and the residential development for 85 dwellings (land adjacent to Parsonage Road) as committed developments. The results of the capacity assessments demonstrated that trips that would be generated by three proposed residential

developments would have a detrimental impact on the local highway network, particularly at the Brownhill Roundabout and Pleckgate Junction.

As part of the Roe Lee proposals, the development would be accessed from the A6119 Ramsgreave Drive and as such the access arrangement for the Roe Lee site has been also considered within this Feasibility Report.

Figure 2-4 Roe Lee Site Access Location



2.3 Purpose of the Report

As mentioned in Section 1.2, the 860 dwellings proposed at the three sites in North Blackburn would have a detrimental impact on the local highway network, and thus improvements to the infrastructure to increase capacity at the Brownhill Roundabout and Pleckgate Junction would be required.

This Feasibility Report seeks to understand the existing operational capacity of the Brownhill Roundabout and Pleckgate Junction. The main consideration is then given to options which would improve the existing operational capacities of the junctions and provide increase capacity for trips likely to be generated by the proposed residential dwellings.

This Feasibility Report therefore seeks to offer a recommendation on the preferred improvement option for each junction.

2.4 Structure of the Feasibility Report

The remainder of this Feasibility Report will take the following structure:

Chapter 2 – Baseline Conditions

Chapter 3 – Accident Analysis

Chapter 4 – Option Identification

Chapter 5 – Junction Modelling

Chapter 6 – Summary and Conclusions

3. Baseline Conditions

3.1 Brownhill Roundabout

The A6119 Brownhill Drive and Ramsgreave Drive / A666 Whalley New Road junction (known as Brownhill Roundabout) is a five-arm asymmetrical signalised roundabout with the northern and southern arms formed by the A666 Whalley New Road, eastern arm formed by the A6119 Brownhill Drive and the western arm formed by the A6119 Ramsgreave Drive. The fifth arm of the roundabout is formed by Pleckgate Road which is an access only arm to a small residential area. The extent of the junction is illustrated in Figure 3-1 below.

Figure 3-1 Extent of Brownhill Roundabout



The A6119 Brownhill Drive and Ramsgreave Drive have three lanes on the approach to the Brownhill Roundabout, comprising of two long lanes, and one short lane able to accommodate approximately ten PCUs for the right-turn movement. Both the A666 Whalley New Road northern and southern arms of the junction have two long lanes on the approaches to the Brownhill Roundabout.

Signalised pedestrian crossings are provided across the A666 Whalley New Road northern and southern arms and the A6119 Brownhill Drive arm, with no crossing facilities provided across the A6119 Ramsgreave Drive arm of the roundabout junction. Dropped kerbs are provided across the Pleckgate Road arm of the Brownhill Roundabout, which is a one-way access only road.

3.1.1 The A666 Whalley New Road

The A666 is an important part of the strategic road network, providing access into Blackburn Town Centre to the south, and connections to Brownhill, Wilphire, Lango, Ribchester, and Clitheroe to the north. Near the Brownhill Roundabout the A666 Whalley New Road is a single carriageway subject to a 30-mph speed limit. Footways and street lighting are provided on either side of the road.

To the north of the Brownhill Roundabout a parking bay approximately 33m long is provided along the western side of the carriageway adjacent to Mazda car showroom, which can accommodate approximately five cars.

Double yellow lines are provided along both sides of the A666 Whalley New Road (north of Brownhill Roundabout) for approximately 45m. No stopping is permitted Monday to Friday 08:00 – 09:30 (and no loading) on the eastern side of the carriageway further to the north until the junction with Haston Lee Avenue. No parking restrictions apply along the western side of the carriageway until approximately 10m to the south of the junction with Beech Mount.

To the south of the Brownhill Roundabout, the A666 Whalley New Road is bounded by residential dwellings to the east and grassland to the west. Double yellow lines are provided along the western side of the A666 Whalley New Road until the junction with Opal Street. Parking is unrestricted further to the south. There are no parking restrictions along the eastern side of the carriageway. Footways and street lighting are provided on either side of the road.

To the north of Brownhill roundabout, the bus stops are located approximately 70m and 180m from the junction, and to the south the bus stops are located approximately 80m and 105m from the junction.

3.1.2 The A6119 –Brownhill Drive and Ramsgreave Drive

The A6119 forms half a ring around Blackburn and is considered as a busy local route around Blackburn, which provides access to Junction 6 of the M65 motorway and the strategic road network. The A6119 is a two-lane dual carriageway, with a wide grassed central reservation,

subject to a 50pmh speed limit. The speed limit is however reduced to 30mph on the approach to Brownhill Roundabout.

The A6119 Ramsgreave Drive is bounded by residential dwellings to the north, which take their access directly from the dual carriageway. To the south, the A6119 Ramsgreave Drive is bounded by open grassland where the Roe Lee development would be located (see Section 1.2.1 of this Feasibility Report). Footways and street lighting are provided on either side of the road. No on street parking is permitted along the A6119 Ramsgreave Drive.

The A6119 Brownhill Drive is bounded by residential dwellings along the northern and southern side of the carriageway, with footways and street lighting provided on both sides.

A bus stop is located approximately 80m from Brownhill Roundabout on the A6119 Brownhill Drive exit arm, after which a parking bay of approximately 80m long is provided for on-street parking. On the southern side of the carriageway double yellow lines are provided from Brownhill Roundabout to the Roe Lee Park junction.

3.2 Pleckgate Junction

The Pleckgate Road / Ramsgreave Drive signalised junction (further referred as Pleckgate Junction for this Feasibility Report), is a four-arm signalised junction formed by Pleckgate Road (B6232) and the A6119 Ramsgreave Drive. The extent of the junction is illustrated in Figure 3-2 overleaf.

Figure 3-2 Extent of the Pleckgate Junction

The A6119 Ramsgreave Drive (both eastern and western arms) has three lanes on the approach to the Pleckgate Junction, comprising of two long lanes, and one short lane able to accommodate approximately three PCUs for the right-turn movement. Pleckgate Road is a single lane, with a short flare of approximately 3m on the northern and southern approach to the Pleckgate Junction.

Signalised pedestrian crossings are provided across the A6119 Ramsgreave Drive (both eastern and western arms). Uncontrolled pedestrian crossing (with dropped kerbs and central refuge island) is provided across Pleckgate Road southern arm of the junction and no crossing facilities are provided across Pleckgate Road northern arm of the junction.

3.2.1 *Pleckgate Road*

Pleckgate Road provides access into Blackburn Town Centre, via the A6078 Barbara Castle Way and is subject to a 30-mph speed limit. To the north of the Pleckgate Junction, Pleckgate Road provides an access to a small residential area, a community centre, a bakery and construction unit.

To the south, Pleckgate Road provides an access to a residential area and several educational facilities including: Pleckgate High School, St. Gabriel's C of E Primary School, Holy Souls Roman Catholic Primary School and St. Mary's College. Traffic associated with the educational facilities has a detrimental impact on Pleckgate Road, more so within the AM peak period, as observed during the site visit. The location of Pleckgate Junction in relation to the educational facilities is illustrated in Figure 3-3 below.

There are no parking restriction along Pleckgate Road, both to the north and the south of the Pleckgate Junction, with on-street parking taking place as observed during the site visit.

Figure 3-3 Educational Facilities in the Vicinity of Pleckgate Road



The A6119 Ramsgrave Drive west of the Pleckgate Junction is a two-lane carriageway in each direction, with a speed limit of 50mph which is reduced to 30mph on the approach to the junction. To the north and south of the carriageway the A6119 Ramsgrave Drive is bounded by residential dwellings, with the dwellings on the northern carriageway taking their access directly from the dual carriageway. Footways and street lighting are provided on either side of the A6119 Ramsgrave Drive.

3.3 Site Visit

On site observations at the Brownhill Roundabout and Pleckgate Junction took place within the AM and PM peak periods on Wednesday 19th July 2017. On site observations also took place at the A6119 Brownhill Drive and Whitebirk Drive / Whalley Old Road junction within the PM peak period.

3.3.1 *Brownhill Roundabout*

The AM peak period observations showed that most traffic at the Brownhill Roundabout originated from the A666 Whalley New Road northern approach, with queues backing up over 300m from the junction entrance. The queue observed was slow moving, and could not clear within one cycle of the traffic signal staging sequence.

The A666 Whalley New Road is a single lane carriageway which increases to a two-lane carriageway approximately 60m from the junction. During the AM, peak period observations, a Heavy Goods Vehicle (HGV) was unloading in front of the Co-Operative food store, on the western side of the carriageway. The HGV therefore blocked the carriageway which led to vehicles overtaking the HGV and blocking oncoming traffic, and thus causes the underutilisation of the secondary lane on the A666 Whalley New Road approach. The duration of the HGV stay was approximately 5-10 minutes, and anecdotal information suggests such activity occurs regularly during the week day AM period, as illustrated in Figure 3-4.

Figure 3-4 HGV blocking A666 Whalley New Road Exit



As can be seen in Figure 3-4, a bus stop is located directly adjacent to the Co-Operative food store, and when buses are utilising this bus stop, vehicles are also forced to overtake and block oncoming traffic along the A666 Whalley New Road approach.

On street parking is also available on the western side of the A666 Whalley New Road. However, this was not utilised within the AM peak period observations as illustrated in Figure 3-5 below.

Figure 3-5 On-Street Parking Available on the A666 Whalley New Road (N)



On site observations found that the pedestrian crossing facilities at the Brownhill Roundabout are not in accordance with industry standards, with incorrect tactile paving provided as illustrated in Figure 3-6 overleaf. The tactile paving therefore presents a safety concern for disabled pedestrians.

Figure 3-6 Incorrect Tactile Paving on Brownhill Roundabout



Observations in the PM peak period revealed that the queue lengths on the approach to the Brownhill Roundabout were significantly less than observed within the AM peak period.

On street parking along the A666 Whalley New Road was utilised within the PM peak period. However, on street parking was also present on double yellow lines and sections of the carriageway where parking is prohibited, as illustrated in Figure 3-7 below.

Figure 3-7 On - Street Parking Narrowing the Carriageway



It was observed that the right-turn movement from the A666 Whalley New Road onto Haston Lee Avenue results in full blocking of the carriageway exacerbated by on-street parking when this occurs, as illustrated in Figure 3-8 below.

Figure 3-8 Vehicle Turning Right onto Haston Lee Avenue



Queues were also observed at the A666 Whalley New Road exit. The A666 Whalley New Road exit is a two-lane carriageway which merges into one lane within a short section. The PM peak period observations revealed that queues formed within both lanes and backed onto the junction.

During the AM peak period site observations showed queues forming along the A6119 Ramsgreave Drive approach, however the queues would clear within one cycle of the traffic signal staging sequence. Likewise, queues along the A6119 Brownhill Drive approach would clear within one cycle of the traffic signal staging sequence.

In the PM peak period, it was observed that the A6119 Brownhill Drive approach experienced a heavy right turn demand within the PM peak period. The A6119 Brownhill Drive right-turn demand exceeded the storage capacity which consequently blocked the main carriageway, as illustrated in Figure 3-9 below.

Figure 3-9 Heavy Right Movement on Brownhill Drive



3.3.2 *Pleckgate Junction*

On site observations within the AM peak period showed that traffic associated with Pleckgate High School, St. Gabriel's C of E Primary School, Holy Souls Roman Catholic Primary School and St. Mary's College all impact on Pleckgate Road (the location of the educational facilities is illustrated in Figure 3-3). The associated pick-up / drop-off activity can lead to the blocking back along Pleckgate Road as far as A6119 Ramsgreave Drive although this doesn't appear to impact significantly on the junction's operation.

Along the A6119 Ramsgreave Drive western arm, right-turn demand onto Pleckgate Road can cause storage capacity of right-turn lane to be exceeded. However, queue lengths in the ahead lanes do not exceed a single cycle of the traffic light stages.

3.3.3 *Whalley Old Road Junction*

As outlined above, on site observations found a high right-turn demand from the A6119 Brownhill Drive at Brownhill Roundabout. It was considered that the high right-turn demand could be the result of existing issues at the A6119 Brownhill Drive and Whitebirk Drive / Whalley Old Road junction (further referred to as Whalley Old Road Junction in this Feasibility Report).

The extent of the junction is illustrated in Figure 3-10 below.

Figure 3-10 Whalley Old Road Junction Location



The Whalley Old Road Junction is a signalised staggered junction, with the A6119 Brownhill Drive and Whitebirk Drive forming the major arms and Whalley Old Road forming the minor arms of the junction.

On the approach to the junction, the A6119 Whitebirk Drive has three lanes, comprising two long lanes, and one short lane able to accommodate approximately three PCUs for a right-turn movement. The A6119 Brownhill Drive and Whalley Old Road each have two lanes on the approaches to the junction. No pedestrian crossing facilities are provided at the Whalley Old Road Junction.

On the approach to the junction the A6119 Brownhill Drive & Whitebirk Drive is a two-lane dual carriageway in each direction, with a speed limit of 50mph, wide grassed central reservation and street lighting along the entire road length. Footways are provided along both sides of the A6119 Brownhill Drive carriageway, while footways on the A6119 Whitebirk Drive are provided along the southern side of the carriageway only.

Whalley Old Road is a single lane carriageway in each direction. To the south Whalley Old Road provides access to Blackburn Town Centre. To the north Whalley Old Road provides connections to Lango, Whalley and Clitheroe. Whalley Old Road is bounded by residential

dwelling along both sides of the carriageway. Footways and street lighting also provided along both sides of the road.

During the site visit it was observed that the Whalley Old Road Junction currently operates with capacity issues with a dedicated right turn lane for a right turn onto Whalley Old Road (N) being fully blocked by traffic originating from Whalley Old Road (S) before green time is allocated to the A6119 Whitebirk Drive approach. Traffic originating from the A6119 Whitebirk Drive instead of turning right at this location therefore proceeds straight through the junction and makes a right turn at the Brownhill Roundabout, as seen within Figure 3-11 below and Figure -12 overleaf.

Figure 3-11 Storage Capacity for Right Movement onto Whalley Old Road (N)



Inspection of the site signal controller specification indicates that the junction currently operates with fixed time control with common green times applied throughout the day. This suggests that the junction may not be operating efficiently and could benefit from changes to the signal timings or through installation of intelligent signal controller to adjust green times based on demand (MOVA).

Figure -12 Queues Along the A6119 Whitebirk Drive



3.4 Summary of Site Constraints

A summary of the site constraints for the Brownhill Roundabout and the Pleckgate Junction are illustrated and presented in Figure 3-13 below and Table 3-1 overleaf.

Figure 3-13 Constraint Locations



Table 3-1 Summary of Constraints

Ref.	Constraint	Effect of Constraint
1	Right-turn movement from A666 (NB) onto Haston Lee Avenue	<ul style="list-style-type: none"> Right-turn movement blocks the A666 (NB) traffic flow
2	On-street, legal & illegal parking	<ul style="list-style-type: none"> On-street legal & illegal parking observed narrowing the carriageway and restricting the A666 (NB) traffic flow
3	Service Delivery and Bus Stop	<ul style="list-style-type: none"> HGV stopping for deliveries and buses stopping due to bus stop. As the results, the SB movement is affected by NB vehicles overtaking HGV & buses
4	Tactile paving at signalised crossing not in accordance with industry standards	<ul style="list-style-type: none"> Safety concern for disabled pedestrians using the crossing facilities
5	Heavy demand for right turn movement onto the A666 – Whalley New Road (N)	<ul style="list-style-type: none"> High demand for right turn movement causing storage capacity to be exceeded as a result of blocking of straight ahead movement on the main carriageway
6	Right turn demand onto Pleckgate Road (S)	<ul style="list-style-type: none"> Storage capacity of right turn pocket exceeded during school peak hours Blocking of straight ahead movement on the main carriageway
7	No pedestrian crossing facilities	<ul style="list-style-type: none"> Safety concern for pupils walking to St. Gabriel's C of E Primary School and Holy Souls Roman Catholic Primary School
8	High traffic demand on Pleckgate Road as a result of school traffic	<ul style="list-style-type: none"> Increase in the on-street parking experienced on Pleckgate Road Vehicles blocking back along Pleckgate Road as far as Ramsgreave Drive
9	Whalley Old Road inefficient signal timings	<ul style="list-style-type: none"> Increasing the right turn demand at Brownhill Roundabout

4. Accident Analysis

4.1 Overview

The following section examines most recent available accident data for a five-year period from 2012 to 2016 recorded at the Brownhill Roundabout, Pleckgate Junction and the Whalley Old Road Junction.

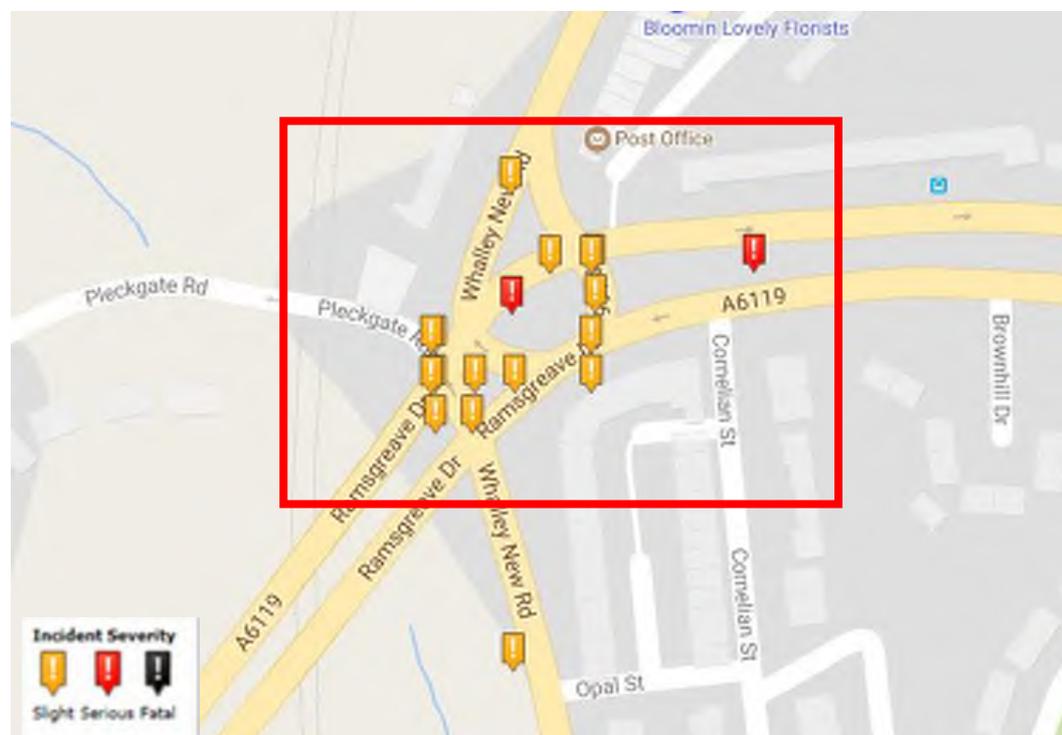
4.2 Accident History

Accident data history for the three junctions has been obtained from the Crash Map¹ database for the most recent available five-year period (2012 to 2016).

4.2.1 Brownhill Roundabout

Personal Injury Collisions (PIC) recorded at the Brownhill Roundabout are illustrated in Figure 4-1 below, while a breakdown of casualty severity and type is presented within Table 4-1 overleaf.

Figure 4-1 Accident Data at Brownhill Roundabout



¹ <http://www.crashmap.co.uk/>

Table 4-1 Accident Data History - Brownhill Roundabout

Year	Severity	Number of Vehicles Involved	Casualties Involved
2012	Slight	2	-
2012	Serious	2	Cyclist
2012	Slight	2	-
2012	Slight	2	-
2012	Slight	2	-
2013	Slight	2	-
2013	Slight	2	-
2013	Slight	2	-
2013	Slight	1	-
2014	Slight	2	-
2015	Slight	2	-
2015	Slight	2	-
2016	Serious	1	Pedestrian
2016	Slight	2	-
2016	Slight	2	Child
2016	Slight	2	-
2016	Slight	2	-

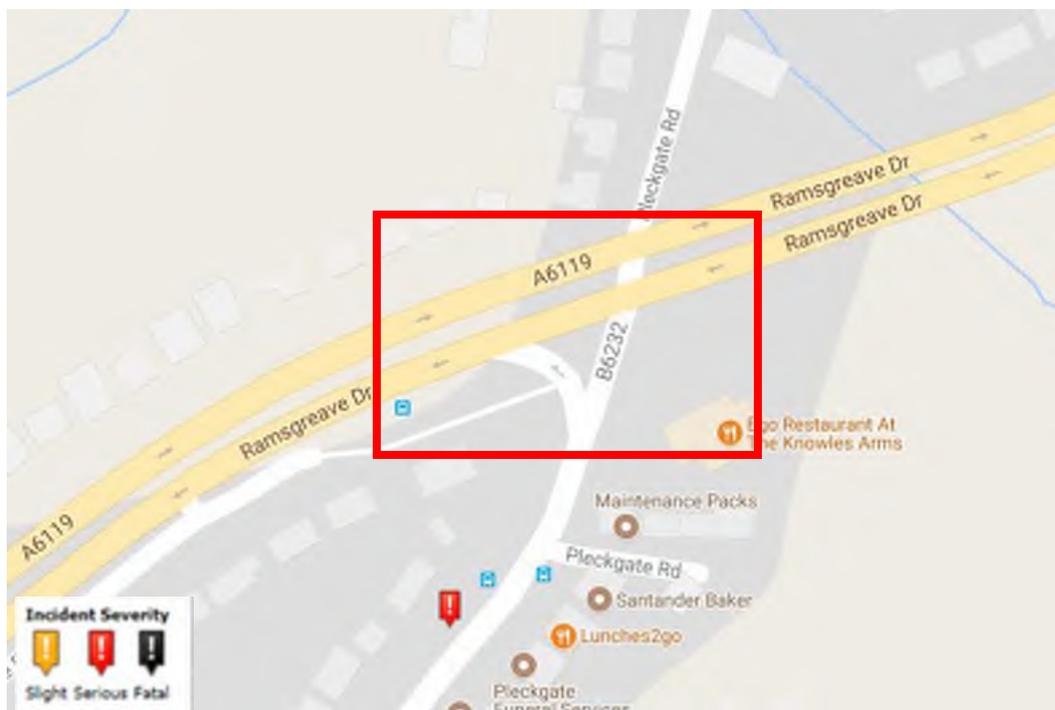
Table 4-1 shows there have been a total of 17 accidents over the most recent available five-year period at the Brownhill Roundabout. The PICs resulted in 15 slight casualties and two serious casualties, comprising of one pedal cyclist, one pedestrian, one child and 14 'other' casualties, with no fatal PICs recorded. In total 17 PICs recorded equates to an accident rate of 3.4 PICs per annum.

4.2.2 *Pleckgate Junction*

PICs recorded at the Pleckgate Junction are illustrated in Figure 4-2 below.

It is apparent from Figure 4-2 that there have been no recorded PICs at the Pleckgate Junction in the most recent available five-year period, therefore no identified road safety issues at the Pleckgate Junction.

Figure 4-2 Accident Data for the Pleckgate Junction



4.2.3 *Whalley Old Road Staggered Junction*

PICs recorded at the Whalley Old Road Junction are illustrated in Figure 4-3 overleaf, while a breakdown of casualty severity and type can be found within Table 4-2 overleaf.

Figure 4-3 Accident Data for the Whalley Old Road Staggered Junction



Table 4-2 Accident Data History - Whalley Old Road Junction

Year	Severity	Number of Vehicles Involved	Casualties Involved
2012	Slight	2	-
2013	Sight	2	-
2014	Slight	2	-
2014	Slight	2	-
2016	Slight	2	-

Table 4-2 shows there have been a total of five accidents over the most recent available five-year period at the Whalley Old Road Junction. The PICs resulted in six slight casualties involving cars only. In total six PICs recorded equates to an accident rate of 1.2 PICs per annum.

4.3 Conclusion

The results of the accident analysis show that when considering the PICs per annum for the most recent available five-year period (2012-2016) accidents recorded are low, with no pattern of common causation identified.

5. Option Identification

5.1 Overview

This section of the Feasibility Report presents the options for the improvements at the Brownhill Roundabout and the Pleckgate Junction, and provides a description of what each option would entail.

Three options have been identified for the Brownhill Roundabout and four options have been identified for the Pleckgate Junction.

5.2 Brownhill Roundabout

The options proposed for the improvement of the Brownhill Roundabout have been identified through a review of the existing traffic flows at the junction and modelling of the existing junction arrangement.

Brownhill Roundabout Option One – Low Cost, Optimised Signals

Option One is a low-cost option and does not include any geometric changes to the junction arrangement, the option would provide the following:

- New signal equipment with revised signalisation; and
- Existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards.

Brownhill Roundabout Option Two – Geometric Changes to Internal Layout

The proposed layout of Brownhill Roundabout junction incorporates the following improvements as shown in Appendix A:

- Reduce central reserve width along Brownhill Drive to provide three lanes on the approach;
- Provision of three lanes on the Ramsgreave Drive approach, with a dedicated right turn lane;
- Provision of cycle lanes through the junction with advance stop lines; and
- Existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards.

Brownhill Roundabout Option Three - Crossroads

Option Three would provide an upgrade of the five-arm asymmetrical signalised roundabout to a signalised junction. Option Three of the proposal is shown in Appendix B and would provide the following:

- Removal of the central island within the junction and stop lines moved forward;
- Reduce central reserve width along Brownhill Drive to provide three lanes on the approach with a dedicated right turn lane;
- Provision of three lanes on the Ramsgreave Drive approach, with a dedicated right turn lane;
- Provision of cycle lanes on the approaches to the junction with advance stop lines; and
- Existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards.
- Maintains two ahead lanes on the Whalley New Road (S) approach with a two lane exit with merge in turn to a single lane. The Whalley New Road (N) approach has 2 lanes.

Brownhill Roundabout Option Three B - Crossroads

Option Three B would provide an upgrade of the five-arm asymmetrical signalised roundabout to a signalised junction. Option Three B of the proposal is shown in Appendix B and would provide the following:

- Removal of the central island within the junction and stop lines moved forward;
- Reduce central reserve width along Brownhill Drive to provide three lanes on the approach with a dedicated right turn lane;
- Provision of three lanes on the Ramsgreave Drive approach, with a dedicated right turn lane;
- Provision of cycle lanes on the approaches to the junction with advance stop lines; and
- Existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards.
- Reduces the ahead movement allocation on Whalley New Road (S) approach to a single lane. The Whalley New Road (N) approach has 3 lanes as there is no longer a need for a merge section on Whalley New Road (N) exit lane.

5.3 Pleckgate Junction

The options proposed for the improvement of the Pleckgate Junction have been identified through on site observations, a review of existing traffic flows at the junction and modelling of the existing junction arrangement.

Pleckgate Junction Option One – Low Cost, Optimised Signals

Option One is a low-cost option and includes only minor geometric changes to the junction, the option would provide the following:

- New signal equipment with revised signalisation to include vehicle actuation signal control for the Pleckgate Road (N) approach;
- Existing pedestrian crossings upgraded to toucan crossings with tactile paving replaced to current standards; and
- Pleckgate Road northern arm green time to be called on demand only.

Pleckgate Junction Option Two – T-junction

Option Two improvements would provide a change of the existing four-arm signal junction to a three-arm signal junction as shown in Appendix C and summarised below:

- Change of the existing crossroad signalised T- junction, which would be achieved by Pleckgate Road (N) becoming a priority junction (left in – left out) onto the A6119 Ramsgreave Drive restricting the right turn or straight through movements from the A6119 Ramsgreave Drive (N);
- Relocation of the Pleckgate Road (S) arm approximately 2m to the west;
- Provision of a left turn lane from the A6119 (Ramsgreave Road E) onto Pleckgate Road (S); and
- Inclusion of signalised pedestrian crossings with central refuges across each of the three arms.

Pleckgate Junction Option Three - Roundabout

Option Three improvements would incorporate the change of the existing signalised crossroads to a three-arm standard roundabout. Option Four is shown in Appendix D and would provide the following:

- Pleckgate Road (N) becomes a priority junction onto the A6119 Ramsgreave Drive, with a left-in and left-out permitted movements only;
- The junction would be relocated approximately 5m to the west of the existing junction arrangement;
- Two lanes provided on the A6119 Ramsgreave Drive eastern and western approaches and one lane provided on the Pleckgate Road southern approach; and
- A shared footway/cycle lane provided along the A6119 Ramsgreave Drive and Pleckgate Road southern arm of the junction.

5.3.1 *Option Constraint*

Option Two and Option Three would not permit right-turn or straight ahead movement from the Pleckgate Road (N) arm of the junction. As Ramsgreave Drive is a dual carriageway road, with Option Two or Option Three being in place, traffic moving from Pleckgate Road (N) and wishing to join Pleckgate Road southbound or Ramsgreave Drive westbound would have to turn left out at the Pleckgate Junction and then make a U-turn at the Brownhill Roundabout.

However, if Option Three (crossroad arrangement) for the Brownhill Roundabout is identified as the preferred, it would need to be considered how traffic wishing to travel southbound along Pleckgate Road or westbound along Ramsgreave Drive would make the necessary U-turn.

6. Junction Modelling

6.1 Modelling Software

LinSig Version 3 and Junctions 8 software packages have been used to undertake modelling for the future year of 2023, which considers future growth and committed developments in North Blackburn.

The LinSig V3 computer program is used to predict capacities, queue lengths and delays at signalised junctions. LinSig presents results as a Degree of Saturation (DoS) and Mean Max Queue length on each approach to a signalised junction. It is generally accepted that a DoS value of 90% or less on individual links represents satisfactory signal operation. DoS values of between 90% and 100% represent variable operation which warrants further investigation and values more than 100% represent overcapacity conditions.

Junctions 8 software ARCADY mode is used to predict capacities queue lengths and delays at the roundabout junctions. ARCADY presents results as RFC (Ratio to Flow Capacity) values and average queue lengths on each approach to a roundabout. RFC value of 1 presents the ultimate capacity of a junction.

6.2 Traffic Flows

The traffic flows for the AM and PM peak periods at the Brownhill Roundabout and the Pleckgate Junction have been extracted from the Roe Lee TA prepared by Capita (submitted in July 2017).

Growth factors were derived using TEMPRO 7.2 for the Blackburn with Darwen Local Authority, using NTM adjusted factors and with manual adjustments made to the future households in accordance with the residential developments stated in Section 1.2. The traffic flows include the committed developments stated within Section 1.2 of this Feasibility Report. Traffic flow diagrams can be found within Appendix E of this Feasibility Report.

6.3 Modelling Approach

LinSig 3 and ARCADY has been used to undertake baseline modelling for the 2018 opening year, which includes the trips generated by the Parsonage Road development.

Modelling has also been completed for 2023 for a five-year assessment which includes all traffic generated by the committed developments.

The following scenarios have been modelled for each of the access junction options:

- 2018 (Future Year Assessment)
- 2023 (Five Year Assessment)

Full modelling reports can be found within Appendix F of this Feasibility Report.

6.4 Brownhill Roundabout

The summarised results from the modelling of options for Brownhill Roundabout are presented in below.

Table 6-1 Brownhill Roundabout Option Modelling Results

Degrees of Saturation %	2018		2023	
	AM	PM	AM	PM
Brownhill Option 1	102.60%	117.70%	117.30%	126.30%
Brownhill Option 2	87.50%	122.80%	100.40%	137.30%
Brownhill Option 3A	116.70%	98.20%	132.50%	110.00%
Brownhill Option 3B	103.00%	89.50%	116.60%	97.80%
Total Delay PCU Hrs	AM	PM	AM	PM
Brownhill Option 1	65.1	136.6	163.3	210.4
Brownhill Option 2	33.2	79	61.8	115.3
Brownhill Option 3A	173.3	72.9	314.1	186.3
Brownhill Option 3B	87.2	54.6	189.2	86.4

Table 6-1 shows that the best performing option in terms of degrees of saturation is Option 2 for the AM peak and Option 3B for the PM peak. junction is over capacity within the AM and PM peak periods. This is also the case for the Total Delay results at the junction.

6.5 Sensitivity Test

Regarding Section 3.3.3 it was observed during the site visit that the Whalley Old Road Junction currently operates over capacity with a dedicated right turn lane for a right turn onto Whalley Old Road (N) being fully blocked by traffic originating from Whalley Old Road (S) before green time is allocated to the A6119 Whitebirk Drive approach.

Traffic originating from the A6119 Whitebirk Drive instead of turning right at this location therefore proceeds straight through the junction and makes a right turn at the Brownhill Roundabout.

On inspecting the signal controller specification for the junction, it is evident that the junction is currently operating on a fixed time operation with the same timings applied to each stage throughout the day.

A sensitivity test has been carried out to assess the impact of signal time optimisation at the Whalley Old Road / Whitebirk Drive Junction and to consider the potential impact of improving the efficiency of this junction on the operational efficiency of the Brownhill Roundabout.

The results from the Whalley Old Road Junction signal optimization are summarised in Table 6-2 below.

Table 6-2 Whalley Old Road Junction - 2023 (Five Year Assessment)

Option	AM		PM	
	Deg of Saturation / RFC (%)	Total Delay (pcu/Hr)	Deg of Saturation / RFC (%)	Total Delay (pcu/Hr)
Existing	249.4%	112.0	249.4%	118.2
Optimised	91.5%	7.5	93.4%	10.4

The results show that operating the Whalley Old Road Junction with the current fixed time operation would result in the junction operating significantly over capacity, with a maximum DoS value of 249.4% in both the 2023 AM and PM peak periods.

The results from the optimisation of the signal timings show that the capacity at the junction would improve significantly, with a maximum DoS value of 91% and 93.4% in the AM and PM peak respectively.

It is considered that the improvement in capacity at the Whalley Old Road Junction would result in an increase in right-turn demand at the junction, which would therefore result in a corresponding decrease in the right-turn demand from the A6119 Brownhill Drive approach at the Brownhill Roundabout.

The associated decrease in a right-turn demand at the Brownhill Roundabout has been modelled assuming a 50% decrease in traffic flows performing a right turn manoeuvre from the A6119 Brownhill Drive onto Whalley New Road, with the results shown in Table 6-3 overleaf for each of the improvement options considered for the PM peak hour.

Table 6-3 Brownhill Roundabout – 50% Adjustment (2023)

Option	PM (Without Adjustment)		PM (With Adjustment)	
	Deg of Saturation / RFC (%)	Total Delay (pcuHr)	Deg of Saturation / RFC (%)	Total Delay (pcuHr)
Option 1	126.3%	210.4	81.5%	30.9
Option 2	137.3%	115.3	86.9%	33.9
Option 3	110.0%	186.3	95.9%	62.2
Option 4	97.8%	86.4	84.8%	50.6

Table 6-3 shows that a 50% decrease in right-turn movement from the A6119 Brownhill Drive approach at the Brownhill Roundabout would significantly improve the operation of the junction with Option 1 performing the best.

As such it is considered that the optimisation of signal timings at the Whalley Old Road / Whitebirk Drive junction (which has a very low cost implications) has the greatest potential to improve capacity at the Brownhill roundabout during the PM peak period (no 50% adjustment was made for the AM peak scenario).

6.6 Pleckgate Junction

The summarised results from the modelling of options for Brownhill Roundabout are presented in Table 6-4 below.

Table 6-4 Pleckgate Junction Option Modelling Results

Degrees of Saturation %	2018		2023	
	AM	PM	AM	PM
Option 1 A	101.30%	85.70%	116.30%	123.60%
Option 1 B	86.10%	77.50%	89.30%	80.70%
Option 2	66.00%	80.70%	82.00%	97.90%
Option 3	57.00%	53.00%	65.00%	62.00%
Total Delay PCU Hrs	AM	PM	AM	PM
Option 1 A	43.2	18.6	99.2	66.3
Option 1 B	18.5	13.6	23.9	17.5
Option 2	15.7	16.8	24.7	39.1
Option 3	2.6	2.2	3.6	3.1

The summarised results indicate that options 2 and 3 offer the best results. However, any benefits realised in these options are as a consequence of removing the Pleckgate Road (N) arm from the junction. The results presented for option 1 show the operation with the Pleckgate Road (N) included in the junction but being called every cycle (Option 1A) and every other cycle (Option 1B). As the demand for vehicles from Pleckgate Road (N) is very low it is likely that the demand for this stage in the signal staging could be less than every other cycle and as such it is even greater benefits could likely be achieved.

7. Summary & Recommendation

7.1 Summary

Capita Real Estate & infrastructure have been commissioned by Blackburn with Darwen Borough Council to consider a limited number of options for improvements at the junctions of Brownhill roundabout and the Ramsgreave Drive / Pleckgate Road signalised junction.

Following the analysis of data and the undertaking of site visits to understand the current conditions it is apparent that there are factors remote from these junctions that impact on the prevailing conditions during the typical weekday peak hours. As such, in addition to junction improvements at the locations identified, other measures have also been considered as part of this study.

The modelling of junction options has been undertaken and includes sensitivity tests to take account of other possible measures identified that may be of benefit to the peak hour operation of the local network.

In considering the Pleckgate Road / Ramsgreave Drive junction it is apparent that two of the improvement options identified would result in Pleckgate Road (N) becoming a left-in / left-out priority arm onto the dual carriageway section of Ramsgreave Drive. This would have a negative impact on those wanting to access and egress the residential properties and businesses accessed from Pleckgate Road (N) and result in negative impacts through redistribution of traffic on the local network.

It is apparent from site visits that the operation of the Brownhill roundabout is being impacted by indiscriminate parking to the front of the Co-op convenience store and properties on the opposite side of Whalley New Road which are close to the Brownhill Roundabout. It is also likely that the demand for right turners from Brownhill Drive to Whalley New Road during the PM peak period is impacted by the poor operation of the signalised junction of Whalley Old Road / Brownhill Drive.

7.2 Recommendations

At the Pleckgate junction it is recommended that a low-cost option which incorporates the Pleckgate Road (N) arm into the signalised junction on a demand dependant stage using vehicle actuation be progressed as the preferred option. While the other options identified offer the greatest benefit in terms of junction capacity, they do not fully take account of the wider

impacts and traffic management implications of changing Pleckgate Road (N) to a left-in / left-out priority arrangement.

In relation to the Brownhill roundabout it is considered that alterations to the PM signal timings at the Brownhill Drive / Whalley Old Road be made to reduce the right turn demand from Brownhill Drive to Whalley New Road at the Brownhill roundabout junction. Furthermore, it is recommended that a corridor study be undertaken along Whalley New Road between Brownhill Roundabout and Parsonage Road to review the layout of existing side road junctions, bus stops, parking bays etc. to improve the operation of the Brownhill roundabout and the local highway network.

Notwithstanding, the above recommendations it is apparent that the Brownhill junction is aged with signal equipment in place that is likely to be time expired and which includes pedestrian crossing facilities which do not meet current standards. On balance, it appears that Option 3B which would change the junction to a four-arm signalised junction (with a single exit lane on Whalley New Road (N)) and improved pedestrian and cycle facilities represents a preferred option.

However, as the capacity benefits which are likely to be realised are unlikely to be significant (particularly if the inflated demand for right turners can be resolved), an upgrade of the existing junction to replace signal equipment and upgrade the signal controllers and pedestrian / cycle facilities at the junction as a low-cost alternative would likely yield some improvements to all users.

Appendix A - Brownhill Roundabout Option Drawings