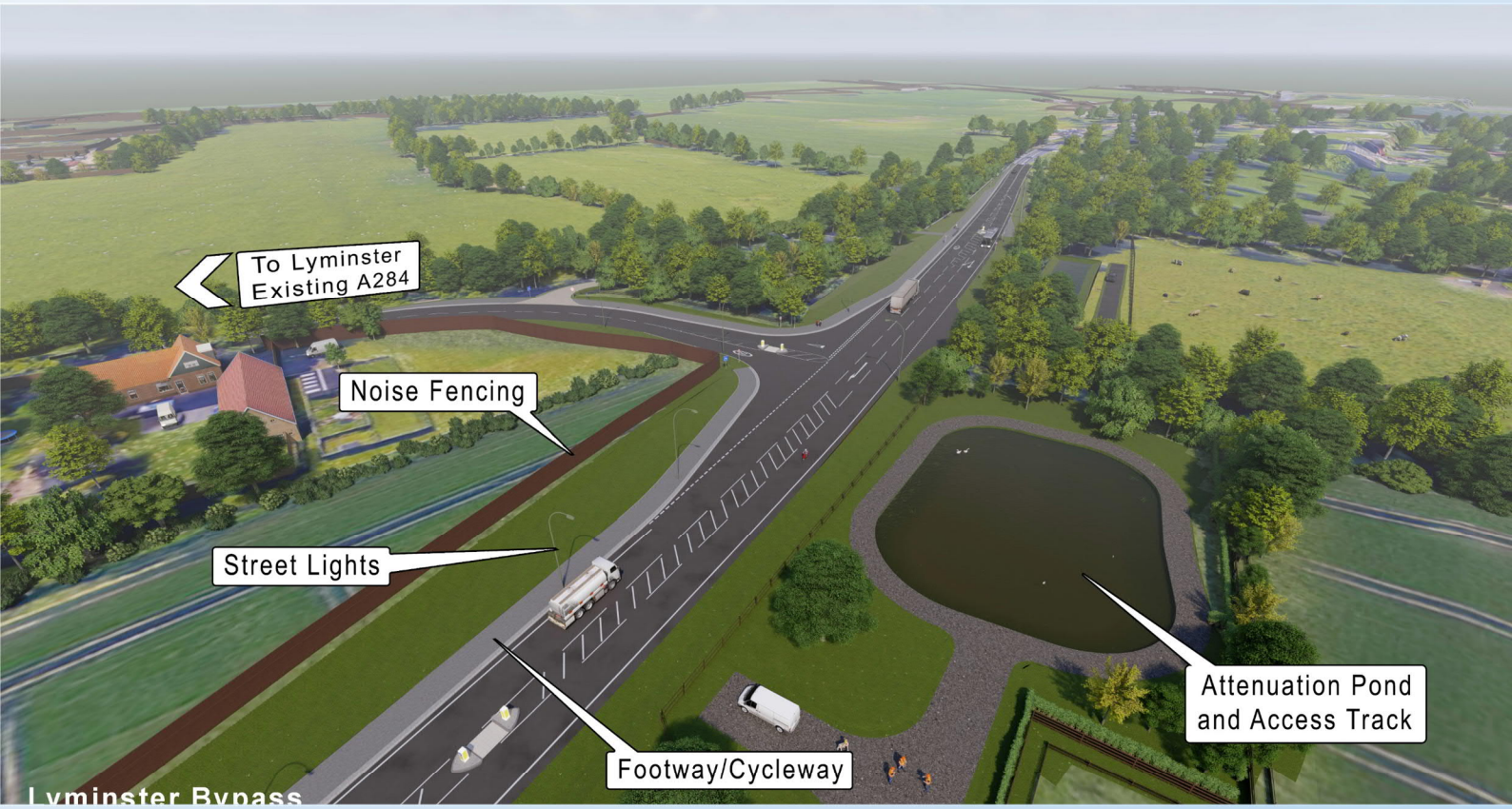
West Sussex County Council

LYMINSTER BYPASS (NORTH)

Full Transport Business Case



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West Sussex County Council

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Full Transport Business Case

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1 EXECUTIVE SUMMARY

1.1 INTRODUCTION

1.1.1. This Full Transport Business Case presents the evidence base in favour of the proposed Lyminster Bypass (North) near Littlehampton in West Sussex. The document has been prepared in accordance with the Department for Transport guidance on the Five Case Model as published in August 2021 that requires business cases to set out in five dimensions

- Strategic Dimension
- Economic Dimension
- Financial Dimension
- Commercial Dimension
- Management Dimension

1.2 SCHEME DESCRIPTION

1.2.1. The primary north-south route between Littlehampton and the A27 is via the A284, which passes through the villages of Lyminster and Wick, crossing the West Coastway rail line at a level crossing. Delay caused by the level crossing leads to unreliable and long journey times for people using the route and poor air quality for local residents. The problems are compounded by the existing alignment, which has several tight bends and local accesses, making the route a significant constraint on future development in the area.

1.2.2. The Combined A284 Lyminster Bypass scheme will comprise a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.

1.2.3. The Combined A284 Lyminster Bypass will be delivered in two parts. Lyminster Bypass (South), between A259 and Toddington Nurseries, is being funded and delivered by developers. Works began January 2020 and are awaiting the installation of safety features on the bridge over the railway before opening the road to the public. This element is not the subject of this business case.

1.2.4. The remaining Lyminster Bypass (North), from Toddington Nurseries to the A284 north of Lyminster village, will be delivered by West Sussex County Council (WSCC), and is the subject of this business case.

1.2.5. Lyminster Bypass (North) has some funding from the Coast to Capital Local Enterprise Partnership (LEP), some Section 106 developer funding and match funding from the WSCC Capital Programme. Following further delay to statutory processes due to the pandemic and increases in cost in the construction industry as a result of the UK leaving the European Union, the scheme cost has increased. Works on Lyminster Bypass (North) are now programmed to start in June 2022 with the scheme being opened to traffic in January 2024.

1.3 STRATEGIC DIMENSION

1.3.1. The A284 Lyminster Bypass (North) will support the growth of one of the underperforming areas of the West Sussex economy and is essential for investment in Littlehampton so as not to constrain growth. It is necessary to achieve the full benefits from the delivery of 1,260 homes and 700 jobs at the North Littlehampton Strategic Development Location (SDL) as shown in Figure 2.1. The objectives align with the Department for Transport (DfT) objectives 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.

1.3.2. The objective for this scheme is to build a bypass that will provide a direct link between Littlehampton and the A27. A series of objectives have been identified that align with the strategic aims of West Sussex County Council, Coast to Capital LEP and the DfT. These are:

- Provide vehicles with a shorter and less congested route with reduced journey times, avoiding the level crossing
- Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new homes and 700 new jobs
- Improve local environmental quality
- Improve local road safety
- Fulfil the above criteria while providing good value for money for the taxpayer.

1.3.3. There are three principal interdependencies that affect the Lyminster Bypass (North). These are:

- **North Littlehampton Strategic Development Location (SDL)** – Lyminster Bypass (South) is being delivered as part of the North Littlehampton SDL scheme, so the timing of this is important for completing Lyminster Bypass (North) covered by this business case. Lyminster Bypass (North) is dependent on Lyminster Bypass (South) during its operational phase following construction, but it is not fully dependent for the construction phase. The current proposal is that the majority of construction materials for the viaduct section of Lyminster Bypass (North) will be brought to site via Lyminster Bypass (South). Although it is not yet open to the public, the route has now been completed, and WSCC have agreements in place with the developer to gain access if required.
- **Other Highway Schemes - A27 Improvements and A259 Corridor Improvements** – The existing A284 Lyminster Road joins with the A27 to the north on the southern arm of the junction at Crossbush. Lyminster Bypass (North) terminates some 600m south of this junction, thus there is no direct construction interdependency between Lyminster Bypass (North) and A27 Arundel Bypass. Lyminster Bypass (North) is considered to be a committed scheme in the National Highways (NH) traffic modelling and appraisal work and is included in their Do Minimum scenarios. Lyminster Bypass (North) does not rely on the completion of the A27 Arundel Bypass.

  The North Littlehampton SDL will be served by Lyminster Bypass (South) which will form a new junction with the A259 to the south via a four-arm roundabout. This new roundabout represents the western extent of the A259 Improvement scheme. The completed Lyminster Bypass (North) will re-route strategic traffic, relieving congestion at Wick roundabout. If the Lyminster Bypass (North) were not completed, this re-routing would not take place. The A259 Improvements would still provide a benefit in this scenario, but Wick roundabout would remain a bottleneck. Lyminster Bypass (North) does not depend on either the A27 Arundel Bypass or the A259 Improvements to be completed to achieve a benefit.

1.4 ECONOMIC DIMENSION

1.4.1. The Economic dimension sets out the assessment of the benefits that the scheme is forecast to deliver to society as a whole. The Value for Money (VfM) statement provides a summary of these benefits and is presented in Table 1-1 for the Core Growth Scenario.

Table 1-1 - Value for Money Statement

	Assessment	Detail
Initial Benefit Cost Ratio (BCR)	1.8	Calculated using TAG guidance
Adjusted BCR	1.8	Includes wider impacts
Qualitative assessment	Largely beneficial	Key improvements in journey quality and community severance
Value for money category	Medium	The Adjusted BCR are in Medium category, which is supported by qualitative assessment

1.4.2. The information presented in the economic dimension indicates that Lyminster Bypass (North) has an adjusted BCR of 1.8, which is considered **Medium** value for money.

1.5 FINANCIAL DIMENSION

1.5.1. The Financial dimension provides a detailed cost estimate and a breakdown of how the scheme will be funded. The total scheme cost is expected to be £37.45m. This comprises £3.00m from Coast to Capital LEP, £3.76m from S106 developer contributions £18.90m funded by WSCC and the remaining £11.79m is sought from the Department for Transport. The cost breakdown is set out in Table 1-2.

1.5.2. £2.29m of the S106 funding has been received, £0.52m has been spent on the scheme already and the remaining £1.77m is available to be spent on the scheme. Legal agreements are in place to receive the remaining £1.47m of S106 funding from the developers, which will be due once the 'triggers' in the payment mechanism have been reached. However, to ensure timely delivery of the scheme, WSCC has decided to provide forward funding for the remaining £1.47m S106 contributions and this is included in the Council's Capital Programme approved by the County Council.

1.5.3. The transport analysis guidance (TAG) requires that the costs incurred on schemes by Central or Local Government bodies are differentiated from costs incurred by developers and other contributors. Therefore, the economic appraisal for the business case is based on the assumption that the total S106 contributions amounting to £3.76m will be received and this is reflected in the programme and funding profile below.

Table 1-2 - Scheme Cost

Cost Element	Cost
Design Costs	£3,043,000
Construction Costs	£24,875,000
Archaeology	£562,000
Compulsory Purchase Order	£179,000
Professional Fees	£1,647,000
WSCC Overheads	£672,000
Land Acquisition	£2,381,000
Utilities Diversions	£96,000
Risk	£3,997,000
TOTAL	**£37,452,000**

1.6 COMMERCIAL DIMENSION

1.6.1. The Commercial dimension relates to the commercial viability and supply-side capacity of the proposed scheme. West Sussex County Council has established a Design and Build (D&B) Framework following a procedure that accords with the EU procurement regulations. Tenders were received from 9 contractors on 5th October 2015 and were assessed by WSCC to provide a list of four suppliers who can provide a D&B function for WSCC's programme of major highways schemes over a 6-year period. The preferred suppliers were determined through a 60% quality / 40% price split, which was deemed best practice and offered better value for West Sussex. Award of a D&B Contract for Lyminster Bypass (North) was made in April 2016 to Jackson Civil Engineering.

1.7 MANAGEMENT DIMENSION

1.7.1. The Management dimension sets out the proposed project management procedures to be adopted throughout the life cycle of the project. A Project Board has been set up to oversee the project. The responsibilities of the Project Board include:

- Ensuring the project is, and remains, aligned with its objectives and other strategic policies.
- Monitoring progress, timescales and costs at a strategic level.
- Contributing to, and signing off of key project management documents and project level plans.
- Reviewing each completed stage and approving progress to the next.
- Approving Exception Reports including authorising any major deviation from the agreed Project (or Stage) Plans.
- Arbitrating on any conflicts within the project including negotiating a solution to any problems between the project and any third parties.
- Ensuring the Project Benefits can be, and are, delivered by the project.
- Approving Project Closure.

1.7.2. Owing to project constraints, a three-stage approach is proposed for the delivery of the scheme as follows:

Stage One

- Complete preliminary designs and non-statutory environmental statement. This has been completed
- Complete Transport Business Case and obtain approval for further funding from the Department for Transport (DfT). This has been completed
- Obtain planning consent for the scheme. This was granted on 26th March 2019, with the decision published 9th May 2019 following confirmation that the scheme would not be called in by the Secretary of State.

Stage Two

- Undertake land acquisition by negotiation and Compulsory Purchase Order (CPO.) This process has been completed and the statutory timescales allow the land to be acquired on 22nd February 2022
- Undertake detailed design, which was completed in April 2019. Obtain and agree target cost following completion of the CPO process.

Stage Three

- Proceed to construction June 2022, with completion by January 2024. The timelines are detailed in the scheme programme in **Appendix E**.

1.7.3. The scheme will be subject to Gateway Reviews in accordance with the WSCC Gateway Review Process by the Project Board at key decision points. These reviews would, among others:

- Enable the Project Board to assess the viability of the scheme at regular intervals, rather than let it run on in an uncontrolled manner
- Ensure that key decisions are made prior to the detailed work needed to implement them
- Clarify the impact of any identified external influences on the scheme
- Provide the LEP with the opportunity to undertake independent assurance.

1.7.4. A strategy has been developed to establish how the performance of the scheme against objectives for project success will be monitored and assessed, to demonstrate the value for money for the funding of the scheme. These objectives relate to changes in traffic flows, reductions in journey times and in the variability of travel times, changes in noise and air quality levels at key locations, highway safety and wider economic indicators.

2 PROJECT BACKGROUND

2.1 OVERVIEW

2.1.1. Littlehampton is in Arun District, which is one of the coastal districts in West Sussex. The town has merged with the settlements of Rustington and East Preston to create an urban area with a combined population of 48,200. This makes Littlehampton the second largest built-up area in Arun District and provides 46% of the jobs available in Arun. The Arun Local Plan (adopted July 2018) has allocations for regeneration, development and sustainable urban extensions, including the North of Littlehampton SDL.

2.1.2. The primary north-south route between Littlehampton and the A27 is via the A284, which passes through the villages of Lyminster and Wick, crossing the West Coastway rail line at a level crossing. Delay caused by the level crossing leads to unreliable and long journey times for people using the route and poor air quality for local residents. The problems are compounded by the existing alignment, which has several tight bends and local accesses, making the route a significant constraint on future development in the area.

2.2 PROPOSALS

2.2.1. Lyminster Bypass (as shown in Figure 2-1) comprises a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington. The existing bus stop on the A284 will be relocated into Lyminster village as a result of the proposals, and consultation is underway with the bus operators on any changes to routes.

2.2.2. The A284 Lyminster Bypass will be delivered in two parts. Lyminster Bypass (South), between A259 and Toddington Nurseries, is being funded and delivered by developers. Works began in January 2020 and their current programme indicates the scheme being open to traffic in April 2022. This element is not the subject of this business case.

2.2.3. Approximately 0.92km of highway is being built by Persimmon Homes between a new roundabout on the A259 Worthing Road at Highdown Drive, connecting to the existing access road (Fitzalan Road) serving Littlehampton Academy. It opened to the public on 8 December 2021. This is independent of A284 Lyminster Bypass (North).

2.2.4. The remaining Lyminster Bypass (North), Toddington Nurseries to the A284 north of Lyminster village, will be delivered by West Sussex County Council (WSCC), and is the subject of this business case.

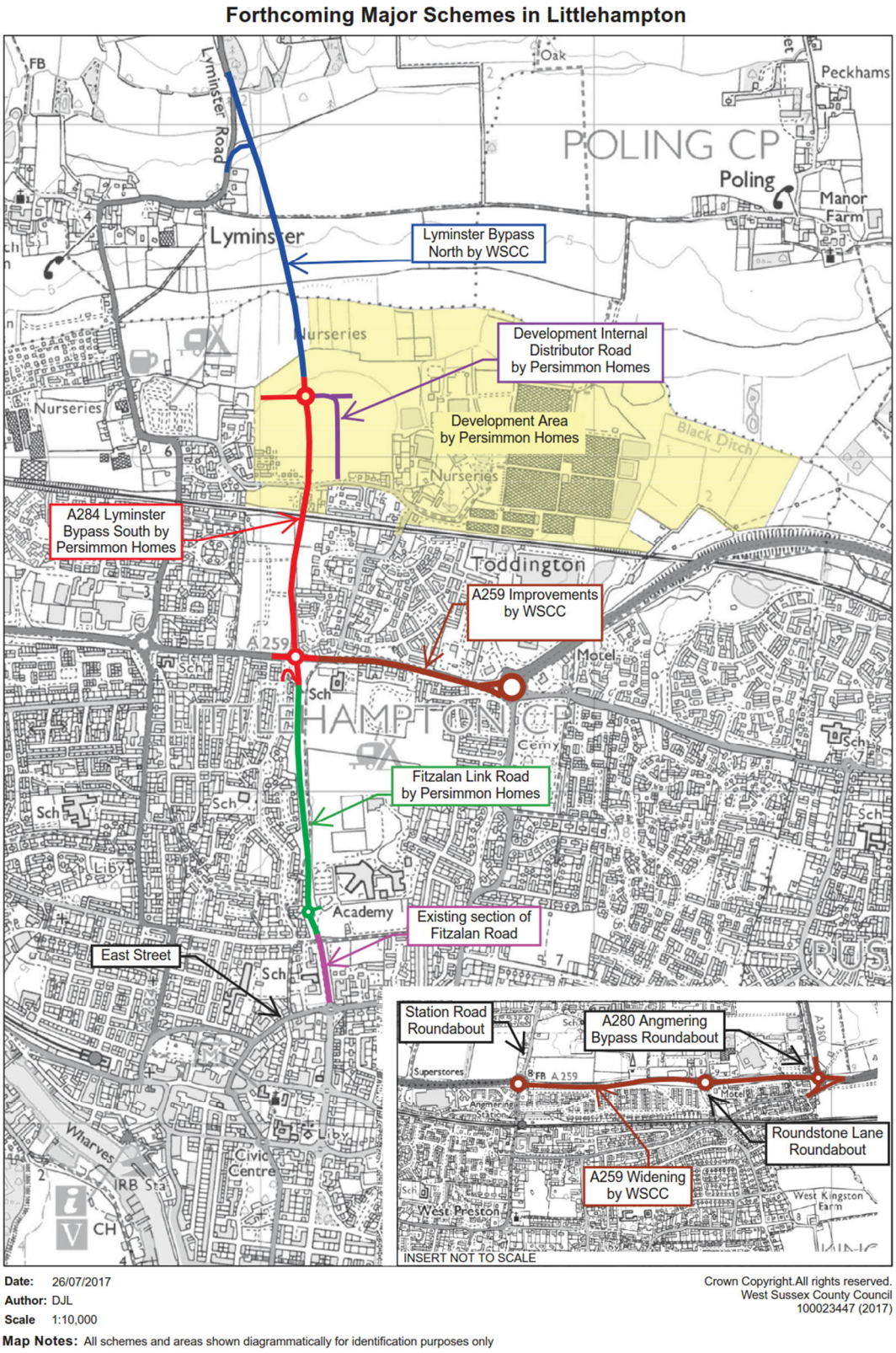


Figure 2-1 - Lyminster Bypass and Key Schemes

2.2.5. Lyminster Bypass (North) has some funding from the Coast to Capital Local Enterprise Partnership (LEP), some Section 106 developer funding and match funding from the WSCC Capital Programme. Following further delay to statutory processes due to the pandemic and increases in cost in the construction industry as a result of the UK leaving the European Union, the scheme cost has increased. Works on Lyminster Bypass (North) are programmed to start in June 2022 with the scheme being opened to traffic in January 2024.

2.3 PURPOSE OF REPORT

2.3.1. The purpose of this report is to set out the Full Transport Business Case (FBC) for the scheme, thereby forming the primary evidence base for the Lyminster Bypass (North) funding bid. The FBC has been completed in accordance with the Department for Transport's guidance document, "Transport business case: assessment and process procedures" as published in August 2021. The FBC contains an assessment of the scheme in sufficient detail to allow an investment decision to be made.

2.4 REPORT STRUCTURE

2.4.1. This Full Transport Business Case has been structured in accordance with the DfT's best practice Five Case Model dimensions, with arguments set out in each of the following areas:

- **Strategic dimension** which sets out the case for change, demonstrating how the proposal fits the organisation's priorities and a need for future investment
- **Economic dimension** which identifies impacts of the scheme and whether it offers value for money to the public, in accordance with the requirements of HM Treasury.
- **Financial dimension** which identifies the cost of the proposals, potential funding sources, financial risk and sustainability
- **Commercial dimension** which identifies the proposed strategy for procurement and management of the commercial risks
- **Management dimension** which demonstrates how the proposal will be delivered, setting out information relating to project planning, governance structure and stakeholder management

3 STRATEGIC DIMENSION

3.1 INTRODUCTION

3.1.1. The information presented in the Strategic dimension sets out the need for the project and how the scheme meets this need and aligns with the aims and objectives of West Sussex County Council, Coast to Capital Local Enterprise Partnership (LEP) and Department for Transport (DfT). Information has been obtained from liaison with key stakeholders. Information is presented on the following elements:

- Business strategy
- Problem identified
- Impact of not changing
- Objectives
- Measures for success
- Scope
- Constraints
- Interdependencies
- Stakeholders
- Alternatives.

3.2 BUSINESS STRATEGY

3.2.1. The A284 Lyminster Bypass (North) will support the growth of one of the underperforming areas of the West Sussex economy and is necessary for investment in Littlehampton so as not to constrain growth. It is necessary to achieve the full benefits from the delivery of 1,260 homes and 700 jobs at the North Littlehampton Strategic Development Location (SDL). The objectives align with the Department for Transport's objectives 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.

3.2.2. Lyminster Bypass (North) will support local objectives within the adopted Arun Local Plan (2018) to strengthen the north-south links between Littlehampton and A27 as well as continuing to be safeguarded as a committed scheme under Policy T SP3. It supports an aim in the West Sussex Transport Plan 2011–2026 for the delivery of the Lyminster Bypass for Arun. It will support economic growth, create safer roads, move towards climate change resilience and provide access to housing, employment and services.

3.3 PROBLEM IDENTIFIED

3.3.1. The area of interest is shown in Figure 3-1.

Figure 3-1 - Area of Interest

Infrastructure

3.3.2. The key problem which Lyminster Bypass (North) seeks to address is one of inadequate access to Littlehampton from the national Strategic Road Network (SRN). The existing A284 is characterised by a tortuous, narrow and slow route into the town centre, employment areas and the A259 from the A27 at Crossbush, with a railway level crossing at Lyminster Road, Wick. This leads to delays and congestion, causing unreliable journey times, notably at the level crossing and at the junction with the A259.

3.3.3. Lyminster Bypass (South), being delivered by Persimmon Homes, provides a new bridge over the railway. Access to the bridge from the north without Lyminster Bypass (North) would be inadequate for the strategic traffic, as it would be required to use the existing A284 and Mill Lane before joining the Lyminster Bypass (South). Mill Lane is a very narrow, D class road with discontinuous footways. This is also a longer route with a series of 90 degree turns and is inadequate for strategic traffic.

3.3.4. The residential development at North Littlehampton provides infrastructure in the town and across the rail line but leaves increased traffic pressure on the gap which is left through the village of Lyminster and north to the A27 at Crossbush.

3.3.5. The proposed Lyminster Bypass (North) scheme would bypass and relieve the village of Lyminster and join with the developer funded alignment enabling relief of the remainder of the A284 south into Littlehampton, notably including the railway level crossing and the congested A259 Wick roundabout.

Economy

3.3.6. Littlehampton's local economy performs poorly in comparison to other areas of West Sussex and the wider southeast region. The poor access from the A27 Crossbush Interchange into Littlehampton is seen as a significant disincentive for businesses, especially higher value businesses, to locate in the Littlehampton area and makes it harder for existing businesses to attract and retain qualified and skilled staff.

3.3.7. Wards in Littlehampton have higher levels of unemployment and deprivation in income and employment than the average for West Sussex, as shown below. The poor transport links and lack of attractiveness for business are likely to be contributory factors to this situation. River and Ham wards in Littlehampton feature in the 10% most deprived wards nationally from the indices of multiple deprivation.

Table 3-1 - Economic Indicators for Littlehampton Wards

Area	% Unemployed (2011 census)	% People Income Deprived (2010)	% Working Age People Employment Deprived (2010)
West Sussex	3.2	9.5	6.9
Beach ward	3.6	10.5	9.3
Brookfield ward	4.1	11.1	6.8
Ham ward	4.7	24.0	13.8
River ward	5.6	21.1	18.1
Wick with Toddington ward	3.6	12.1	8.0

Environment, Community and Road Safety

3.3.8. The A284 passes through the centre of the village of Lyminster, passing through a Conservation Area and adjacent or close to six of the nine Grade 2 Listed Buildings in the village. The section of the A284 through the village contains four 90° bends which have a relatively poor road traffic collision record. The environment of the village is marred by the through traffic and the safety signing to encourage slow vehicle speeds around these bends.

3.3.9. In 2018 the Average Annual Daily Traffic (AADT) 24-hour two-way flow on the A284 through Lyminster was 12,523 vehicles (10.8% LGV, 4.3% HGV), with the Average Annual Weekday Traffic (AAWT) 24-hour two-way flow being 13,289 vehicles (11.7% LGV, 5.2% HGV). Weekday peak hour two-way flows were 916vph (14.5% LGV, 7.3% HGV) in the AM peak (08:00-09:00) and 1,078vph (10.7% LGV, 5.7% HGV) in the PM peak (17:00-18:00). Traffic flows are expected to increase significantly once planned development is complete.

3.3.10. For much of the route, there is a footway on the west side of the road only, which is variable in width from adequate to substandard. This causes some severance to pedestrian movement, notably for vulnerable groups and for properties on the eastern side of the road. The road also fails to provide a cycle friendly environment, despite being within easy cycling distance of Littlehampton town centre.

3.3.11. Between 2013 and 2017, there were two fatal, six serious and 27 slight Personal Injury collisions on the A284 between the A27 and the A259.

3.3.12. The scheme crosses the Black Ditch and its associated flood plain, and the proposed viaduct ensures that even for the critical flood event plus climate change, and considering the undefended scenario for the River Arun, there is no increase in flood risk as a result of the scheme.

3.4 IMPACT OF NOT CHANGING

3.4.1. To inform the scheme design, a traffic model of the East Arun areas has been created in accordance with the principles set out in TAG and the Design Manual for Roads and Bridges (DMRB). The East Arun Traffic Model (EATM) has been built to assess the scheme, and development of the EATM is documented in the Local Model Validation Report and the Traffic Forecasting Report. The original forecasts were built for an opening year of 2019 and 2034. Although the programme has been updated since the model was created, the forecast models have not been changed, as there is unlikely to be a significant difference in flows in this period.

3.4.2. The impact of not changing is best evidenced by considering:

- Link flows
- Journey times
- Air quality
- Noise.

3.4.3. The key points for each set of data are presented in the following paragraphs.

Link Flows

3.4.4. Forecast weekday traffic flows are presented in Table 3-2 for key links.

Table 3-2 - Forecast Average Annual Daily Total (AADT)

Link	2019		2034	
	Cars	HGVs	Cars	HGVs
A284 through Lyminster	14,218	574	16,858	668
A27 east of Crossbush	31,840	2,297	37,090	2,695
A27 north of Crossbush	34,385	2,379	39,279	2,729
A259 east of Wick	29,777	1,030	34,378	1,149
A259 west of Wick	21,750	1,040	26,015	1,196

3.4.5. There is a considerable volume of traffic using the A284 passing through Lyminster village. In the 2019 model, this is forecast to be nearly 15,000 vehicles per day, 4% of which are HGVs. By 2034, this is forecast to have increased by 18% to over 17,500 vehicles per day. This volume of traffic in the heart of the village will exacerbate problems associated with noise and air quality and increase severance of the community.

Journey Times

3.4.6. Critical to this scheme is the variability of journey times on the A284, compounded by the operation of the level crossing at Wick. Journey time surveys were conducted in a series of locations in 2013 to assist with validation of the traffic model. Summary results are shown in Table 3-3 with the routes shown in Figure 3-2. Route 2 is the key route on the A284.

Table 3-3 - Observed Journey Time Summary Results

Route	Length (km)	AM Peak		Inter Peak		PM Peak	
		Mean JT(s)	Coefficient of Variation	Mean JT(s)	Coefficient of Variation	Mean JT(s)	Coefficient of Variation
Route 1 - EB	3.8	275	13%	255	9%	292	15%
Route 1 - WB	3.9	459	16%	293	8%	305	10%
Route 2 - NB	4.3	722	28%	441	17%	466	21%
Route 2 - SB	4.3	506	23%	435	15%	539	20%
Route 3 – Anti-clockwise	5.9	592	11%	565	8%	649	18%
Route 3 – Clockwise	6.1	558	11%	565	15%	625	22%
Route 4 – NB	6.8	571	12%	644	10%	701	21%
Route 4 – SB	6.8	574	12%	556	31%	617	26%
Route 5	11.5	882	9%	822	6%	776	4%
Route 6 – EB	4.4	493	27%	294	8%	362	17%
Route 6 - WB	4.4	369	17%	307	7%	378	6%
Route 7 – NB	3.9	484	29%	345	13%	391	12%
Route 7 – SB	3.9	403	19%	316	8%	430	33%
Route 8 – Anti-clockwise	15.5	1424	13%	1147	5%	1552	6%
Route 8 – Clockwise	15.5	2241	7%	1102	4%	1693	12%
Route 9 – NB	7.0	1081	4%	1082	8%	1035	8%
Route 9 - SB	6.7	641	10%	701	8%	658	6%

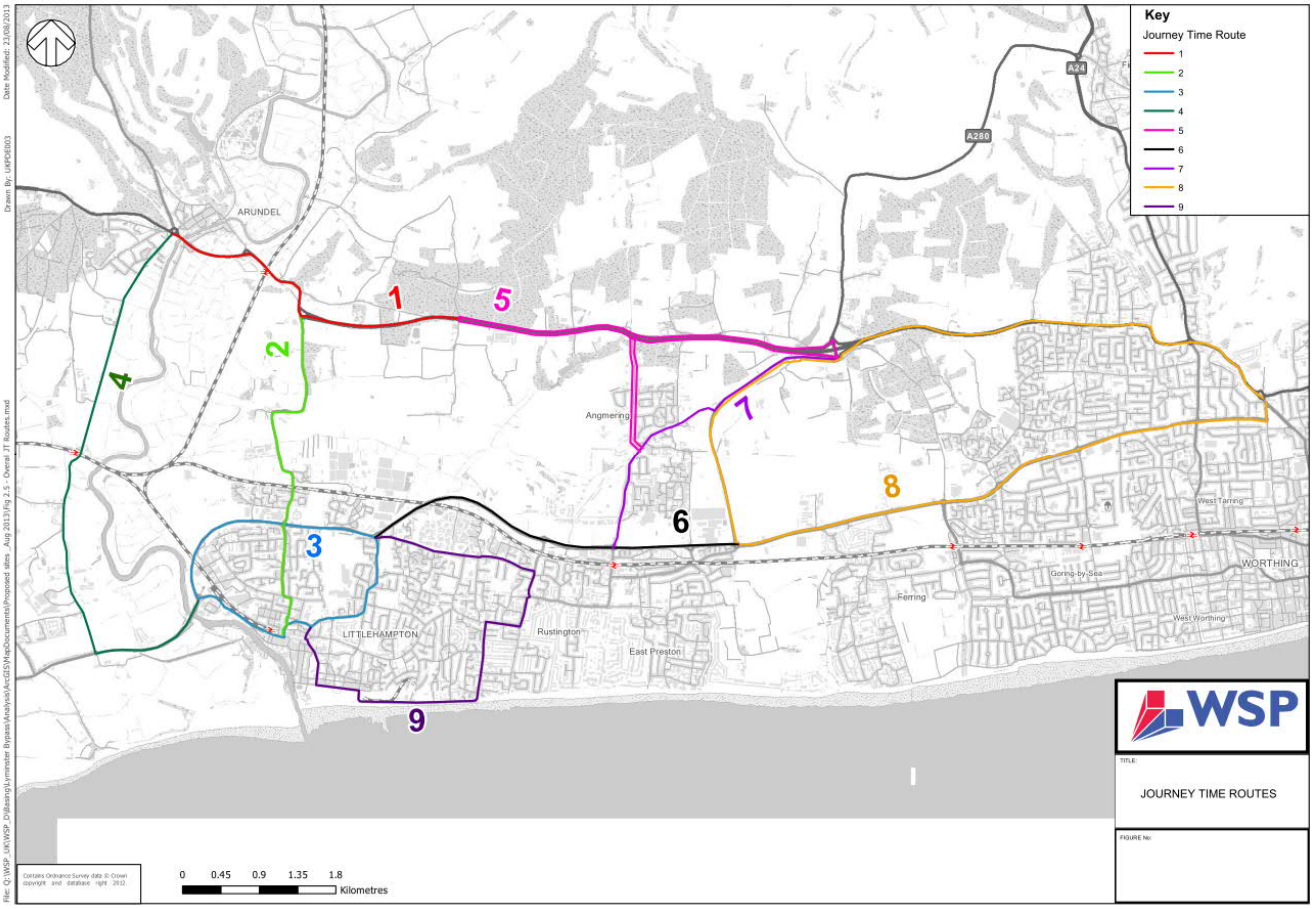


Figure 3-2 - Journey Time Routes

3.4.7. Variability is represented by considering the coefficient of variation (the standard deviation of observed journey times divided by the mean journey time). For Route 2 along the A284, in the peak hours, this is generally 20-28%, whereas for most other routes this is generally less than 15%. This indicates significant variation, due primarily to the level crossing.

3.4.8. Journey times on Route 2 through the village are predicted to increase in the future, as shown in Table 3-4.

Table 3-4 - Modelled Journey Times on the A284

Time	Direction	2016	2019		2034	
		Time (s)	Time (s)	% Change	Time (s)	% Change
AM	NB	380	383	1%	406	7%
	SB	386	391	1%	407	5%
IP	NB	372	375	1%	385	3%
	SB	375	380	1%	389	4%
PM	NB	339	342	1%	349	3%
	SB	349	357	2%	400	5%

3.4.9. The forecasts demonstrate that the A284 corridor is expected to experience increases in journey time during the peak hours in the future, particularly northbound in the AM peak and southbound in the PM peak.

3.4.10. Lyminster Bypass (North) will reduce this journey time, making the route into Littlehampton more attractive and improving access for local residents. Table 3-5 compares the travel time on the existing A284 between the A27 and B2187 to a route encompassing the bypass and Fitzalan Link Road between the A27 and B2187. The bypass route typically reduces travel time in both directions by between 20-30%.

Table 3-5 - Modelled Journey Times on the A284 Compared to Bypass

Time	Direction	A284 2019 DM	Bypass 2019 DS		A284 2034 DM	Bypass 2034 DS	
		Time (s)	Time (s)	% Change	Time (s)	Time (s)	% Change
AM	NB	383	269	-30%	406	296	-27%
	SB	391	273	-30%	407	314	-23%
IP	NB	375	266	-29%	385	284	-26%
	SB	380	264	-30%	389	278	-29%
PM	NB	342	265	-23%	349	284	-19%
	SB	357	282	-21%	400	386	-4%

3.5 OBJECTIVES

3.5.1. The objective for this scheme is to build a bypass that will provide a direct link between Littlehampton town centre and the A27 at Crossbush. National Highways is currently developing the A27 Arundel Bypass scheme which will connect to the Crossbush junction. This scheme is still in development; the Preferred Route Announcement was published on the 15th of October 2020 and it is currently undergoing statutory consultation, but it is not yet sufficiently advanced to be considered a committed scheme. Lyminster Bypass is a committed scheme and is therefore included in the Do Minimum scenario when National Highways assesses the A27 Arundel Bypass.

3.5.2. The scheme meets a series of objectives that align with the strategic aims of West Sussex County Council, their funding partner Coast to Capital LEP and DfT. These are:

- Provide vehicles with a shorter and less congested route with reduced journey times, avoiding the level crossing
- Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new homes and 700 new jobs
- Improve local environmental quality
- Improve local road safety
- Fulfil the above criteria while providing good value for money for the taxpayer

3.6 MEASURES FOR SUCCESS

3.6.1. In order to measure whether the scheme objectives set out above have been met, a series of specific; measurable; achievable; realistic and time-bound targets have been derived.

Table 3-6 - Measures for Success

Objective	Target
Provide shorter route with reduced journey times	Forecast journey times between the A27 and Littlehampton lower in Do Something scenario compared to Do Minimum scenario
Support North Littlehampton SDL	Full quantum of development at North Littlehampton is completed by 2031.
Improve local environmental quality	Air and noise assessments produced in support of the planning application (and reported on the Appraisal Summary Table) demonstrate beneficial impact
Improve local road safety	Accident assessment completed as part of this business case demonstrates a net benefit
Achieve good value for money	Benefit to Cost Ratio greater than 2

3.7 SCOPE

3.7.1. The combined Lyminster Bypass scheme comprises a new 1.8km bypass of the A284 between Lyminster village and the A259 Worthing Road as shown in Figure 3-3. This includes a viaduct over Black Ditch and its associated floodplain and a bridge over the railway line at Toddington.

3.7.2. The 0.7km section crossing the railway line and connecting to the A259 Worthing Road (Lyminster Bypass (South)) is being delivered as part of the North Littlehampton development, so is not considered part of this scheme. The Transport Business Case covers the 1.1km section from the A284 approximately 600m south of Crossbush junction to approximately 180m north of the new access to the North Littlehampton SDL.

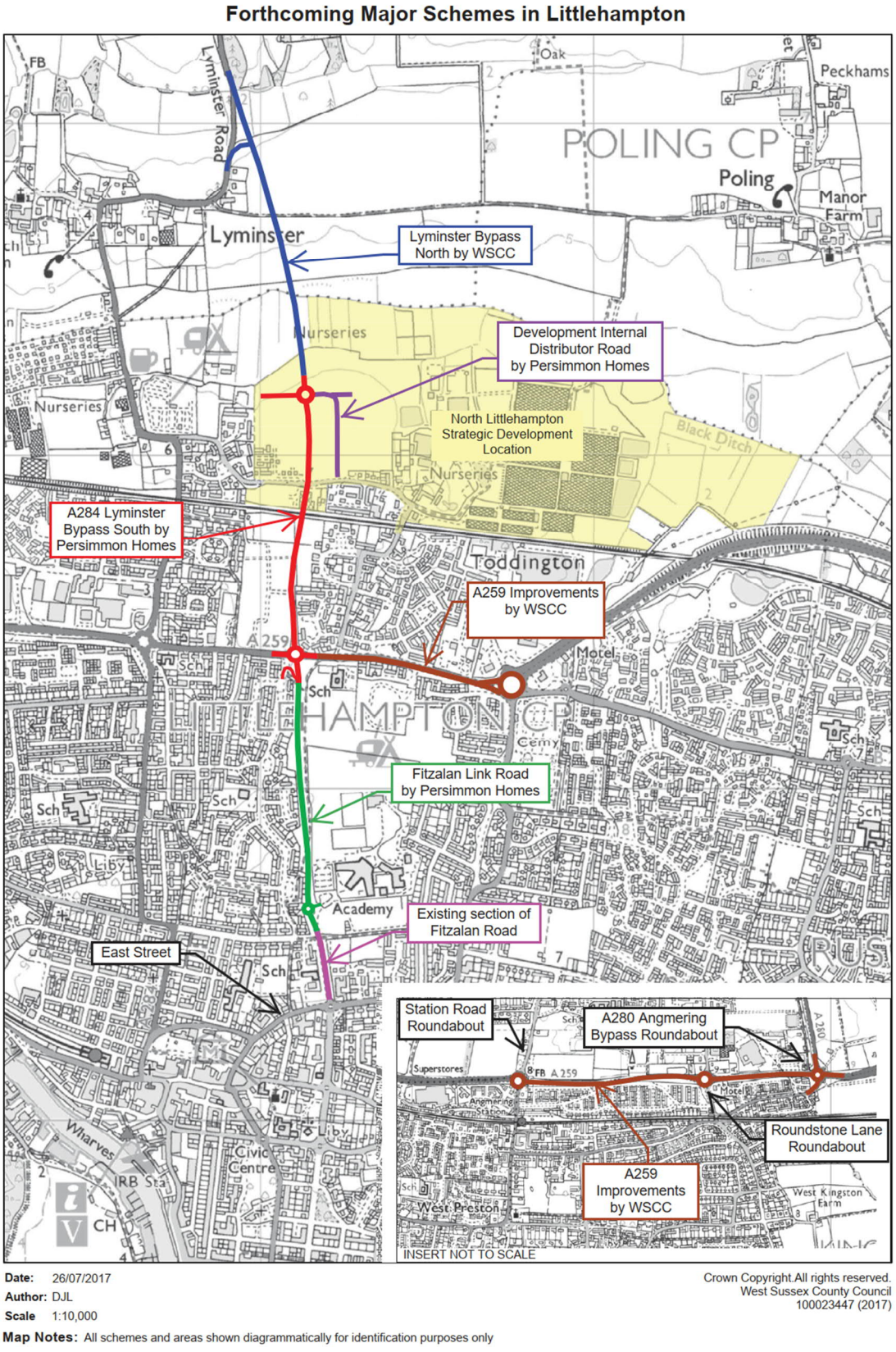


Figure 3-3 - Scope of Scheme

3.8 CONSTRAINTS

The following is a summary of the high-level constraints on the scheme:

- **Connection to the existing network** – The tie-in points to the north and south of the scheme are fixed, so are instrumental in determining the alignment of the bypass scheme
- **Lyminster Bypass (South)** – The section of the bypass being delivered as part of the North Littlehampton SDL scheme has been granted planning consent and construction has commenced, so Lyminster Bypass (North), for which the FBC has been developed, must follow a consistent design.

3.9 INTERDEPENDENCIES

3.9.1. There are four principal interdependencies that affect the delivery of Lyminster Bypass (North). These are as follows.

North Littlehampton SDL

3.9.2. Lyminster Bypass (South) is being delivered as part of the North Littlehampton SDL scheme, so the timing of this is important for completing Lyminster Bypass (North) covered by this business case. Lyminster Bypass (North) is dependent on Lyminster Bypass (South) during its operational phase following construction, but it is not fully dependent for the construction phase. The current proposal is that the majority of construction materials for the viaduct section of Lyminster Bypass (North) will be brought to site via Lyminster Bypass (South). Although it is not yet open to the public, the route has now been completed, and WSCC have agreements in place with the developer to gain access if required.

3.9.3. This scheme is required to provide access to the North Littlehampton strategic development location. Without the scheme, the cumulative impact on the transport system of development in the Arun Local Plan would be severe. However, it would not be viable for the north Littlehampton development to deliver the scheme in full, so permission has been granted for the development with a temporary access arrangement via Mill Lane, completion of Lyminster Bypass (South) and a substantial financial contribution towards the completion of the scheme.

3.9.4. The scheme is needed to provide a long-term access solution for the North Littlehampton site, replacing the temporary access arrangement via Mill Lane. Therefore, the benefits of the development form part of the strategic dimension for the scheme and form part of the Arun Local Plan which seeks to deliver 4,695 jobs, 2,600 homes and 27,370sqm net employment floor space in east Arun as outlined in the LEP's 2014 Strategic Economic Plan.

3.9.5. If Lyminster Bypass (North) were not completed, it is likely that the North Littlehampton site would become considerably less attractive as the temporary access arrangement at Mill Lane would be unsuitable for a development of this type. This would particularly impact the commercial value and potential employment within the site since access to the SRN would be poor. Public consultation for the site and the granting of outline consent has been undertaken on the understanding that the full bypass would be completed.

3.9.6. The following quotes from relevant sections of the Transport Assessment accompanying the planning application for the North Littlehampton development (Mayer Brown 2011), set out the relationship between the development and Lyminster Bypass (North) from the perspective of the applicant:

- "**3.6** The authorities have a long-term ambition to create a bypass route to the town from the north in order to remove the congestion caused by the Lyminster Road level crossing… The bypass would become the main route into Littlehampton from the north, essentially superseding the stretch of the A284 through Lyminster."
- "**3.11** It is not feasible for the development to provide the complete bypass and it has been agreed that the key element is the Southern Section, which bridges the rail line, connecting the site to the town and Fitzalan Link."
- "**3.13** In addition, a link will be created from Lyminster Road through to the bypass (Southern Section). This will largely follow the existing route of Mill Lane/Toddington Lane. This link has been discussed and agreed with WSCC and is seen as a temporary route, which will be downgraded or removed once the northern section of the bypass is implemented."
- "**2.21 (Appendix A of TA)** It is anticipated that the North Littlehampton site will be proposed as a strategic development allocation in the draft Local Plan next year… Provision of the Lyminster by-pass from the A27 at Crossbush to the edge of the town centre and seafront, bridging the railway line, is key to this; and for this reason the development of the North Littlehampton site (which includes delivery of the section of the Lyminster bypass from the site over the railway line to the A259) is embedded in the District Council's spatial strategy which will underpin the forthcoming Local Plan."
- "**3.6 (Appendix A of TA)** The completion of the Lyminster Bypass is considered important and will be delivered through a new local planning policy that will require new development in the area to "make Section 106 financial contributions towards the cost of the design and implementation of the northern section of the bypass."

Other Highway Schemes - A27 Improvements and A259 Corridor Improvements

3.9.7. Although there is a Preferred Route Announcement for the A27 Arundel Bypass, details of the Government's commitment to this scheme and further improvements to the A27 at Worthing and Lancing are not currently available and therefore cannot be taken into account in this FBC. A27 improvements at Arundel, Worthing and Lancing will need to take account of this scheme as these proposals are developed.

3.9.8. The A27 at Arundel is a significant constraint on the operation of the trunk road network in this area, as it comprises a short section of single carriageway with three at-grade junctions on a route that is otherwise dual carriageway with some grade-separated junctions. This generates significant congestion, particularly at the signalised junction with the A284 at Crossbush, immediately to the north of Lyminster Bypass (North). Highway improvements at Crossbush or Arundel could be expected to significantly enhance the benefits for Lyminster Bypass (North), with the degree of enhancement dependant on the final design for any A27 improvements.

3.9.9. The existing A284 Lyminster Road joins with the A27 to the north on the southern arm of the junction at Crossbush. Lyminster Bypass (North) terminates some 600m south of this junction, thus there is no direct construction interdependency between Lyminster Bypass (North) and A27 Arundel Bypass.

3.9.10. Lyminster Bypass (North) is considered to be a committed scheme in the National Highways traffic modelling and appraisal work and is included in their Do Minimum scenarios. Lyminster Bypass (North) does not rely on the completion of the A27 Arundel Bypass.

3.9.11. The A259 Corridor Improvements Scheme, also being promoted by WSCC, is a scheme in Arun District Council's Local Plan associated with the delivery of local economic growth. The scheme is currently under construction and is due to fully open in April 2025. The North Littlehampton Development Area will be served by Lyminster Bypass (South) which will form a new junction with the A259 to the south via a four-arm roundabout. This new roundabout represents the western extent of the A259 Improvement scheme. The completed Lyminster Bypass (North) will re-route strategic traffic, relieving congestion at Wick roundabout. If the Lyminster Bypass (North) were not completed, this re-routing would not take place. The A259 Improvements would still provide a benefit in this scenario, but Wick roundabout would remain a bottleneck.

3.9.12. Although both serve as east-west corridors, the A27 is a fast-strategic route catering primarily for long-distance traffic, and the A259 is a slower route serving traffic with an origin or destination within the local area. As such, the two corridors are not considered as competing routes. The proposed improvement schemes on these corridors have different timescales for implementation, and both are intended to relieve congestion for existing users. There is no expectation for significant transfer of traffic between the corridors, regardless of the status of the improvement schemes.

3.9.13. Completion of the A27 and A259 improvement schemes would ease distribution of traffic towards and away from Lyminster Bypass (North). In the absence of Lyminster Bypass (North), this could place additional pressure on the existing A284 through Lyminster village, leading to negative impacts on environment and safety which would be averted by Lyminster Bypass (North). The A27 improvements included in the DfT Roads Investment Strategy at Arundel, Worthing and Lancing are expected to improve transport connectivity and efficiency along the Sussex Coast. Lyminster Bypass (North) can be expected to put Littlehampton in a position to maximise its potential economic advantage from the A27 improvements, rather than these benefits possibly bypassing the town. This potential wider economic benefit would be over and above the wider impacts identified in this appraisal, which do not include A27 improvements.

3.9.14. The A284 is considered the principal north-south access between Littlehampton and the strategic route of the A27, with alternative accesses at Ford Road to the west and the A280 at Angmering to the east. Ford Road is especially constrained by the presence of a level crossing at Ford, but both routes would involve the significant transfer of additional traffic onto the A259 to access Littlehampton if they were the preferred access, leading to additional congestion for all road users.

3.9.15. Lyminster Bypass (North), therefore, enhances the A284 as the principal route into and out of Littlehampton, reducing the pressures on the A259 and other local roads and allowing a shorter and more direct journey into Littlehampton. Lyminster Bypass (North) does not depend on either the A27 Arundel Bypass or the A259 Improvements to be completed to achieve a benefit.

3.10 STAKEHOLDERS

3.10.1. The following are key stakeholders in the scheme:

- **West Sussex County Council** – Scheme promoter, concerned with the strategic movement of people across the highway network and economic regeneration of Littlehampton.
- **National Highways** – Responsible for operation and maintenance of the A27 immediately to the north of the scheme, with particular interest in the operation of the Crossbush junction. There is a clear interaction between the operation of the A27 at Crossbush and Lyminster Bypass (North), so support from NH is crucial. There is an ongoing dialogue between the parties and in their response to the Detailed Planning Application, NH has supported the scheme.
- **Coast to Capital** – Local Enterprise Partnership (LEP) responsible for delivering economic growth and job creation in areas including West Sussex.
- **Arun District Council** – Local Authority for Lyminster Bypass (North). Supporter of the scheme, as bypass will improve quality of life for Lyminster residents, facilitate the delivery of the North Littlehampton SDL and reduce journey times into the district.
- **Persimmon Homes** – Private developer delivering the housing at North Littlehampton SDL. Full consent has been granted for proposals.
- **T&L Crawley No. 2** – Owner of part of the North Littlehampton SDL, currently with consent for commercial development. T&L Crawley No. 2 confirmed their support of the scheme at planning application stage, but objected to the CPO at Public Inquiry in order to progress their own application for residential development. This objection was not upheld, and the Council will take possession of the land in accordance with their statutory powers.
- **North Littlehampton Members Steering Group** – Members of West Sussex County Council, Arun District Council and Littlehampton Town Council, with other service providers including, Network Rail advising on the North Littlehampton SDL. Members have been consulted on an on-going basis since the inception of the scheme.
- **Network Rail** – Affected due to change of traffic flows at Wick level crossing. They have expressed support for the scheme in principle.
- **Environment Agency** – Responsible for maintenance of Black Ditch, which is bridged by the Lyminster Bypass (North). They have been involved in technical review of the flood modelling undertaken to date and assisting in the preparation of the required permits.
- **Private Landowners** – Broadly supportive of the scheme. Negotiations prior to and during the CPO objection period resolved concerns and objections.
- **Lyminster and Crossbush Parish Council** – Broadly supportive of the scheme, but they have some concerns about lack of relief to some residential properties on A284 to the north of the scheme tie-in to the existing road and impact on congestion at the A284/A27 Crossbush junction. This is outside the scope of this project and would be covered by the A27 Arundel Bypass.
- **Littlehampton Town Council** – Supporter of the scheme.
- **Joint Eastern Arun Area Committee (JEAAC) Highways and Transport Sub-Group** – The committee is regularly provided with updates on the scheme and is supportive.

3.10.2. The approach for engaging these stakeholders is set out in section 7.7.

3.11 OPTIONS AND ALTERNATIVES

3.11.1. The following options have been assessed:

- **Do Minimum**: Committed schemes are progressed, but Lyminster Bypass (North) is not completed. Lyminster Bypass (South) is completed by the developers
- **Do Something**: Completed Lyminster Bypass (North) with Wick level crossing remaining open.

3.11.2. Primary risks associated with the Do Something option are as follows:

- Programming problems with statutory undertakers
- Unexpected ground conditions adversely impacting construction
- Unexpected ecological constraints
- Further delays arising from Covid-19
- Availability of construction material.

4 ECONOMIC DIMENSION

4.1 INTRODUCTION

4.1.1. The economic assessment is undertaken to ensure that the scheme fulfils the Treasury's requirements for appraisal and demonstrating value for money.

4.1.2. To enable the scheme value for money to be calculated, and to inform the scheme design and environmental assessments of the scheme, a traffic model of the East Arun areas has been created in accordance with the principles set out in TAG and the Design Manual for Roads and Bridges (DMRB). Development of the East Arun Traffic Model (EATM) is documented in the Local Model Validation Report and the Traffic Forecasting Report.

4.1.3. Information is presented below on the following:

- Options appraised
- Assumptions
- Results
- Sensitivity and risk profile
- Appraisal Summary Table
- Value for Money statement.

4.2 OPTIONS APPRAISED

4.2.1. In developing the economic dimension, the Do Something option which includes the completed Lyminster Bypass (North) with Wick level crossing remaining open has been tested against a Do Minimum option that includes Lyminster Bypass (South). The benefits have been assessed for two assessment periods using TUBA version 1.9.17 (December 2021) as follows:

- **AM, IP, PM:** the modelled (AM peak, Interpeak and PM peak) periods only
- **AM, IP, PM, OP, WE**: the modelled periods and additional benefits for off peak (OP) and weekend (WE) periods.

4.2.2. The details presented in the Economic Dimension are based on the Do Something option.

4.3 ASSUMPTIONS

4.3.1. The economic dimension has been compiled in accordance with the guidance set out in TAG. However, there are some assumptions that have been made in relation to some specific areas of the assessment, and these are discussed below.

Costs

4.3.2. WSCC has received target cost price from the appointed contractor, as detailed in the Financial dimension. We have reviewed the risk register to reflect the current stage of work and refreshed the QCRA, which has generated a P80 mitigated risk cost of £3,996,828, around 14% of the remaining scheme cost.

4.3.3. In keeping with the refreshed TAG guidance on Risk and Optimism Bias, we have compared this estimate of “known unknowns” with the recommended mean Optimism Bias of 20% for a scheme at Full Business Case submission.

4.3.4. The difference of 6% therefore reflects the “unknown unknowns” which is generally of the order of magnitude to be expected and does not indicate the presence of any unusual risks. Following TAG guidance, we have therefore applied an Optimism Bias uplift of 20% to the scheme cost for the Economic dimension.

Table 4-1 - Adjusted Scheme Cost (2021 Q3 prices)

Element	Cost
Total Scheme Cost	£33,455,256
Spend to Date	£4,640,884
Remaining Scheme Cost	£28,814,372
Optimism Bias (20% of Remaining)	£5,762,874
Maintenance Costs	4,238,800
Adjusted Scheme Cost (Economic dimension)	**£38,816,046**

4.3.5. It should be noted that maintenance costs would be funded through the County’s annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits for the Economic dimension for robustness. A detailed breakdown of maintenance costs is provided in Table 5-2.

User Benefits

4.3.6. Scheme benefits have been assessed using the Department for Transport’s TUBA (Transport Users Benefit Appraisal) software. This is an industry-standard tool for undertaking economic appraisal in accordance with guidelines published in TAG Unit A1 (July 2021). The full economic assessment methodology adopted including choice of parameters, definition of inputs, discounting, and reporting is compliant with TAG Unit A1.

4.3.7. Lyminster Bypass (North), like most road projects, is considered an asset with an indefinite life, with maintenance and renewal taking place as required. Scheme appraisal has therefore been undertaken for a 60-year period in accordance with HM Treasury’s Green Book.

4.3.8. Annualisation factors for the three modelled time periods (AM peak hour, inter peak hour, PM peak hour) have been derived based on values obtained from the traffic survey data, as set out in section 8.3 of the Data Collection Report. The derived annualisation factors are given in Table 4-2, with further details provided in the Economic Assessment Report.

Table 4-2 - Annualisation Factors

Peak Hour	Peak Hour to Peak Period Factor	Number per Year	Annualisation Factor
AM (08:00-09:00, weekdays)	2.690	253	680
IP (10:00-16:00, weekdays, Average Hour)	6.000	253	1518
PM (17:00-18:00, Weekdays)	2.699	253	683
Off-peak (19:00-07:00 weekdays)	2.700	253	683
Weekend (Sat 07:00-Mon 07:00)	25.600	56	1444

4.3.9. Off-peak and weekend periods use the interpeak model as a proxy, with suitable factors applied based on observed traffic flows over these periods. Bank holidays are represented by weekend factors. There are 8 bank holidays per year, which can be amalgamated into four 2-day blocks equivalent to a weekend. Thus, there are 56 “weekend” periods in a year. The calculated benefits have therefore been derived for all 8,760 hours in the year.

4.3.10. User classes have been defined as shown in Table 4-3 so that the definitions used in model development have been applied to the TUBA assessment.

Table 4-3 - User Class Definitions

UC	Model Definition	TUBA Parameter		
		Vehicle Type	Purpose	Person Type
1	Car: Commuting	Car	Commuting	All
2	Car: Employer’s Business	Car	Business	All
3	Car: Other	Car	Other	All
4	LGV	LGV Freight	Business	All
5	OGV1	OGV1	Business	Driver
6	OGV2	OGV2	Business	Driver

4.3.11. TUBA requires that the trip matrices be entered as total trips, but SATURN defines trips in Passenger Car Units (PCU), as set out in the Local Model Validation Report (February 2014). It is, therefore, necessary to apply adjustment factors to convert the PCU matrices into total trips. These are set out in Table 4-4.

Table 4-4 - PCU to Vehicle Adjustment Factors

UC	Model Definition	PCU Factor	TUBA Factor
1	Car: Commuting	1.0	1.00000
2	Car: Employer’s Business	1.0	1.00000
3	Car: Other	1.0	1.00000
4	LGV	1.0	1.00000
5	OGV1	1.9	0.52632
6	OGV2	2.9	0.34483

4.3.12. The derivation of the PCU factors is set out in section 2.7 of Deliverable D7 - Forecasting Report (August 2018).

4.3.13. Model skims were extracted from the 2019 and 2034 forecast models. There have been delays in the opening year for the scheme compared to the year when the modelling was first undertaken. The opening year for the scheme is 2024 and the first modelled year is 2019. TUBA does not allow a modelled year that is before the first year for which benefits should be calculated. The TUBA default assumption on growth has been applied, with no additional growth assumed beyond the final modelled year of 2034. The default assumptions on growth in the values of impacts have also been

applied, meaning that the per unit benefits of the scheme decline over time. Adjustments have been made to the TUBA input file parameters with 2019 as the first year, and 2083 as the horizon year. TUBA has calculated benefits and revenues for the period 2019 to 2083 (inclusive), and then adjustments have been made to remove benefits for the years 2019 to 2023 from the results presented in the results section in 4.4.

4.3.14. The model forecasts have been completed in accordance with TAG principles, as set out in the Lyminster Bypass (North) Forecasting Report. TAG requires that forecasts for fixed trip models should include increases to account for fuel and income growth, resulting in relatively large growth forecasts. While this is sufficient growth to generate a robust assessment, it is reasonable to assume that such growth forecasts will not continue indefinitely. There is no further evidence to indicate the likely direction of traffic growth beyond this point, so the default assumption of zero growth beyond the final modelled year has been adopted.

4.3.15. Analysis undertaken on the high and low growth scenarios provides a sufficiently robust evidence base to assess the scheme benefits under possible alternative growth scenarios.

Wider Impacts

4.3.16. The wider economic impacts of the proposed scheme have been assessed in accordance with guidance set out in TAG Unit A2-1 (May 2019). The guidance considers the following impacts:

- **WI1: Agglomeration**: changes in economic production as a result of changes in connectedness and accessibility
- **WI2: Output change in imperfectly competitive markets**: a reduction in transport costs to businesses allows for an increase in output of goods and services that use transport
- **WI3: Tax revenues arising from labour market impacts**: changes in labour supply or a move to more or less productive jobs due to a change in commuting cost.

4.3.17. TAG indicates that the output change in imperfectly competitive markets and tax revenues from changes in the labour supply will be relevant to most schemes, but the agglomeration element may not be relevant. Critical to this determination is whether the scheme is in close proximity to an economic centre or large employment centre. TAG defines such locations as Functional Urban Regions (FUR), and the plan included in Appendix A of the guidance indicates that Lyminster Bypass (North) does not lie within a FUR.

4.3.18. It is considered that the impact on the labour supply due to changes in transport costs will be beneficial, as congestion will be reduced, but the impact will be small in relation to the typical length of commuting trips. The data collection and analysis required for a detailed quantitative study is considered disproportionate for a scheme of this size. It should be noted that this impact is different to releasing highway capacity to facilitate the development of employment sites, which is a direct benefit of this scheme.

4.3.19. Consequently, only the output change in imperfectly competitive markets (WI2) has been assessed.

Accident Assessment

4.3.20. Assessment of the costs and benefits associated with accidents has been undertaken using the DfT's CoBALT (Cost – Benefit-Analysis Light Touch) software (COBALT v2.2). The input parameters are those published March 2022, the analysis has been updated for the Full Business Case.

4.3.21. CoBALT uses information derived from the SATURN model, so a network has been built that replicates the EATM network. Traffic flows have been obtained from the SATURN model, for the following years:

- Base Year (2013)
- Opening year (2024)
- Design year with Scheme (2039).

4.3.22. Accident data for the latest five-year period from 2015 to 2019 has been extracted from DfT accident database (DfT Stat19) in order to provide accident rates for existing links in CoBALT. The accidents have been geocoded to correspond to the selected highway network.

4.3.23. CoBALT provides three options for assessment:

- Link only
- Junction only
- Link and junction combined.

4.3.24. The analysis for Lyminster Bypass (North) has been carried out using the 'combined' method. This requires considerably less analysis than separate link and junction analysis, so is the appropriate proportional assessment for this scheme. TAG Unit A4-1 2.3.9 indicates that this is acceptable when local data is hard to distinguish between links and junctions.

Air Quality Assessment

4.3.25. The Air Quality Assessment has been undertaken following up to date guidance (LAQM) and methodologies (ADMS Roads) to provide a robust assessment of the potential impacts upon air quality.

Noise Assessment

4.3.26. Noise has been assessed in line with the Noise and Vibration Assessment (November 2021)

4.4 RESULTS

4.4.1. Results are presented for the "AM, IP and PM" peak period assessment as well as the "AM IP, PM, OP and WE" assessment which includes additional benefits in the off peak and weekend period. These assessments are presented in Table 4-5 to Table 4-7 below.

Table 4-5 – User Benefits for the Core Growth Scenario (2010 Prices Discounted to 2010)

Benefit		AM, IP and PM	AM, IP, PM, OP and WE
Consumer - commuting user benefits	Travel time	£8,271,540	£10,331,772
	Vehicle operating costs	£587,197	£737,844
	Subtotal	£8,858,737	£11,069,616
Consumer - other user benefits	Travel time	£15,024,281	£28,992,885
	Vehicle operating costs	£1,870,910	£3,557,311
	Subtotal	£16,895,191	£32,550,195
Business benefits	Travel time	£7,830,535	£14,586,957
	Vehicle operating costs	£1,594,161	£2,789,092
	Subtotal	£9,424,696	£17,376,049
Present Value of Benefits (PVB)		**£35,178,624**	**£60,995,860**

4.4.2. The Core Growth Scenario run generates benefits £35.2m for the AM, IP and PM periods and £61m for the AM, IP, PM, OP and WE periods.

Table 4-6 – User Benefits for the High Growth Scenario (2010 Prices Discounted to 2010)

Benefit		AM, IP and PM	AM, IP, PM, OP and WE
Consumer - commuting user benefits	Travel time	£8,926,608	£11,071,189
	Vehicle operating costs	£714,366	£839,294
	Subtotal	£9,640,974	£11,910,483
Consumer - other user benefits	Travel time	£15,737,799	£29,953,244
	Vehicle operating costs	£1,987,993	£3,819,125
	Subtotal	£17,725,792	£33,772,369
Business benefits	Travel time	£8,277,794	£15,067,287
	Vehicle operating costs	£1,718,194	£2,973,615
	Subtotal	£9,995,988	£18,040,902
Present Value of Benefits (PVB)		**£37,362,754**	**£63,723,754**

4.4.3. The High Growth Scenario run generates benefits £37.4m for the AM, IP and PM periods and £63.7m for the AM, IP, PM, OP and WE periods.

Table 4-7 – User Benefits for the Low Growth Scenario (2010 Prices Discounted to 2010)

Benefit		AM, IP and PM	AM, IP, PM, OP and WE
Consumer - commuting user benefits	Travel time	£7,124,035	£9,128,930
	Vehicle operating costs	£645,268	£775,497
	Subtotal	£7,769,304	£9,904,427
Consumer - other user benefits	Travel time	£12,819,939	£26,103,924
	Vehicle operating costs	£1,679,883	£3,218,320
	Subtotal	£14,499,822	£29,322,244
Business benefits	Travel time	£7,559,927	£14,390,102
	Vehicle operating costs	£1,453,978	£2,566,457
	Subtotal	£9,013,905	£16,956,559
Present Value of Benefits (PVB)		**£31,283,031**	**£56,183,230**

4.4.4. The Low Growth Scenario run generates benefits £31.3m for the AM, IP and PM periods and £56.2m for the AM, IP, PM, OP and WE periods.

Wider Impacts

4.4.5. The results of the analysis described above are summarised in Table 4-8, Table 4-9 and Table 4-10. TAG indicates impact WI2 should be estimated at 10% of the total business benefits arising from the scheme.

Table 4-8 - Wider Economic Impacts Results for the Core Growth Scenario (2010 Prices Discounted to 2010)

Impact	Scenario	Total Business Benefits	NPV of WI2
WI2 – Output in Imperfectly Competitive Markets	AM, IP and PM	£9,424,696	£942,000
	AM, IP, PM, OP and WE	£17,376,049	£1,738,000

Table 4-9 - Wider Economic Impacts Results for the High Growth Scenario (2010 Prices Discounted to 2010)

Impact	Scenario	Total Business Benefits	NPV of WI2
WI2 – Output in Imperfectly Competitive Markets	AM, IP and PM	£9,995,988	£1,000,000
	AM, IP, PM, OP and WE	£18,040,902	£1,804,000

Table 4-10 - Wider Economic Impacts Results for the Low Growth Scenario (2010 Prices Discounted to 2010)

Impact	Scenario	Total Business Benefits	NPV of WI2
WI2 – Output in Imperfectly Competitive Markets	AM, IP and PM	£9,013,905	£901,000
	AM, IP, PM, OP and WE	£16,956,559	£1,696,000

Accident Assessment

4.4.6. Costs per casualty and per accident are as set out in the TAG data book (November 2021). All monetary values are in pounds, in 2010 prices, discounted to 2010.

4.4.7. The results of the accident analysis are shown in Table 4-11. The appraisal period is 2024 to 2083 which covers the 60-year appraisal period.

Table 4-11 - Accident Analysis Results (2010 Prices Discounted to 2010)

Benefit		Value
Total accidents saved by scheme		88
Casualties saved by scheme	Fatal	0
	Serious	11
	Slight	104
	TOTAL	115
Total value of accident savings		**£3,333,000**

4.4.8. The scheme generates **£3.333m** of safety benefits arising from a reduction in accidents and casualties. Therefore, there are high safety benefits associated with the scheme.

Delays During Construction

4.4.9. Lyminster Bypass (North) will be built largely off-line, and the only interface with operation of the existing highway is the northern tie-in. Construction of the Brookfield culvert at this location makes the works more complex than a typical tie-in, but the impacts from positive Traffic Management are still minor. The Traffic Management impacts are shown in Table 4-12.

Table 4-12 – Traffic Management Impacts

Intervention	No. of instances	Impact on BCR
Weekday night closure	15	Negligible
Weekday off-peak signals	60	Negligible
Weekend road closures	5	Negligible

4.4.10. The majority of the affected time periods have not been directly modelled so construction delays would not have a significant impact on the Benefit to Cost Ratio (BCR) for the scheme.

Distributional Impact Assessment

4.4.11. The Distributional Impact Assessment has been completed and is the subject of a separate report.

Air Quality Assessment

4.4.12. Given the relatively low background concentrations within the study area, according to the EPUK significance criteria, the effects of the operation phase are considered to be a permanent direct long term slight adverse to slight beneficial for NO2 and negligible effects for PM10. The qualitative assessment shows a total Air Quality benefit of **£2,303,932**. Full results are provided in the Economic Assessment Report.

Noise Assessment

4.4.13. The Noise assessment shows that most receptors will experience an impact of negligible magnitude. During the short-term, moderate and major adverse impacts are predicted to the south of the scheme. In the long term, the same area would receive a minor or moderate adverse impact.

4.4.14. The assessment shows that noise sensitive receptors near Lyminster Bypass (South) at the intersection with the A259, which does not form part of this scheme, are likely to receive an increase in noise levels. Mitigation in the form of a 3m high noise barrier is committed and therefore some of these areas will experience a noise impact lower than presented.

4.4.15. Beneficial impacts will be experienced at noise sensitive receptors along the existing A284 over both short and long-term. The qualitative assessment shows a total Noise benefit of **-£179,683**. Full results are given in the Economic Assessment Report.

4.5 SENSITIVITY AND RISK PROFILE

4.5.1. Risks that have the potential to affect the scheme cost are included in the project risk register, which also includes potential mitigation measures. Risks have been assessed on a full Quantified Cost Risk Assessment basis. The project risk register and QCRA output is included in Appendix C.

4.5.2. The sum of unmitigated risk costs is **£3,996,828**.

4.6 APPRAISAL SUMMARY TABLE

4.6.1. The Appraisal Summary Table (AST) is a single-page summary of the key aspects of the economic case, focusing on five key appraisal areas, in accordance with guidance presented in TAG:

- Economy
- Environmental
- Social
- Safety
- Public Accounts.

4.6.2. The AST for Lyminster Bypass (North) has been completed and is presented in **Appendix A**. Supporting worksheets are presented in **Appendix B**.

4.7 VALUE FOR MONEY STATEMENT

4.7.1. The value for money assessment has been prepared in accordance with the DfT's "Value for money assessment: advice note for local transport decision makers".

4.7.2. Guidance indicates a range of value for money categories that vary according to the Benefit to Cost Ratio (BCR) of the scheme. These value for money categories are shown in Table 4-13.

Table 4-13 - DfT Value for Money Categories

BCR Range	Value for Money Category
< 1.0	Poor
1.0 – 1.5	Low
1.5 – 2.0	Medium
2.0 – 4.0	High
> 4.0	Very High

4.7.3. Initial monetised impacts of the scheme have been extracted from the AST and reported in the Economic Efficiency of the Transport System (TEE) table, Public Accounts (PA) table and Analysis of Monetised Costs and Benefits (AMCB) table, which are included in **Appendix B** and repeated in Table 4-14 to Table 4-22. In compiling the value for money statement, the impacts of accidents and delays during construction were included. All monetary values are in 2010 prices, discounted to 2010.

Table 4-14 - Economic Efficiency of the Transport System (TEE) for the Core Growth Scenario

User	Item	AM, IP and PM	AM, IP, PM, OP and WE
Non-business: Commuting	Travel time	£8,271,540	£10,331,772
	Vehicles operating costs	£587,197	£737,844
	Net Commuting	£8,858,737	£11,069,616
Non-business: Other	Travel time	£15,024,281	£28,992,885
	Vehicles operating costs	£1,870,910	£3,557,311
	Net Other	£16,895,191	£32,550,195
Business	Travel time	£7,830,535	£14,586,957
	Vehicles operating costs	£1,594,161	£2,789,092
	Net Business	£9,424,696	£17,376,049
	TOTAL	**£35,178,624**	**£60,995,860**

Table 4-15 - Economic Efficiency of the Transport System (TEE) for the High Growth Scenario

User	Item	AM, IP and PM	AM, IP, PM, OP and WE
Non-business: Commuting	Travel time	£8,926,608	£11,071,189
	Vehicles operating costs	£714,366	£839,294
	Net Commuting	£9,640,974	£11,910,483
Non-business: Other	Travel time	£15,737,799	£29,953,244
	Vehicles operating costs	£1,987,993	£3,819,125
	Net Other	£17,725,792	£33,772,369
Business	Travel time	£8,277,794	£15,067,287
	Vehicles operating costs	£1,718,194	£2,973,615
	Net Business	£9,995,988	£18,040,902
	TOTAL	**£37,362,754**	**£63,723,754**

Table 4-16 - Economic Efficiency of the Transport System (TEE) for the Low Growth Scenario

User	Item	AM, IP and PM	AM, IP, PM, OP and WE
Non-business: Commuting	Travel time	£7,124,035	£9,128,930
	Vehicles operating costs	£645,268	£775,497
	Net Commuting	£7,769,304	£9,904,427
Non-business: Other	Travel time	£12,819,939	£26,103,924
	Vehicles operating costs	£1,679,883	£3,218,320
	Net Other	£14,499,822	£29,322,244
Business	Travel time	£7,559,927	£14,390,102
	Vehicles operating costs	£1,453,978	£2,566,457
	Net Business	£9,013,905	£16,956,559
	TOTAL	**£31,283,031**	**£56,183,230**

Table 4-17 - Public Accounts (PA) for the Core Growth Scenario

User	Item	AM, IP and PM	AM, IP, PM, OP and WE
Central government funding	Investment costs	£20,470,000	£20,470,000
Central government funding: non-transport	Indirect tax revenues	£1,237,095	£2,167,621
Broad transport budget		**£22,912,000**	**£22,912,000**
Wider public finances		**£1,237,095**	**£2,167,621**

Table 4-18 - Public Accounts (PA) for the High Growth Scenario

User	Item	AM, IP and PM	AM, IP, PM, OP and WE
Central government funding	Investment costs	£20,470,000	£20,470,000
Central government funding: non-transport	Indirect tax revenues	£1,330,057	£2,286,657
Broad transport budget		**£22,912,000**	**£22,912,000**
Wider public finances		**£1,330,057**	**£2,286,657**

Table 4-19 - Public Accounts (PA) for the Low Growth Scenario

User	Item	AM, IP and PM	AM, IP, PM, OP and WE
Central government funding	Investment costs	£20,470,000	£20,470,000
Central government funding: non-transport	Indirect tax revenues	£1,151,173	£2,019,582
Broad transport budget		**£22,912,000**	**£22,912,000**
Wider public finances		**£1,151,173**	**£2,019,582**

Table 4-20 - Analysis of Monetised Costs and Benefits (AMCB) for the Core Growth Scenario

Item	AM, IP and PM	AM, IP, PM, OP and WE
Air Quality	£2,304,000	£2,304,000
Noise	-£180,000	-£180,000
Accidents	£3,333,000	£3,333,000
Greenhouse Gases	£1,186,000	£2,091,000
Economic Efficiency: Consumer Users (Commuting)	£8,858,737	£11,069,616
Economic Efficiency: Consumer Users (Other)	£16,895,191	£32,550,195
Economic Efficiency: Business Users and Providers	£9,424,696	£17,376,049
Wider Public Finances (Indirect Tax Revenues)	-£1,237,095	-£2,167,621
Present Value of Benefits (PVB)	**£40,584,529**	**£66,376,239**
Present Value of Costs (PVC)	**£22,912,000**	**£22,912,000**
OVERALL IMPACTS		
Net Present Value (NPV)	**£17,672,529**	**£43,464,239**
Initial Benefit to Cost Ratio (BCR)	**1.8**	**2.9**

4.7.4. The information in Table 4-20 shows that the Initial BCR of the Core Growth Scenario of the scheme, based on standard monetised values, is **1.8** for the "AM, IP and PM" and **2.9** for the "AM, IP, PM, OP and WE" assessment. This represents the benefits for the core elements of the scheme and is considered **Medium** and **High** value for money according to DfT guidance.

Table 4-21 - Analysis of Monetised Costs and Benefits (AMCB) for the High Growth Scenario

Item	AM, IP and PM	AM, IP, PM, OP and WE
Air Quality	£2,304,000	£2,304,000
Noise	-£180,000	-£180,000
Accidents	£3,333,000	£3,333,000
Greenhouse Gases	£1,278,000	£2,208,000
Economic Efficiency: Consumer Users (Commuting)	£9,640,974	£11,910,483
Economic Efficiency: Consumer Users (Other)	£17,725,792	£33,772,369
Economic Efficiency: Business Users and Providers	£9,995,988	£18,040,902
Wider Public Finances (Indirect Tax Revenues)	-£1,330,057	-£2,286,657
Present Value of Benefits (PVB)	**£42,767,697**	**£69,102,096**
Present Value of Costs (PVC)	**£22,912,000**	**£22,912,000**
OVERALL IMPACTS		
Net Present Value (NPV)	**£19,855,697**	**£46,190,096**
Initial Benefit to Cost Ratio (BCR)	**1.9**	**3.0**

4.7.5. The information in Table 4-21 shows that the Initial BCR of the High Growth Scenario of the scheme, based on standard monetised values, is **1.9** for the "AM, IP and PM" and **3.0** for the "AM,

IP, PM, OP and WE" assessment, which is considered **Medium** and **High** value for money respectively according to DfT guidance.

Table 4-22 - Analysis of Monetised Costs and Benefits (AMCB) for the Low Growth Scenario

Item	AM, IP and PM	AM, IP, PM, OP and WE
Air Quality	£2,304,000	£2,304,000
Noise	-£180,000	-£180,000
Accidents	£3,333,000	£3,333,000
Greenhouse Gases	£1,102,000	£1,945,000
Economic Efficiency: Consumer Users (Commuting)	£7,769,304	£9,904,427
Economic Efficiency: Consumer Users (Other)	£14,499,822	£29,322,244
Economic Efficiency: Business Users and Providers	£9,013,905	£16,956,559
Wider Public Finances (Indirect Tax Revenues)	-£1,151,173	-£2,019,582
Present Value of Benefits (PVB)	**£36,690,859**	**£61,565,648**
Present Value of Costs (PVC)	**£22,912,000**	**£22,912,000**
OVERALL IMPACTS		
Net Present Value (NPV)	**£13,778,859**	**£38,653,648**
Initial Benefit to Cost Ratio (BCR)	**1.6**	**2.7**

4.7.6. The information in Table 4-22 shows that the Initial BCR of the Low Growth Scenario of the scheme, is **1.6** for the "AM, IP and PM" and **2.7** for the "AM, IP, PM, OP and WE" assessment, which is **Medium** and **High** value for money according to DfT guidance.

4.7.7. The DfT guidance recommends that this Initial BCR be modified to include additional elements from the AST to create an Adjusted BCR. Following DfT guidance, the monetised values to be extracted from the AST are set out in Table 4-23 to Table 4-25.

Table 4-23 - Adjusted BCR Calculation for the Core Growth Scenario

Impact		AM, IP and PM	AM, IP, PM, OP and WE
Initial PVB		£40,584,529	£66,376,239
Economy	Wider impacts	£942,000	£1,738,000
Adjusted PVB		£41,526,529	£68,114,239
Adjusted NPV		£18,614,529	£45,202,239
Adjusted BCR		**1.8**	**3.0**

4.7.8. The Adjusted BCR for the Core Growth Scenario is increased to **1.8** and **3.0**, representing the wider benefits of the scheme. This is **Medium** and **High** value for money respectively, according to DfT guidance.

Table 4-24 - Adjusted BCR Calculation for the High Growth Scenario

Impact		AM, IP and PM	AM, IP, PM, OP and WE
Initial PVB		£42,767,697	£69,102,096
Economy	Wider impacts	£1,000,000	£1,804,000
Adjusted PVB		£43,767,697	£70,906,096
Adjusted NPV		£20,855,697	£47,994,096
Adjusted BCR		**1.9**	**3.1**

4.7.9. The Adjusted BCR for the High Growth Scenario is increased to **1.9** and **3.1**, representing the wider benefits of the scheme. This is **Medium** and **High** value for money respectively, according to DfT guidance.

Table 4-25 - Adjusted BCR Calculation for the Low Growth Scenario

Impact		AM, IP and PM	AM, IP, PM, OP and WE
Initial PVB		£36,690,859	£61,565,648
Economy	Wider impacts	£901,000	£1,696,000
Adjusted PVB		£37,591,859	£63,261,648
Adjusted NPV		£14,679,859	£40,349,648
Adjusted BCR		**1.6**	**2.8**

4.7.10. The Adjusted BCR for the Low Growth Scenario is maintained at **1.6** and **2.8**, representing the wider benefits of the scheme. This is **Medium** and **High** value for money, according to DfT guidance.

4.7.11. In considering overall value for money, attention must be paid to the Initial and Adjusted BCRs, as well as non-monetised impacts. The value for money statement provides a summary of these considerations and is presented in Table 4-26, Table 4-27 and Table 4-28.

Table 4-26 - Value for Money Statement for the Core Growth Scenario

	AM, IP and PM	AM, IP, PM, OP and WE	Detail
Initial Benefit Cost Ratio (BCR)	1.8	2.9	Calculated using TAG guidance
Adjusted BCR	1.8	3.0	Includes wider impacts
Qualitative assessment	Largely beneficial		Key improvements in journey quality and community severance
Key risks, sensitivities	Risk pot of £3,996,828		Risk allowance quantified to an appropriate level for this stage of scheme design
Value for money category	Medium	High	Initial and Adjusted BCRs are in Medium category for the AM, IP and PM, and High category for AM, IP, PM, OP and WE which is supported by qualitative assessment

Table 4-27 - Value for Money Statement for the High Growth Scenario

	AM, IP and PM	AM, IP, PM, OP and WE	Detail
Initial Benefit Cost Ratio (BCR)	1.9	3.0	Calculated using TAG guidance
Adjusted BCR	1.9	3.1	Includes wider impacts
Qualitative assessment	Largely beneficial		Key improvements in journey quality and community severance
Key risks, sensitivities	Risk pot of £3,996,828		Risk allowance quantified to an appropriate level for this stage of scheme design
Value for money category	Medium	High	Initial and Adjusted BCRs are in Medium category for the AM, IP and PM, and High category for AM, IP, PM, OP and WE which is supported by qualitative assessment

Table 4-28 - Value for Money Statement for the Low Growth Scenario

	AM, IP and PM	AM, IP, PM, OP and WE	Detail
Initial Benefit Cost Ratio (BCR)	1.6	2.7	Calculated using TAG guidance
Adjusted BCR	1.6	2.8	Includes wider impacts
Qualitative assessment	Largely beneficial		Key improvements in journey quality and community severance
Key risks, sensitivities	Risk pot of £3,996,828		Risk allowance quantified to an appropriate level for this stage of scheme design
Value for money category	Medium	High	Initial and Adjusted BCRs are in Medium category for the AM, IP and PM, and High category for AM, IP, PM, OP and WE which is supported by qualitative assessment

4.7.12. The information presented in the economic dimension indicates that Lyminster Bypass (North) is considered **Medium** value for money.

5 FINANCIAL DIMENSION

5.1 INTRODUCTION

5.1.1. To determine the affordability of Lyminster Bypass (North), a target cost has been determined following completion of the detailed design. The information presented in this section demonstrates that further funding is required for the scheme.

5.1.2. Information is presented below on the following:

- Costs
- Budgets / funding cover

5.2 COSTS

5.2.1. Cost estimates have been prepared broadly in accordance with the guidance presented in TAG Unit A1-2. The cost pro-forma is included in Appendix D and summarised in Table 5-1. Construction costs are based on latest information supplied by the contractor (Jackson Civil Engineering), plus spend incurred to date on design and preparatory work.

Table 5-1 - Summary Scheme Costs (2022 Q1 Prices)

Cost Element	Cost
Design Costs	£3,043,000
Construction Costs	£24,875,000
Archaeology	£562,000
Compulsory Purchase Order	£179,000
Professional Fees	£1,647,000
WSCC Overheads	£672,000
Land Acquisition	£2,381,000
Utilities Diversions	£96,000
Risk	£3,997,000
TOTAL	**£37,452,000**

5.2.2. In keeping with guidance presented in TAG, cost estimates associated with Part 1 Claims have been excluded, and no allowance has been made for Optimism Bias in the Financial Dimension.

5.2.3. Maintenance costs are set out in Table 5-2. These have been included in the assessment of costs and benefits as set out in the Economic dimension, but they have not been included in the scheme budget, since they would be funded through the County's annual maintenance programme, so do not require capital to be set aside.

Table 5-2 – Maintenance Costs

Item	Frequency	Cost over 60 years
Resurfacing	12 years	£1,059,875
HFS	10 years	£170,730
Pothole repairs	£20000 in 2 years prior to resurfacing	£200,000
Signalised Pegasus crossing - Annual Maintenance	Annually	£125,280
Signalised Pegasus crossing - Periodic replacement	20 years	£119,730
3m wide shared cycleway/footway AC6	20 years	£180,000
2.5m grassed verge	6x a year	£126,000
Black Ditch Viaduct - General Inspections	2 years	£2,300
Black Ditch Viaduct - Principal Inspections	6 years	£20,000
Black Ditch Viaduct - Drainage cleaning	6 years	£100,000
Black Ditch Viaduct - expansion joint replacements	15 years	£84,000
Black Ditch Viaduct: Waterproofing & parapet replacement	50 years	£685,000
cellular storage,	30 years	£65,000
balancing pond/Wetland area	10 years	£134,400
swales	2 years	£5,830
Kerb drains	5 years	£58,080
pipework	5 years	£120,960
Filer drains	20 years	£11,833
flow control	5 years	£7,200
Gullys	annually	£69,000
Street lighting - Annual maintenance	annually	£225,000
Street lighting - Periodic replacement	20 years	£165,000
Landscaping - Trees - First 5 years	Annually for 5 years	£14,625
Landscaping - Trees - Thereafter	5 years	£32,175
Landscaping - Hedgerows	annually	£28,620
Acoustic fencing - General Inspections	2 years	£1,800

Item	Frequency	Cost over 60 years
Acoustic fencing - Principal Inspections	6 years	£1,800
Acoustic fencing - Full replacement	20 years	£424,528
TOTAL		**£4,238,766**

5.3 BUDGET / FUNDING COVER

5.3.1. As shown in Table 5-1, the estimated scheme cost in current prices is **£37.45m**. Funding sources are shown in Table 5-3. Section 106 contributions amounting to £3.76m have been earmarked for this scheme under various agreements. £2.29m of the £3.76m S106 funding has been received and is available to be spent on the scheme. Legal agreements are in place to receive the remaining £1.47m of S106 funding from the developers, which will be due once the 'triggers' in the payment mechanism have been reached.

5.3.2. However, to ensure timely delivery of the scheme, WSCC has decided to provide forward funding for the remaining £1.47m S106 contributions and this is included in the Council's Capital Programme approved by the County Council on 28th February 2022. This is detailed in the programme profile and funding stream provided in Table 5-4.

Table 5-3 - Funding Sources

Source	Total	Status
S106 Contributions	£3.76m	£1.47m of this amount will be forward funded by WSCC
Coast to Capital LEP	£3.00m	
WSCC	£18.90m	
DfT	£11.79m	The subject of this Transport Business Case
TOTAL	**£37.45m**	

5.3.3. Annual budget requirements have been reviewed against funding streams to ensure that the scheme is affordable in each year of its construction as shown in Table 5-4.

Table 5-4 - Annual Budget Cover (2022 Prices)

FY	Cost	S106	LEP	DfT	WSCC
2013-14	*£351,000*	£351,000			
2014-15	*£332,000*	£173,000			£159,000
2015-16	*£49,000*		£49,000		
2016-17	*£291,000*		£290,000		
2017-18	*£936,000*		£909,000		£27,000
2018-19	*£702,000*		£702,000		
2019-20	*£506,000*		£506,000		
2020-21	*£526,000*		£514,000		£12,000
2021-22	*£2,276,000*		£ 30,000		£2,246,000
2022-23	*£18,600,000*	£424,000		£5,878,000	£12,298,000
2023-24	*£12,883,000*	£2,813,000		£5,914,000	£4,156,000
TOTAL	**£37,452,000**	**£3,761,000**	**£3,000,000**	**£11,792,000**	**£18,899,000**

6 COMMERCIAL DIMENSION

6.1 INTRODUCTION

6.1.1. The commercial dimension provides evidence of the commercial viability of the project and the procurement strategy adopted. A procurement workshop was held 29 April 2014 with representatives from relevant departments within WSCC. The commercial dimension has been compiled based on the outcomes of this workshop and information presented subsequently by each department.

6.1.2. Information is presented below on the following:

- Output based specification
- Procurement strategy
- Sourcing options
- Payment mechanisms
- Pricing framework and charging mechanisms
- Risk allocation and transfer
- Contract length
- Human resource issues
- Contract management.

6.2 OUTPUT BASED SPECIFICATION

6.2.1. West Sussex County Council is promoting the delivery of Lyminster Bypass (North), which involves the design and construction of a new bypass of the A284 Lyminster Road between Lyminster village and Toddington Nurseries to the north of Littlehampton. It will form the northern section of a new 1.8km combined bypass of the A284 between Lyminster village and the A259 Worthing Rd to the south, bridging the railway line at Toddington. Lyminster Bypass (South) (between A259 and Toddington Nurseries) is being delivered by private developers as part of the North Littlehampton Strategic Development Location, as shown in Figure 2-1.

6.2.2. Lyminster Bypass (North) is approximately 1.1km in length and is shown on Figure 3-6 above and it covers an approximate site area of 4.7ha. At its northern extent, the Lyminster Bypass (North) will incorporate a junction to serve the existing A284 Lyminster Road. The junction will branch off Lyminster Bypass (North), north of the residential properties on the eastern side of the A284.

6.2.3. Lyminster Bypass (North) will comprise a new 7.3m wide carriageway with 1.0m hard strips either side. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton. A 2.5m grassed verge will be provided on the opposite side of the carriageway apart from along the length of the viaduct. A priority-controlled junction will link the existing A284 to the new road.

6.2.4. Lyminster Bypass (North) will have a speed limit of 50mph reducing to 40mph towards the northern end to match the existing 40mph speed limit in this location. At the southern end, the speed limit will reduce to 30mph on the approach to the roundabout which is due to be constructed as part of the Lyminster Bypass (South) works. This change in speed limit will be just beyond the limit of the proposed scheme.

6.2.5. From the southern end, Lyminster Bypass (North) will be approximately at grade until it reaches the southern limit of the Black Ditch flood plain. From this point, the scheme will be constructed on a 225m long viaduct which will span the entirety of the Black Ditch flood plain. At the northern extent of the flood plain, the road will continue on an embankment. The road will be above the existing ground level until reaching the location of the Pegasus crossing which is approximately at-grade. From the crossing heading north, the road will be in a slight cutting before reverting once more to an embankment as it passes the new junction with the existing A284 and crosses Brookfield Stream.

6.2.6. The viaduct will be a piled structure with piers at 20m centres. The surface of the viaduct will sit approximately 4.0 – 4.5m above existing ground level. The viaduct will have a plain concrete finish and steel parapets either side to protect users.

6.2.7. As noted previously, Black Ditch and its associated floodplain will be spanned with a 225m viaduct. Brookfield Stream will be crossed with a replacement enlarged and extended culvert. Surface water run-off from the road will drain into these two watercourses with attenuation provided to restrict the rate of discharge of the surface water to greenfield run-off rates. South of Black Ditch, cellular storage will be used as attenuation and prior to discharge into Black Ditch, this surface water run-off will pass through a wetland area located to the east of the viaduct.

6.2.8. This feature will provide water polishing with the added benefit of encouraging biodiversity. The section of road north of Black Ditch up to the Pegasus crossing will drain into a swale running along the eastern side of the road achieving both attenuation and water quality objectives. From the Pegasus crossing to Brookfield Stream, surface water will discharge to a swale and into a dry balancing pond located to the east of the road prior to draining into the watercourse. Surface water from the section of road north of Brookfield Stream will discharge directly into the watercourse as is the current situation.

6.2.9. Limited street lighting will be required for safety reasons in the vicinity of the junction with the existing A284 and the Pegasus crossing with further lighting along the southern section on the approach to the roundabout.

6.2.10. Ecological mitigation will form part of the scheme with badger crossings, additional water vole habitat, bat and bird boxes.

6.2.11. Noise mitigation measures are proposed. These include a 2.5m high noise fence to be constructed from the existing Bridleway along the road to the new junction and back towards the boundary with Wolstanton House. It will also be the intention to surface the proposed road in a low noise surface along its entire length. This surfacing will continue beyond the extent of the new road up to the Brookfields property.

6.3 PROCUREMENT STRATEGY

6.3.1. The aim of a procurement strategy is to achieve the optimum balance of risk, control and cost certainty for a particular project and this procurement strategy, therefore, relates to Lyminster Bypass (North) only.

Procurement Rules

6.3.2. The European public contracts directive (2004/18/EC) applies to public authorities, including, local authorities. The directives set out detailed procedures for the award of contracts whose value equals or exceeds specific thresholds. The current construction cost for the scheme is £15.5m as compared to the current threshold for works. Therefore, the EU Regulations apply to Lyminster Bypass (North).

6.3.3. The WSCC Standing Orders on Procurement and Contracts (May 2013) require that contracts for services, supplies or works, over the financial thresholds specified in the EU Regulations must be conducted as set out in the EU Regulations. They also require that procurements must be conducted in accordance with Local Government Acts 1988 and 1999 (relating to the application of non-commercial considerations) and all relevant subordinate legislation relating to them. Where EU Regulations apply, they apply in addition to the WSCC Standing Orders and override Standing Orders in cases of conflict.

6.3.4. A soft market engagement exercise was held in January 2015, which provided the opportunity to assess the market's likely response to the contract models proposed for tender. A total of 10 highways consultants and contractors attended the event and provided valuable input into the procurement process.

Procurement Process

6.3.5. An OJEU Notice for the D&B framework was published on 27th May 2015, and this resulted in 56 expressions of interest. From that WSCC received completed pre-qualification questionnaires (PQQs) from a total of 13 contractors. Following an assessment of the PQQs, an Invitation to Tender (ITT) was issued to 9 prequalified contractors on 22nd June 2015. All 9 contractors submitted their tenders on 5th October 2015, and these tenders were assessed by WSCC with 4 Contractors gaining a place on the Design and Build Lot 2 Framework relevant to Lyminster Bypass (North). One of these Contractors was Carillion who are no longer trading. The Design and Build Contract for Lyminster Bypass (North) was a call-off scheme linked to the Framework and was awarded to Jackson Civil Engineering on 13th April 2016 although due to issues with the delivery of the southern section of the bypass, detailed design did not commence until March 2017.

6.4 PRICING FRAMEWORK AND CHARGING MECHANISMS

6.4.1. The WSCC Standing Orders specify that the Lowest Price or Most Economically Advantageous Tender (MEAT) criteria shall be used when the Council is buying. Owing to the fact that quality was a very important consideration for Lyminster Bypass (North) scheme, it was proposed to use the MEAT criteria in the evaluation of tenders for the Framework. Factors evaluated included the tenderer's capacity, capability, stability, experience and strength of their supply chain plus their profit, fees, overheads and their other costed proposals (e.g. the cost of detailed design) as appropriate. The precise criteria and the methodology for applying them was made available to contractors with tender documents.

6.4.2. The contractor was selected on a combination of qualitative (60%) and price (40%) criteria, the latter including profit, overhead and pre-construction phase fees.

6.5 RISK ALLOCATION AND TRANSFER

6.5.1. The risks associated with the project have been considered and included in the project risk register (included in Appendix C), which has been updated regularly through the project life cycle. The risk register was considered as part of the preparation of the detailed procurement strategy, and those risks that are best managed by the contractor were allocated to be priced by the contractor accordingly. Risks best managed by WSCC were retained and excluded from the contract.

6.6 CONTRACT LENGTH

6.6.1. The Framework will be available for six years as determined by EU regulations.

6.6.2. For Lyminster Bypass (North), a two-stage contract strategy has been adopted. In stage 1, the successful D&B Contractor team were appointed to undertake the detailed design of the scheme on the basis of a Limited Instruction to Proceed On completion of detailed design and subject to the Contractor meeting WSCC's stated outcomes and cost benchmarks, the Contractor will proceed to the second stage involving the construction of the scheme on an NEC Engineering and Construction Contract (ECC) option C (target cost contract with activity schedule).

6.6.3. The contract is expected to run until spring 2024.

6.7 HUMAN RESOURCE ISSUES

6.7.1. The project will be delivered by WSCC in partnership with the appointed contractor. There are therefore no implications with regards to people management, trade unions, or TUPE regulations.

6.8 CONTRACT MANAGEMENT

6.8.1. Design, procurement, and construction supervision will be managed by West Sussex County Council in conjunction with the Contractor (Jackson Civil Engineering) and appointed Consultant for NEC3 Project Management. The NEC3 Project Management will be provided by the consultant (Provelio) appointed under the Professional Services Contract Lot 2.

6.8.2. The Principal Designer at Construction will be the appointed Contractor, Jackson Civil Engineering.

7 MANAGEMENT DIMENSION

7.1 INTRODUCTION

7.1.1. The Management dimension sets out how the scheme will be delivered and managed, with measures to manage and apportion risk clearly defined.

7.1.2. Information is presented below on the following:

- Evidence of similar projects
- Programme / project dependencies
- Governance, organisational structure and roles
- Programme / project plan
- Assurance and approvals plan
- Communications and stakeholder management
- Programme / project reporting
- Risk management strategy
- Benefits realisation plan
- Monitoring and evaluation
- Management Options
- Carbon Management Plan.

7.2 EVIDENCE OF SIMILAR PROJECTS

7.2.1. In 2016 WSCC implemented a suite of frameworks related to highways construction and professional services highways. This was in recognition of the demand across the country for contractors and consultants as a result of increased national investment of infrastructure, and WSCC recognised that a long-term relationship with these parties was essential to ensure successful delivery of the major projects programme and to be seen as a 'client of choice'.

7.2.2. The WSCC frameworks have been successfully employed for a number of the major projects associated with LEP funding including Worthing Montague Place public realm scheme (c£1.3m) NCN2 major cycleway (c£2m) and the non- LEP Broadbridge Heath roundabouts (c£3m). The frameworks have also successfully awarded design-and-build contracts for the Littlehampton A259 widening scheme (c£26m), the A29 realignment (c£12m) as well as the Burgess Hill A2300 (c£23m). As a result, WSCC has continued to learn from all of these projects.

7.2.3. The A2300 is the most advanced (commenced on site April 2020 and opened March 2022) and the key lessons learnt and employed are as follows:

- **Early use of cost consultant.**

  WSCC created an additional Lot (Lot 2) under the professional services framework to allow commissioning of expertise in managing the NEC contracts and provide cost consultancy specialism that has previously been difficult to resource. WSCC has learnt to award these commissions as early as possible in the process and ideally prior to award of the design and build process. This has helped manage budget and costs expectations and provided robust challenge and scrutiny of contractors forecast of final cost.

- **Employing a dedicated NEC Project Manager through framework.**
  Lot 2 of the professional services framework exists purely for this reason and has greatly assisted the management of the complexities managing an NEC contract.
- **Using NEC supervisor.**
  Earlier schemes delivered through the frameworks did not have a dedicated NEC supervisor which led to poor communication in the construction phase. There is now a dedicated and very experienced NEC site supervisor who provides a communication conduit, alongside robust scrutiny and challenge during construction activities. This also assists in ensuring 'getting it right first time' providing greater final cost and programming certainty
- **Incorporating communications strategy within contract documents.**
  Managing the communications as purely a client role during the construction phase is cumbersome and inefficient, when most of the messages and the owner of the solution is with the contractor. For the A2300 responsibilities defined in the communications strategy were incorporated within the contract documents.
- **Using delivery group forum to manage developers and their dependencies.**
  Many schemes in the major projects programme have co-dependencies with developments and developers and WSCC has introduced a model of forums consisting of all key parties to a scheme (developers, their contractors and consultants, WSCC development control teams, streetworks teams for defining roadspace and project management team) to build relationships, trust and maintain full communication in order to manage and mitigate all risks arising from a multi-party delivery.
- **Management of subcontractors.**
  Contractors' management of supply chains and the supply chain's performance has been seen as a root-cause of some issues including delays and reputational issues. By incorporating the use of the dedicated NEC supervisor as well as full NEC governance this issue is being mitigated.
- **Using a Design and Build model for major projects.**
  The design and build contract model, that is a principle of the WSCC construction frameworks and employed on all major highway projects over £2m has been very beneficial in allowing for Early Contractor Involvement and establishing the buildability and viability of the designs prior to start of construction assisting the identification and mitigation of risks and providing greater cost certainty.

7.3 PROGRAMME / PROJECT DEPENDENCIES

7.3.1. Lyminster Bypass (South) is being delivered as part of the North Littlehampton SDL scheme, so the timing of this is important for completing Lyminster Bypass (North) covered by this business case. The developer's current proposals are for the southern bypass to be open to the public in April 2022. Lyminster Bypass (North) is dependent on Lyminster Bypass (South) during its operational phase following construction, but it is not fully dependent for the construction phase. The current proposal is that the majority of construction materials for the viaduct section of Lyminster Bypass (North) will be brought to site via Lyminster Bypass (South). Although it is not yet open to the public, the route has now been completed, and WSCC have agreements in place with the developer to gain access if required.

7.4 GOVERNANCE, ORGANISATIONAL STRUCTURE AND ROLES

7.4.1. Owing to the scale of the scheme, a Project Board has been set up to oversee its delivery. The project management structure for the scheme is as shown in Figure 7-1.

7.4.2. Members of the project board are set out in Table 7-1.

Table 7-1 - Project Board Membership

Name	Role	Organisation
Matt Davey	Senior Responsible Officer	Director of Highways, Transport and Planning, WSCC
Darryl Hemmings	Project Sponsor	Transport Policy and Planning Manager, WSCC
Karl Roberts	Senior User	Director of Place, Arun District Council
David Smith	Senior User	Head of Investment, Coast to Capital LEP
Alex Sharkey	Senior Supplier and Due Diligence	Manager, Highway Projects, WSCC
Mark Martin	Project Manager	Major Projects, WSCC
Alan Cowan	Senior Supplier	Programme Manager, WSCC
Alex Hall	Senior Supplier	Senior Finance Officer, WSCC

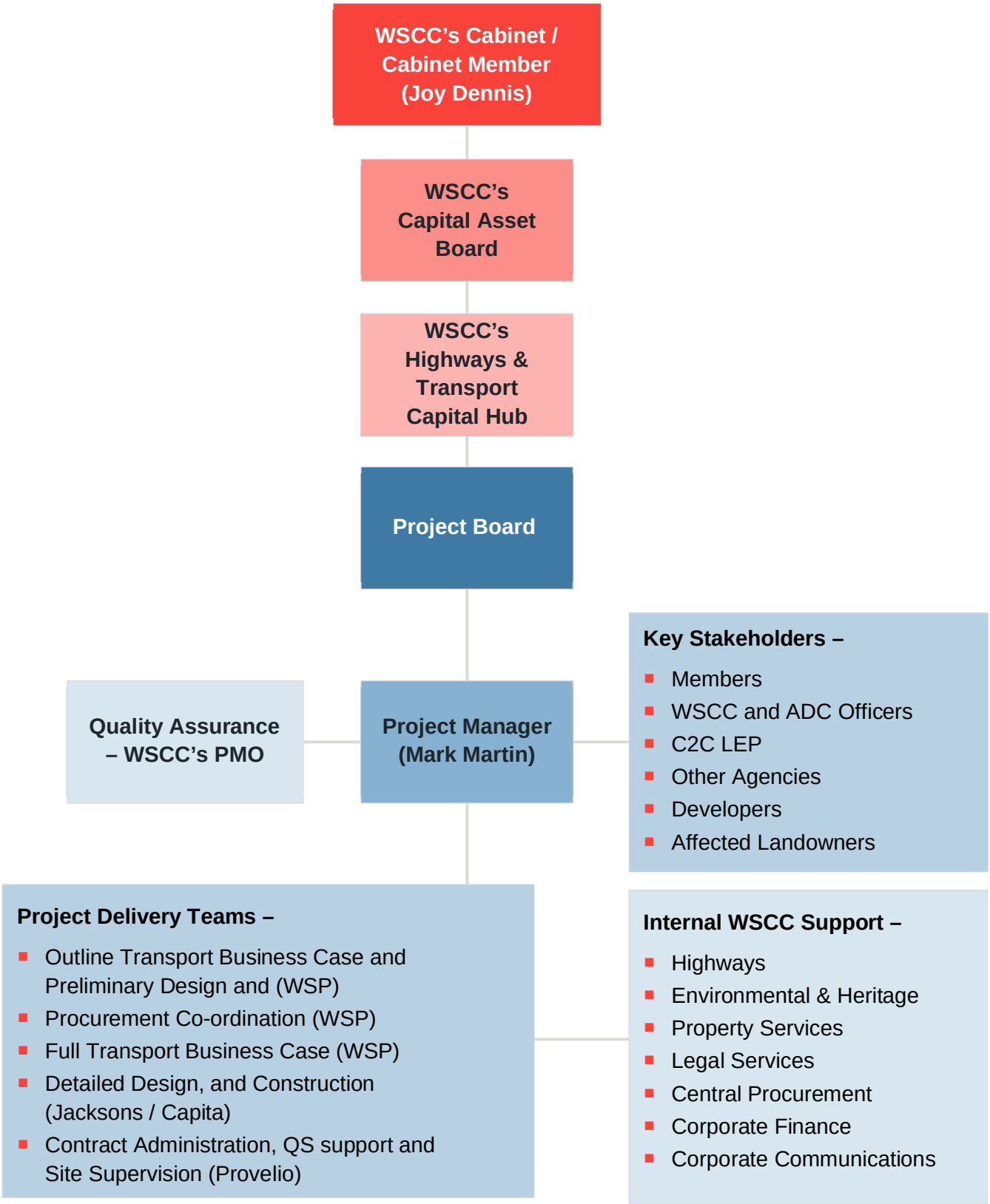


Figure 7-1 - Project Management Structure

7.4.3. The responsibilities of the Project Board include:

- Ensuring the project is, and remains, aligned with its objectives and other strategic policies.
- Monitoring progress, timescales and costs at a strategic level
- Contributing to, and signing off of key project management documents and project level plans
- Reviewing each completed stage and approving progress to the next
- Approving Exception Reports including authorizing any major deviation from the agreed Project (or Stage) Plans
- Arbitrating on any conflicts within the project including negotiating a solution to any problems between the project and any third parties
- Ensuring the Project Benefits can be, and are, delivered by the project.
- Approving Project Closure.

7.4.4. The Project Board represents three areas of interest as follows:

- **Executive**: Ultimately accountable for the delivery of the scheme, supported by the Senior Suppliers and Senior User.
- **Senior User**: Represents the interests of the end-users of the scheme. This role is currently occupied by a representative of Arun District Council. However, it is expected to revert to WSCC Asset Management as the scheme progresses towards implementation
- **Senior Suppliers**: Responsible for the design, facilitating, funding, procuring and building of the scheme.

Senior Responsible Officer

7.4.5. The Senior Responsible Officer is accountable for the delivery of the scheme. He has the following responsibilities:

- Chairing project board meetings;
- Championing the scheme to stakeholders and senior management;
- Approval of the Project Inception Document;
- Approval of major changes to scope, cost and programme; and responsible for the overall scheme funding.
- The SRO is also the Director of Highways, Transport and Planning and as such chairs the Highways Capital Hub meetings that are held monthly and monitor the Capital expenditure of the entire Highways programme. The Project Board report to Capital Hub monthly via Highlight Reports and the Capital Hub reports to WSCC Cabinet.

Project Manager

7.4.6. The Project Manager is the individual who is directly charged with delivering the scheme. The Project Manager leads and manages the project teams and runs the project on a day-to-day basis. The specific responsibilities of the project manager include:

- Preparing and maintaining the project initiation document, stage and exception plans, as required.
- Ensuring that risks are identified, recorded, managed and regularly reviewed.
- Authorising work packages following stage approval by the Project Board.

- Ensuring that the scheme is delivered to specification, on time and to cost within tolerances agreed by the Project Board.
- Escalating project issues where any corrective actions will result in the stage or scheme going beyond agreed tolerance margins.
- Reporting through agreed reporting lines on project progress through highlight reports and stage assessments, including budget and expenditure.
- Conducting end project evaluation to assess how well the project was managed and preparing and end-project report.
- Preparing a Lessons Learned Report.
- Preparing any follow-on action recommendations as required.

7.5 PROGRAMME / PROJECT PLAN

7.5.1. Owing to project constraints, a three-stage approach has been adopted for the delivery of the scheme as follows:

Stage One

- Complete preliminary designs and non-statutory environmental statement. This has been completed.
- Complete Transport Business Case and obtain approval for further funding from the Department for Transport (DfT). This has been completed.
- Obtain planning consent for the scheme. This was granted on 26th March 2019, with the decision published 9th May 2019 following confirmation that the scheme would not be called in by the Secretary of State.

Stage Two

- Undertake land acquisition by negotiation and Compulsory Purchase Order (CPO.) This process has been completed and the statutory timescales allow the land to be acquired on 22nd February 2022.
- Undertake detailed design, which was completed in April 2019. Obtain and agree target cost following completion of the CPO process.

Stage Three

- Proceed to construction June 2022, with completion by January 2024. The timelines are detailed in the scheme programme in **Appendix E**.

7.6 ASSURANCE AND APPROVALS PLAN

7.6.1. Controls are being implemented during the scheme to ensure that it stays in line with the expectations defined in the Project Initiation Document, the current Stage Plan and this Transport Business Case.

7.6.2. The scheme will be subject to Gateway Reviews in accordance with the WSCC Gateway Review Process by the Project Board at key decision points. These reviews would, among others:

- Enable the Project Board to assess the viability of the scheme at regular intervals, rather than let it run on in an uncontrolled manner.
- Ensure that key decisions are made prior to the detailed work needed to implement them.
- Clarify the impact of any identified external influences on the scheme.

7.6.3. The Project Manager will endeavour to contain the cost of any commission or contract works within the approved estimate, subject to a 10% or £20,000 tolerance (whichever is the lesser). The Project Manager will notify the Project Board as soon as it becomes evident that the approved estimate may or will be varied by more than the tolerance and advise the value of the variation, together with options and recommendations to bring the commission back within estimate where appropriate.

7.6.4. Cabinet Member approval has also been sought at appropriate times in order to undertake Statutory Procedures, including the making of a Planning Application and Land Acquisition.

7.7 COMMUNICATIONS AND STAKEHOLDER MANAGEMENT

7.7.1. A consultation and communication strategy was developed for the scheme, which seeks to achieve the following overarching aims with regard to the pre-planning application consultation:

- Meeting the requirements of the Localism Act and WSCC's Statement of Community Involvement (SCI) which obligate developers/scheme promoters to consult with communities prior to submitting planning applications
- Ensuring that all stakeholders are aware of, interested in, and able to contribute to the consultation
- Enabling the local community to give timely feedback on the proposals so that the plans can be refined accordingly to take into account local opinion
- Informing the final proposed design for the route and ensure that the design is supported by stakeholders and the wider community.

7.7.2. The consultation addressed various elements of the proposed scheme, such as the rationale for the bypass, junction design and carriageway width options, environmental and ecology issues.

7.7.3. John Hammond is the Communications Lead for the scheme.

7.7.4. As part of the Lyminster Bypass feasibility study carried out in 2012, statutory bodies and local councillors were consulted on the scheme. Arun District Council then consulted on the scheme as part of its Local Plan consultation in 2012

7.7.5. Public consultation on the proposed scheme was conducted in September 2014. This included the distribution of a leaflet to households, a series of public exhibitions and various communications activities to raise awareness of the consultation. Information was also available at Littlehampton and Arundel libraries and on WSCC's website. A questionnaire was made available for residents to complete over the period to Friday 26 September to share their views on the proposed scheme. Exhibitions were held in Lyminster on 12-13 September 2014 and in Littlehampton on 16-17 September 2014, with a good attendance at each session. The results of the public consultation were analysed in autumn 2014 and have been used to inform the detailed scheme design.

7.7.6. Consultation has been ongoing with landowners, local residents, Lyminster and Crossbush Parish Council. Other parish councils, Littlehampton Town Council, local District and County Council members have been kept informed via the North Littlehampton Steering Group and the JEAAC H&T Sub-group.

7.7.7. Jacksons Civil Engineering have developed a community liaison programme to update the public during the construction period.

7.8 PROGRAMME / PROJECT REPORTING

Project Acceptance Criteria

7.8.1. The Project acceptance criteria will generally be in accordance with the requirements of the Design Manual for Roads and Bridges (DMRB) as well other guidance from the DfT.

Quality Checking Process

7.8.2. A quality management system will be agreed and implemented for each stage of the scheme. Generally, the quality plan for each stage will describe techniques and standards to be applied during the project, and the various responsibilities for achieving the required quality levels.

Project Management Processes

7.8.3. WSCC is taking the lead role in the development, construction, operation and maintenance of Lyminster Bypass (North). To this end WSCC is responsible for all the project management processes involved in delivering the scheme (See 7.4 for further details of the project management processes).

Configuration Management

7.8.4. The Project Manager is responsible for configuration management ensuring that any changes are communicated to all parties to ensure a consistent design.

Change Management

7.8.5. The Project Board is responsible for approving or rejecting any requests for change falling outside agreed tolerance levels. The Board may either set new tolerance levels as long as they are within the constraints of the overall project budget or refer the matter back to corporate management for a decision.

7.9 RISK MANAGEMENT STRATEGY

7.9.1. Risk workshops have been undertaken over the course of the project, with results compiled into the Risk Register included in Appendix C. Risks are assessed on their likelihood and their severity, both with and without mitigation.

7.9.2. The risk register is reviewed at key project milestones with a risk specialist, with key risks reviewed at each Project Board meeting. This strategy has proven successful and will continue for the lifetime of the project.

7.10 BENEFITS REALISATION PLAN

7.10.1. The Benefits Realisation Plan is provided in **Appendix F**.

7.11 MONITORING AND EVALUATION

7.11.1. A separate Monitoring and Evaluation Plan has been issued to the DfT and agreed 29 November 2021. A copy is provided in **Appendix G**.

7.12 MANAGEMENT OPTIONS

7.12.1. WSCC has a project board in place with sufficient processes to monitor and approve project development at key stages. This will continue throughout the life of the project. Given the organisational maturity of the WSCC Highways team and successful implementation of lessons learned on previous projects, no further management options are under consideration at this stage.

7.13 CARBON MANAGEMENT PLAN

Transport Decarbonisation

7.13.1. Carbon dioxide (CO2) is the main greenhouse gas (GHG) responsible for recent changes in our climate. At a national level, transport is the largest single contributor to the UK's domestic greenhouse gas (GHG) emissions, responsible for 27% in 2019[1]. Where emissions from other sectors have fallen in the last 30 years, domestic transport GHG emissions have remained relatively static. Transport has remained the most carbon intensive industry in Britain through the COVID-19 pandemic[2]

7.13.2. The need to reduce carbon emissions in transport in the UK is driven by policy at both the national and local level. The Decarbonising Transport Plan released by the Department for Transport (DfT) in 2021[3] aims to develop a low-carbon trajectory for the UK's transport system to achieve Net Zero by 2050.

7.13.3. In April 2019, West Sussex County Council acknowledged the threat of climate change and passed a motion pledging to try to reach net zero carbon emissions by 2030 (20-years in advance of national policy). Estimates for CO2 emissions for West Sussex indicate that transport accounted for 1,512 kilotonnes (43.5%) of their total CO2 emissions in 2019[4]. This is considerably higher than the national average of 36.1%.

7.13.4. Action to manage carbon emissions is crucial to the decarbonisation of transport. The carbon management standard, PAS2080[5], defines carbon management as the "assessment, removal and reduction of Greenhouse Gas (GHG) emissions during the delivery of new, or the management of existing, infrastructure assets and programmes".

[1] BEIS (2021). 2019 UK Greenhouse Gas Emissions [Online]. Available at: https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2019

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051408/2020-final-greenhouse-gas-emissions-statistical-release.pdf [04/02/2022] page 14.

[3] https://www.gov.uk/government/publications/transport-decarbonisation-plan

[4] National Statistics (2021) *2005 to 2019 UK Local and Regional Carbon Dioxide Emissions – data tables.* Available at: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019 [accessed 04/02/2022].

[5] https://www.bsigroup.com/en-GB/our-services/product-certification/product-certification-schemes/pas-2080-carbon-management-in-infrastructure-verification/

7.13.5. The purpose of the carbon management process is to manage and reduce GHG emissions over the course of a programme or a project's lifecycle. This can be achieved through taking actions that maximise emission reduction impacts and minimise impacts that increase emissions.

7.13.6. These actions should be informed by carbon assessments that provide an understanding of whole-life carbon impacts.

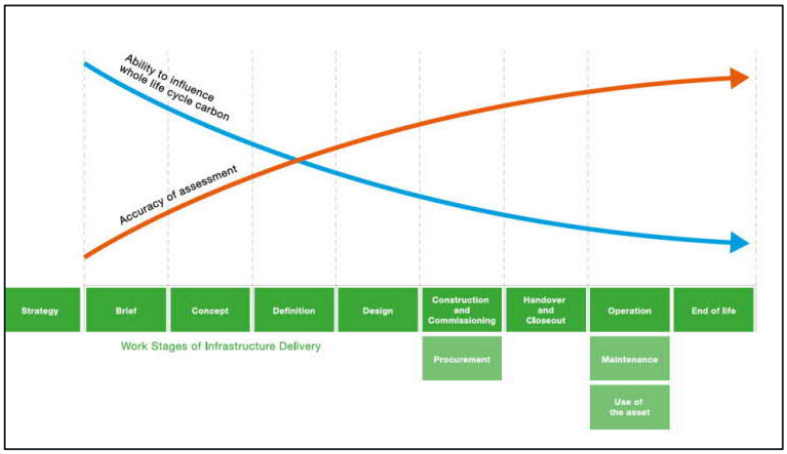


Figure 7-2 – PAS2080 Influencing Carbon Emissions

7.13.7. Supplementary guidance was issued by the DfT in November 2021 to Local Authority scheme promoters directing them to set out carbon management plans to demonstrate how they propose to manage and reduce carbon emissions over the course of their scheme/project lifecycle. Particular emphasis was made on planning from the earliest stages of the project lifecycle when there is the greatest ability to influence whole-life carbon outcomes.

7.13.8. PAS2080 defines a carbon management hierarchy in the development of options, set out in Table 7-2. It is recognised that this scheme has been developed within the context of an evolving decarbonisation policy landscape and that the focus of carbon management at this stage is expected primarily on the extent to which the preferred option can mitigate and reduce overall carbon emissions through detailed design and procurement; maximising opportunities for modal shift to active travel modes (in the context of broader transport policy objectives and area-wide initiatives for active and shared mode improvements) and the use of local carbon construction materials and techniques.

Table 7-2 – PAS2080 Carbon Management Hierarchy

Build nothing	▪ Evaluate the basic need for an asset and/or programme of works (explore alternative approaches to achieve outcomes set).
Build less:	▪ Evaluate the potential for re-using and/or refurbishing existing assets to reduce the extent of new construction requires.
Build clever	▪ Consider the use of low carbon solutions (technologies, materials, and products) to minimise resource consumption during the construction, operation, and user's use stages of the asset of programme of work.
Build efficiently	▪ Consider the use of techniques (construction, operational) that reduce resource consumption during the construction and operation phases of an asset or programme of work.

Carbon Management Process

7.13.9. The process through which scheme-level carbon reduction and mitigation will be managed and aligned to the principles of PAS2080 is represented Figure 7-3.

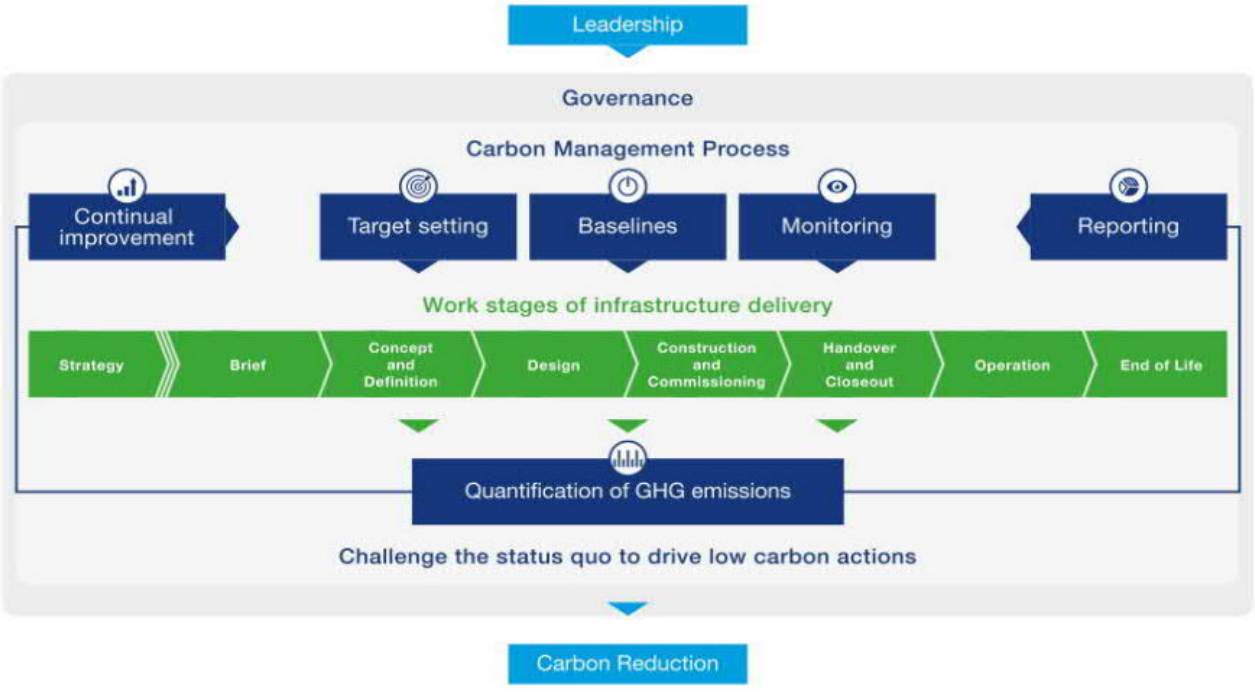


Figure 7-3 – PAS2080 Carbon Management Process

7.13.10. The key stages in this process are summarised in Table 7-3. Whilst PAS2080 provides the primary guidance on carbon management process, other applicable guidance will be considered in the application of this carbon management, including:

- DfT Carbon Management Guidance – Management Case (November 2021)
- IEMA, Delivering Quality Development (2016)
- Construction Playbook
- Transport Appraisal Guidance: Unit A3 environmental impact appraisal

Table 7-3 – Key Stages of the Carbon Management Process

Phase	Description
Quantification	▪ Assessment & monitoring of carbon emissions throughout the project's lifecycle, with sufficient frequency to support & inform agile decision-making. This should follow the standards for quantification established in PAS2080.
Target setting	▪ Targets should be set for each phase of a project, such as embodied, operational (capital and/or user emissions) and/or whole-life carbon. ▪ Targets should relate to a desired outcome and use a fixed timescale by which that outcome is achieved.
Baselines	▪ A reference against which future performance can be compared with respect to the desired outcome. ▪ Assist with identifying carbon emissions hotspots, where efforts to reduce emissions may need to be focussed. ▪ Accepting that the quantified baseline established at earliest stages will be least accurate, the baseline carbon impact should be kept under review and iteratively updated with the latest and most accurate carbon assessment available. Changes from previous assessments will be recorded as part of the monitoring phase.
Monitoring	▪ KPIs to monitor carbon emissions. ▪ PAS2080 recommends these are at a minimum monitored during all infrastructure work stages or at key points where decisions are made that influence whole-life carbon reduction.
Reporting	▪ Reporting should make carbon reduction performance visible at different infrastructure work stages and inform decision-making in managing whole-life carbon. ▪ Impact should be reported with sufficient frequency to enable progress to be monitored against targets and continuous improvement over the duration of the project or programme.
Continuous improvement	▪ This should allow lessons to be learned from applying this carbon management process to improve the delivery of future programmes of work. ▪ Acknowledging that comprehensive carbon data or low carbon solutions will not be available at the outset, adopting continuous improvement allows promoters to commence carbon management whilst gradually improving.

Carbon Management Planning

7.13.11. Reflecting the carbon management process outlined above a scheme-level carbon management plan (CMP) will set out WSCCs approach to whole-life carbon management, establish the carbon baseline, highlight potential carbon hotspots, identify where further/ongoing analysis is required, establish a carbon reduction target, present risks and mitigating measures, and address areas such as carbon management skills and value chain engagement though procurement.

7.13.12. The plan will be underpinned by a whole-life scheme assessment, seeking to quantify all the key impacts across user emissions, embodied and additional impacts as referenced below. This assessment will cover:

- User emissions - quantifying the carbon impacts from forecast changes in trip lengths, speeds, flows, induced demand, and modal shift.
- Embodied carbon – quantifying the carbon impacts from existing designs and cost estimates and applying these to the National Highways Carbon Tool.
- Additional impacts– estimate the number of trees to be lost and planted (if known) and apply carbon storage and sequestration values to estimate the carbon impact.

7.13.13. The outcome of this assessment will establish the carbon impact baseline for the plan from which a carbon reduction target can be set, and associated reduction/mitigating measures set out. The target is likely to be expressed as a percentage reduction at this stage until further evidence is available and there is a clearer understanding of the DfTs expectations of the scheme's programme as a whole in terms of its carbon impact.

7.13.14. This assessment will also be used to establish impact 'hot spots' and determine a range of potential carbon reduction/mitigation measures, and how these will be addressed through the development and delivery of the scheme.

8 SUMMARY

8.1 BACKGROUND

8.1.1. This Transport Business Case presents the evidence base in favour of Lyminster Bypass (North), near Littlehampton in West Sussex. The document has been prepared in accordance with the Department for Transport guidance published in August 2021 on the Five Case Model. This requires the following dimensions cases to be considered:

- Strategic Dimension
- Economic Dimension
- Financial Dimension
- Commercial Dimension
- Management Dimension.

8.2 TRANSPORT BUSINESS CASES

8.2.1. The Strategic dimension outlines the need for Lyminster Bypass (North). The primary need is to provide a high-quality route between the A27 and the A259 that avoids the sharp bends on the existing route and avoids the delays caused by the level crossing at Wick. This would make the Littlehampton area more attractive to developers, leading to local economic growth. The key stakeholders are set out, and the interactions with other schemes are discussed, particularly Lyminster Bypass (South) delivered as part of the North Littlehampton development.

8.2.2. The Economic dimension sets out the assessment of the benefits that the scheme is forecast to deliver to society as a whole. Over 60 years, the scheme is expected to generate benefits worth **£40.6m**, including **£3.3m** of safety benefits. The scheme generates a Benefit-Cost ratio of **1.8** so it is considered a medium value for money scheme.

8.2.3. The Financial dimension provides a detailed cost estimate and a breakdown of how the scheme will be funded. The total scheme cost is expected to be **£37.45m**, of which £3.76m is Section 106 funding. £3.00m is Coast to Capital LEP funding, £11.79m is sought from DfT to complete the scheme, with the remaining £18.90m funded by WSCC.

8.2.4. The Commercial dimension considers the procurement of the scheme. A Design and Build procurement strategy through the restricted procedure was undertaken, with the preferred supplier determined through a 60% quality / 40% price split.

8.2.5. The Management dimension sets out the proposed project management procedures to be adopted throughout the life cycle of the project. The project management team is provided, with an explanation of roles and responsibilities. Measures have also been set out to ensure high quality and timely delivery. Stakeholder management and post-implementation assessment strategies are also discussed.

8.3 CONCLUSION

8.3.1. Lyminster Bypass (North) will generate substantial net benefits to the local economy, helping meet the objectives of all key stakeholders.

APPENDICES

Appendix A

APPRAISAL SUMMARY TABLE

Core Growth Run AM IP PM

Appraisal Summary Table

Date produced:	24 05 2022
Name of scheme:	A284 Lyminster Bypass
Description of scheme:	The A284 Lyminster Bypass scheme consists of a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.

Contact:	
Name	Mark Martin
Organisation	West Sussex County Council
Role	Promoter/Official

	Impacts	Summary of key impacts	Assessment: Quantitative	Assessment: Qualitative	Assessment: Monetary	Assessment: Distributional
Economy	Business users & transport providers	The scheme provides business user benefits, with nearly all of the benefits being from journey time savings totalling over £7.8m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of just under £1.6m The scheme provides over 1.6m person hours time savings for business users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £7.83m Net journey time changes (£) 1 to 2min: £4.61m 3 to 5min: £3.35m > 5min: £0.72m	N/A	£9.42m	
Economy	Reliability impact on Business users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 with grade separation from the rail line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Economy	Regeneration	Not Assessed	N/A	N/A	N/A	
Economy	Wider Impacts	In line with TAG guidance 10% uplift factor to the Business User Benefits as a proxy for output change in imperfectly competitive markets on GDP was applied	N/A	N/A	£0.94m	
Environmental	Noise	Most receptors will experience an impact of negligible magnitude. During the short-term, moderate and major adverse impacts are predicted to the south of the scheme. In the long term, the same area would receive a minor or moderate adverse impact. The assessment shows that noise sensitive receptors near the southern section of the Bypass at the intersection with the A259, which does not form part of this scheme, are likely to receive an increase in noise levels. Mitigation in the form of a 3m high noise barrier is committed and therefore some of these areas will experience a noise impact lower than presented. The southern section of the scheme i.e. A284 Lyminster Bypass (South), between the A259 and Toddington Nurseries, is being delivered by private developers as part of the North Littlehampton Strategic Development Location. Beneficial impacts will be experienced at noise sensitive receptors along the existing A284 over both short and long-term.	Households experiencing increased daytime noise in forecast year = 219 Households experiencing reduced daytime noise in forecast year = 318 Households experiencing increased night time noise in forecast year = N/A Households experiencing reduced night time noise in forecast year= N/A	N/A	-£0.18m	The distributional impact appraisal for noise indicates that residents in the middle of the income deprivation scale are likely to be most affected with disbenefits related to noise. Social groups related to elderly and children are unlikely to experience an impact on noise.
Environmental	Air Quality	Overall there is a net improvement in local air quality with the scheme, but there is a negative impact on regional emissions for NOx. The scheme does not result in any exceedances and does not cause any changes within Air Quality Management Areas.	Number of properties with an improvement for PM2.5 is 1501 and Number of properties with a deterioration for PM2.5 is 704 Number of properties with an improvement for NO2 is 1363 and Number of properties with a deterioration for PM2.5 is 842 Change in NO2 assessment scores over 60 year appraisal period (concentrations) is -70,330.87 Change in PM2.5 assessment scores over 60 year appraisal period (concentration) is -34,139.87	N/A	Present value of change in NO2 concentrations £0.74m Present value of change in PM2.5 concentrations £1.84m	Air quality analysis has shown that benefits are seen on the existing alignment with improved air quality. Slight disbenefits are seen on the A284 bypass and Fitzalan Link Road. The bypass is typically passing through rural areas without receptors. As a result the slight negative impact is unlikely to have a significant impact on any social group or receptor. The benefit seen on the existing alignment will particularly benefit the Q3 income quintile group it passes through as well as providing a positive benefit to the social groups or receptors in the area. There are no AQMA's within the air quality impact area.
Environmental	Greenhouse gases	Decrease in CO2e due to the new bypass offering a more direct and rail level crossing free route. (Values taken from TUBA Analysis)	Change in non-traded carbon over 60y (CO2e): -14,285 Change in traded carbon over 60y (CO2e): -93	N/A	£1.19m	
Environmental	Landscape	The Proposed Bypass is anticipated to result in adverse impacts on the greenfield character of the existing Site (including the loss of hedgerow sections, hedgerows with individual trees and mature trees), setting of listed buildings within 500m of the Site, local landscape character, views from the South Downs National Park and nearby residential receptors as a result of construction traffic, compound location and construction activities. During operation, adverse impacts are anticipated on the greenfield character of the site, Lyminster Conservation Area, listed buildings within 500m, local landscape character, South Downs National Park and nearby residential and PROW receptors from increased traffic, lighting and signage. Potential slight beneficial impacts may occur on the setting of listed buildings and views from around Lyminster where the Proposed Bypass reduces traffic.	N/A	Slight Adverse	N/A	
Environmental	Townscape	The main residential areas are located to the west within the village of Lyminster and to the south and west of the southern extent of the bypass within the north-west of Littlehampton. No assessment was undertaken	N/A	N/A	N/A	
Environmental	Historic Environment	Prior to mitigation, the Proposed Development has the potential for the loss or truncation of buried archaeological deposits. A suitable programme of investigation and mitigation (as defined by the NPPF) is considered sufficient following planning approval with West Sussex County Council. There is the potential for adverse impacts on built heritage assets including listed buildings and conservation areas. Construction works are anticipated to result in slight to moderate adverse impacts on the buried archaeological remains (should they be present). It is considered that the operational phase will result in slight to moderate adverse effects on built heritage features in the landscape during the operational phase.	N/A	Negligible (Designated heritage assets) Minor Adverse (Non-designated heritage assets) Moderate Adverse (Archaeology)	N/A	
Environmental	Biodiversity	Potential for neutral to moderate adverse impacts on protected species and BAP habitat. No potential impacts are considered likely on surrounding statutory or non-statutory sites.	N/A	Moderate Beneficial	N/A	
Environmental	Water Environment	The Proposed Bypass will result in the increase in impermeable surfaces through the construction of the alignment. This will result in an increase in surface water runoff and may also increase in the risk of potential contamination to surface waters. The scheme crosses the Black Ditch and its associated flood plain, and the proposed viaduct ensures that even for the critical flood event plus climate change, and considering the undefended scenario for the River Arun, there is no increase in flood risk as a result of the scheme	N/A	Neutral	N/A	
Social	Commuting and Other users	The scheme provides Commuting and Other user benefits, with most of the benefits being from journey time savings totalling £23.3m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of just under £2.5m The scheme provides around 9.5m person hours time savings for commuting and other users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £23.30m Net journey time changes (£) 1 to 2min: £10.37m 3 to 5min: £10.76m > 5min: £4.00m	N/A.	£25.75m	DIA Para 2.3.15.The scheme is anticipated to show positive commuting and other user benefits for all quintile/economic groups. Distribution of these benefits is anticipated to be proportionate to the population of each quintile, with the exception of quintile 1 (0-20%), which sees a greater proportion of the benefit relative to the proportion of the population. Q1: ✓✓✓ Q2: ✓✓ Q3: ✓✓ Q4: ✓✓ Q5: ✓✓
Social	Reliability impact on Commuting and Other users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 and bridges the West Coastway railway line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Social	Physical activity	The scheme should improve physical activity through the introduction of new footways and crossing points, along with a new bridge over the West Coastway railway line. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton. No Active Mode Appraisal has been undertaken.	N/A	N/A	N/A	
Social	Journey quality	The scheme should improve journey quality between the A27 and A259 by creating a new more direct route, designed to modern standards and as a result of bridging the West Coastway railway line	N/A	N/A	N/A	
Social	Accidents	COBALT has been used to assess the impact of the scheme on accidents. The scheme reduces the chance of an accident, largely due to the new high standard bypass design and associated reductions in queuing and congestion as a result of bridging the West Coastway railway line	Total Accidents Saved = 88 Total Casualties Saved by Scheme (Fatal) = 0 Total Casualties Saved by Scheme (Serious) = 11 Total Casualties Saved by Scheme (Slight) = 104	N/A	£3.33m	DIA 2.6.29: The scheme is expected to be Moderate Beneficial. Though a full appraisal has not been undertaken, it has been shown that the scheme would result in improved collision and casualty rates, and a lower severity of collision. In the area around the Lyminster Bypass (North) scheme, the benefit would be felt by all users and social groups who use the A284 corridor. As there were not more than 50 collisions over a five year period on any impacted links, the threshold for a quantative DIA assessment of the impact on social groups and IMD quintiles has not been undertaken.
Social	Security	This scheme is not expected to change the level of security for general traffic, public transport passengers and freight. No Social Impact Appraisal (SIA) has been undertaken.	N/A	N/A	N/A	No Social Impact Appraisal (SIA) has been undertaken
Social	Access to services	Through the screening process, no significant change in accessibiliy was anticipated. Therefore a full quantitative assessment was not completed. The scheme is anticipated to shift traffic from the old route to the bypass route. This will improve access to local services and public transport in the communities along the old route. There are no services along the bypass area that will be impacted by this change. Outside the scope of the Scheme but under review for the future will be the A259 that borders the south of the Persimmon Homes developments (outside the scope of the discussed Scheme) reviewing defined acceptable walking distances and the possibility of providing bus access to the town on eastwards to shopping and leisure on the A259 (Sainsburys, golf club, etc) as well as access to Littlehampton town centre	N/A	N/A	N/A	DIA Para 2.12.4 indicates that there is not anticipated to be any significant change in terms of accessibility. Improvements in journay time are anticipated on local bus routes along the old route as traffic is re-routed onto the bypass. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Affordability	The scheme is anticipated to improve traffic flow and congestion along the route. This will have a beneficial impact to personal affordability due to reduced fuel costs. Overall a decrease in user charges: -£1.74m	N/A	Moderate Beneficial	N/A	DIA Para 2.12.8. - Analysis of personal affordability shows a moderate benefit as a result of the Lyminster Bypass (North) scheme. There is a benefit for each quintile, but it is disproportionate to the proportion of the population in the quintile for each quintile. The greatest benefits are seen in the area of Lyminster, Wick and towards Arundel to the north of the scheme. There is a slight disbenefit to the east of the District of Arun. Overall, the scheme is assessed to be Moderate Beneficial. Q1: ✓✓ Q2: ✓✓ Q3: ✓✓✓ Q4: ✓✓ Q5: ✓
Social	Severance	Through the screening process, no significant change in severace was anticipated. Therefore a full quantitative assessment was not completed. The scheme will reduce local severance. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton.	N/A	N/A	N/A	DIA Para 2.12.3: Analysis of the severance and accessibility have shown that there would be a minimal impact and hence they were not progressed to full quantitative assessment. In terms of severance, the Lyminster Bypass (North) scheme, and the section of the A284 to the north which joins it to the network experience increases in flow of 10% or more. However, this is in a rural area, and the only desire line has a new pegasus crossing. The scheme aids the north-south movement with the shared path for NMUs running along it. Additionally, the A284 through Lyminster and Wick experiences a reduction in flow of 10%, reducing severance here. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Option and non-use values	This scheme does not involve the loss or introduction of a new mode of transport.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The scheme is to be funded with £3m from Coast to Capital LEP, £3.76m from S106 developer contributions £18.9m funded by WSCC and the remaining £11.79m sought from the Department for Transport	N/A	N/A	-£22.91m	
Public Accounts	Indirect Tax Revenues	There would be a decrease in the tax being paid to the Exchequer from fuel taxes etc. due to a more direct route, reduction in congestion and an increase in average speeds.	N/A	N/A	-£1.24m	

Appraisal Summary Table

Date produced:	24 05 2022
Name of scheme:	A284 Lyminster Bypass
Description of scheme:	The A284 Lyminster Bypass scheme consists of a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.

Contact:	
Name	Mark Martin
Organisation	West Sussex County Council
Role	Promoter/Official

	Impacts	Summary of key impacts	Assessment: Quantitative	Qualitative	Monetary	Distributional
Economy	Business users & transport providers	The scheme provides business user benefits, with nearly all of the benefits being from journey time savings totalling just under £14.6m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of over £2.7m The scheme provides over 3.1m person hours time savings for business users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £14.59m Net journey time changes (£): 1 to 2min: £8.77m 3 to 5min: £6.60m > 5min: £0.72m	N/A	£17.38m	
Economy	Reliability impact on Business users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 with grade separation from the rail line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Economy	Regeneration	Not Assessed	N/A	N/A	N/A	
Economy	Wider Impacts	In line with TAG guidance 10% uplift factor to the Business User Benefits as a proxy for output change in imperfectly competitive markets on GDP was applied	N/A	N/A	£1.74m	
Environmental	Noise	Most receptors will experience an impact of negligible magnitude. During the short-term, moderate and major adverse impacts are predicted to the south of the scheme. In the long term, the same area would receive a minor or moderate adverse impact. The assessment shows that noise sensitive receptors near the southern section of the Bypass at the intersection with the A259, which does not form part of this scheme, are likely to receive an increase in noise levels. Mitigation in the form of a 3m high noise barrier is committed and therefore some of these areas will experience a noise impact lower than presented. The southern section of the scheme i.e. A284 Lyminster Bypass (South), between the A259 and Toddington Nurseries, is being delivered by private developers as part of the North Littlehampton Strategic Development Location. Beneficial impacts will be experienced at noise sensitive receptors along the existing A284 over both short and long-term.	Households experiencing increased daytime noise in forecast year = 219 Households experiencing reduced daytime noise in forecast year = 318 Households experiencing increased night time noise in forecast year = N/A Households experiencing reduced night time noise in forecast year= N/A	N/A	-£0.18m	The distributional impact appraisal for noise indicates that residents in the middle of the income deprivation scale are likely to be most affected with disbenefits related to noise. Social groups related to elderly and children are unlikely to experience an impact on noise.
Environmental	Air Quality	Overall there is a net improvement in local air quality with the scheme, but there is a negative impact on regional emissions for NOx. The scheme does not result in any exceedances and does not cause any changes within Air Quality Management Areas.	Number of properties with an improvement for PM2.5 is 1501 and Number of properties with a deterioration for PM2.5 is 704 Number of properties with an improvement for NO2 is 1363 and Number of properties with a deterioration for PM2.5 is 842 Change in NO2 assessment scores over 60 year appraisal period (concentrations) is -70,330.87 Change in PM2.5 assessment scores over 60 year appraisal period (concentration) is -34,139.87	N/A	Present value of change in NO2 concentrations £0.74m Present value of change in PM2.5 concentrations £1.84m	Air quality analysis has shown that benefits are seen on the existing alignment with improved air quality. Slight disbenefits are seen on the A284 bypass and Fitzalan Link Road. The bypass is typically passing through rural areas without receptors. As a result the slight negative impact is unlikely to have a significant impact on any social group or receptor. The benefit seen on the existing alignment will particularly benefit the Q3 income quintile group it passes through as well as providing a positive benefit to the social groups or receptors in the area. There are no AQMA's within the air quality impact area.
Environmental	Greenhouse gases	Decrease in CO2e due to the new bypass offering a more direct and rail level crossing free route. (Values taken from TUBA Analysis)	Change in non-traded carbon over 60y (CO2e): -25,048 Change in traded carbon over 60y (CO2e): -138	N/A	£2.09m	
Environmental	Landscape	The Proposed Bypass is anticipated to result in adverse impacts on the greenfield character of the existing Site (including the loss of hedgerow sections, hedgerows with individual trees and mature trees), setting of listed buildings within 500m of the Site, local landscape character, views from the South Downs National Park and nearby residential receptors as a result of construction traffic, compound location and construction activities. During operation, adverse impacts are anticipated on the greenfield character of the site, Lyminster Conservation Area, listed buildings within 500m, local landscape character, South Downs National Park and nearby residential and PROW receptors from increased traffic, lighting and signage. Potential slight beneficial impacts may occur on the setting of listed buildings and views from around Lyminster where the Proposed Bypass reduces traffic.	N/A	Slight Adverse	N/A	
Environmental	Townscape	The main residential areas are located to the west within the village of Lyminster and to the south and west of the southern extent of the bypass within the north-west of Littlehampton. No assessment was undertaken	N/A	N/A	N/A	
Environmental	Historic Environment	Prior to mitigation, the Proposed Development has the potential for the loss or truncation of buried archaeological deposits. A suitable programme of investigation and mitigation (as defined by the NPPF) is considered sufficient following planning approval with West Sussex County Council. There is the potential for adverse impacts on built heritage assets including listed buildings and conservation areas. Construction works are anticipated to result in slight to moderate adverse impacts on the buried archaeological remains (should they be present). It is considered that the operational phase will result in slight to moderate adverse effects on built heritage features in the landscape during the operational phase.	N/A	Negligible (Designated heritage assets) Minor Adverse (Non-designated heritage assets) Moderate Adverse (Archaeology)	N/A	
Environmental	Biodiversity	Potential for neutral to moderate adverse impacts on protected species and BAP habitat. No potential impacts are considered likely on surrounding statutory or non-statutory sites.	N/A	Moderate Beneficial	N/A	
Environmental	Water Environment	The Proposed Bypass will result in the increase in impermeable surfaces through the construction of the alignment. This will result in an increase in surface water runoff and may also increase in the risk of potential contamination to surface waters. The scheme crosses the Black Ditch and its associated flood plain, and the proposed viaduct ensures that even for the critical flood event plus climate change, and considering the undefended scenario for the River Arun, there is no increase in flood risk as a result of the scheme	N/A	Neutral	N/A	
Social	Commuting and Other users	The scheme provides Commuting and Other user benefits, with most of the benefits being from journey time savings totalling just over £39.3m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of just under £4.3m The scheme provides around 17m person hours time savings for commuting and other users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £39.32m Net journey time changes (£): 1 to 2min: £16.74m 3 to 5min: £21.65m > 5min: £4.00m	N/A	£43.62m	DIA Para 2.3.15.The scheme is anticipated to show positive commuting and other user benefits for all quintile/economic groups. Distribution of these benefits is anticipated to be proportionate to the population of each quintile, with the exception of quintile 1 (0-20%), which sees a greater proportion of the benefit relative to the proportion of the population. Q1: ✓✓✓ Q2: ✓✓ Q3: ✓✓ Q4: ✓✓ Q5: ✓✓
Social	Reliability impact on Commuting and Other users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 and bridges the West Coastway railway line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Social	Physical activity	The scheme should improve physical activity through the introduction of new footways and crossing points, along with a new bridge over the West Coastway railway line. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton. No Active Mode Appraisal has been undertaken.	N/A	N/A	N/A	
Social	Journey quality	The scheme should improve journey quality between the A27 and A259 by creating a new more direct route, designed to modern standards and as a result of bridging the West Coastway railway line	N/A	N/A	N/A	
Social	Accidents	COBALT has been used to assess the impact of the scheme on accidents. The scheme reduces the chance of an accident, largely due to the new high standard bypass design and associated reductions in queuing and congestion as a result of bridging the West Coastway railway line	Total Accidents Saved = 88 Total Casualties Saved by Scheme (Fatal) = 0 Total Casualties Saved by Scheme (Serious) = 11 Total Casualties Saved by Scheme (Slight) = 104	N/A	£3.33m	DIA 2.6.29: The scheme is expected to be Moderate Beneficial. Though a full appraisal has not been undertaken, it has been shown that the scheme would result in improved collision and casualty rates, and a lower severity of collision. In the area around the Lyminster Bypass (North) scheme, the benefit would be felt by all users and social groups who use the A284 corridor. As there were not more than 50 collisions over a five year period on any impacted links, the threshold for a quantative assessment of the impact on social groups and IMD quintiles has not been undertaken.
Social	Security	This scheme is not expected to change the level of security for general traffic, public transport passengers and freight. No Social Impact Appraisal (SIA) has been undertaken.	N/A	N/A	N/A	No Social Impact Appraisal (SIA) has been undertaken
Social	Access to services	Through the screening process, no significant change in accessibiliy was anticipated. Therefore a full quantitative assessment was not completed. The scheme is anticipated to shift traffic from the old route to the bypass route. This will improve access to local services and public transport in the communities along the old route. There are no services along the bypass area that will be impacted by this change. Outside the scope of the Scheme but under review for the future will be the A259 that borders the south of the Persimmon Homes developments (outside the scope of the discussed Scheme) reviewing defined acceptable walking distances and the possibility of providing bus access to the town on eastwards to shopping and leisure on the A259 (Sainsburys, golf club, etc) as well as access to Littlehampton town centre	N/A	N/A	N/A	DIA Para 2.12.4 indicates that there is not anticipated to be any significant change in terms of accessibility. Improvements in journey time are anticipated on local bus routes along the old route as traffic is re-routed onto the bypass. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Affordability	The scheme is anticipated to improve traffic flow and congestion along the route. This will have a beneficial impact to personal affordability due to reduced fuel costs. Overall a decrease in user charges: -£1.74m	N/A	Moderate Beneficial	N/A	DIA Para 2.12.8. - Analysis of personal affordability shows a moderate benefit as a result of the Lyminster Bypass (North) scheme. There is a benefit for each quintile, but it is disproportionate to the proportion of the population in the quintile for each quintile. The greatest benefits are seen in the area of Lyminster, Wick and towards Arundel to the north of the scheme. There is a slight disbenefit to the east of the District of Arun. Overall, the scheme is assessed to be Moderate Beneficial. Q1: ✓✓ Q2: ✓✓ Q3: ✓✓✓ Q4: ✓✓ Q5: ✓
Social	Severance	Through the screening process, no significant change in severace was anticipated. Therefore a full quantitative assessment was not completed. The scheme will reduce local severance. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton.	N/A	N/A	N/A	DIA Para 2.12.3: Analysis of the severance and accessibility have shown that there would be a minimal impact and hence they were not progressed to full quantitative assessment. In terms of severance, the Lyminster Bypass (North) scheme, and the section of the A284 to the north which joins it to the network experience increases in flow of 10% or more. However, this is in a rural area, and the only desire line has a new pegasus crossing. The scheme aids the north-south movement with the shared path for NMUs running along it. Additionally, the A284 through Lyminster and Wick experiences a reduction in flow of 10%, reducing severance here. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Option and non-use values	This scheme does not involve the loss or introduction of a new mode of transport.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The scheme is to be funded with £3m from Coast to Capital LEP, £3.76m from S106 developer contributions £18.9m funded by WSCC and the remaining £11.79m sought from the Department for Transport	N/A	N/A	-£22.91m	
Public Accounts	Indirect Tax Revenues	There would be a decrease in the tax being paid to the Exchequer from fuel taxes etc. due to a more direct route, reduction in congestion and an increase in average speeds.	N/A	N/A	-£2.17m	

High Growth Run AM IP PM

Appraisal Summary Table

Name of scheme:	A284 Lyminster Bypass	**Date produced:**	24 05 2022
Description of scheme:	The A284 Lyminster Bypass scheme consists of a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.		

Contact:	
Name	Mark Martin
Organisation	West Sussex County Council
Role	Promoter/Official

	Impacts	**Summary of key impacts**	**Assessment: Quantitative**	**Qualitative**	**Monetary**	**Distributional**
Economy	Business users & transport providers	The scheme provides business user benefits, with nearly all of the benefits being from journey time savings totalling over £8.2m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of just over £1.7m The scheme provides over 1.7m person hours time savings for business users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £8.28m Net journey time changes (£) 1 to 2min: £6.11m 3 to 5min: £3.02m > 5min: £0.00	N/A	£10.00m	
	Reliability impact on Business users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 with grade separation from the rail line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
	Regeneration	Not Assessed	N/A	N/A	N/A	
	Wider Impacts	In line with TAG guidance 10% uplift factor to the Business User Benefits as a proxy for output change in imperfectly competitive markets on GDP was applied	N/A	N/A	£1.00m	
Environmental	Noise	Most receptors will experience an impact of negligible magnitude. During the short-term, moderate and major adverse impacts are predicted to the south of the scheme. In the long term, the same area would receive a minor or moderate adverse impact. The assessment shows that noise sensitive receptors near the southern section of the Bypass at the intersection with the A259, which does not form part of this scheme, are likely to receive an increase in noise levels. Mitigation in the form of a 3m high noise barrier is committed and therefore some of these areas will experience a noise impact lower than presented. The southern section of the scheme i.e. A284 Lyminster Bypass (South), between the A259 and Toddington Nurseries, is being delivered by private developers as part of the North Littlehampton Strategic Development Location. Beneficial impacts will be experienced at noise sensitive receptors along the existing A284 over both short and long-term.	Households experiencing increased daytime noise in forecast year = 219 Households experiencing reduced daytime noise in forecast year = 318 Households experiencing increased night time noise in forecast year = N/A Households experiencing reduced night time noise in forecast year= N/A	N/A	-£0.18m	The distributional impact appraisal for noise indicates that residents in the middle of the income deprivation scale are likely to be most affected with disbenefits related to noise. Social groups related to elderly and children are unlikely to experience an impact on noise.
	Air Quality	Overall there is a net improvement in local air quality with the scheme, but there is a negative impact on regional emissions for NOx. The scheme does not result in any exceedances and does not cause any changes within Air Quality Management Areas.	Number of properties with an improvement for PM2.5 is 1501 and Number of properties with a deterioration for PM2.5 is 704 Number of properties with an improvement for NO2 is 1363 and Number of properties with a deterioration for PM2.5 is 842 Change in NO2 assessment scores over 60 year appraisal period (concentrations) is -70,330.87 Change in PM2.5 assessment scores over 60 year appraisal period (concentration) is -34,139.87	N/A	Present value of change in NO2 concentrations £0.74m Present value of change in PM2.5 concentrations £1.84m	Air quality analysis has shown that benefits are seen on the existing alignment with improved air quality. Slight disbenefits are seen on the A284 bypass and Fitzalan Link Road. The bypass is typically passing through rural areas without receptors. As a result the slight negative impact is unlikely to have a significant impact on any social group or receptor. The benefit seen on the existing alignment will particularly benefit the Q3 income quintile group it passes through as well as providing a positive benefit to the social groups or receptors in the area. There are no AQMA's within the air quality impact area.
	Greenhouse gases	Decrease in CO2e due to the new bypass offering a more direct and rail level crossing free route. (Values taken from TUBA Analysis)	Change in non-traded carbon over 60y (CO2e): -15,363 Change in traded carbon over 60y (CO2e): -101	N/A	£1.28m	
	Landscape	The Proposed Bypass is anticipated to result in adverse impacts on the greenfield character of the existing Site (including the loss of hedgerow sections, hedgerows with individual trees and mature trees), setting of listed buildings within 500m of the Site, local landscape character, views from the South Downs National Park and nearby residential receptors as a result of construction traffic, compound location and construction activities. During operation, adverse impacts are anticipated on the greenfield character of the site, Lyminster Conservation Area, listed buildings within 500m, local landscape character, South Downs National Park and nearby residential and PROW receptors from increased traffic, lighting and signage. Potential slight beneficial impacts may occur on the setting of listed buildings and views from around Lyminster where the Proposed Bypass reduces traffic.	N/A	Slight Adverse	N/A	
	Townscape	The main residential areas are located to the west within the village of Lyminster and to the south and west of the southern extent of the bypass within the north-west of Littlehampton. No assessment was undertaken	N/A	N/A	N/A	
	Historic Environment	Prior to mitigation, the Proposed Development has the potential for the loss or truncation of buried archaeological deposits. A suitable programme of investigation and mitigation (as defined by the NPPF) is considered sufficient following planning approval with West Sussex County Council. There is the potential for adverse impacts on built heritage assets including listed buildings and conservation areas. Construction works are anticipated to result in slight to moderate adverse impacts on the buried archaeological remains (should they be present). It is considered that the operational phase will result in slight to moderate adverse effects on built heritage features in the landscape during the operational phase.	N/A	Negligible (Designated heritage assets) Minor Adverse (Non-designated heritage assets) Moderate Adverse (Archaeology)	N/A	
	Biodiversity	Potential for neutral to moderate adverse impacts on protected species and BAP habitat. No potential impacts are considered likely on surrounding statutory or non-statutory sites.	N/A	Moderate Beneficial	N/A	
	Water Environment	The Proposed Bypass will result in the increase in impermeable surfaces through the construction of the alignment. This will result in an increase in surface water runoff and may also increase in the risk of potential contamination to surface waters. The scheme crosses the Black Ditch and its associated flood plain, and the proposed viaduct ensures that even for the critical flood event plus climate change, and considering the undefended scenario for the River Arun, there is no increase in flood risk as a result of the scheme	N/A	Neutral	N/A	
Social	Commuting and Other users	The scheme provides Commuting and Other user benefits, with most of the benefits being from journey time savings totalling over £24.6m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of over £2.7m The scheme provides around 10m person hours time savings for commuting and other users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £24.66m Net journey time changes (£) 1 to 2min: £16.42m 3 to 5min: £10.21m > 5min: £0.00	N/A	£27.37m	DIA Para 2.3.15.The scheme is anticipated to show positive commuting and other user benefits for all quintile/economic groups. Distribution of these benefits is anticipated to be proportionate to the population of each quintile, with the exception of quintile 1 (0-20%), which sees a greater proportion of the benefit relative to the proportion of the population. Q1: ✓✓✓ / Q2: ✓✓ / Q3: ✓✓ / Q4: ✓✓ / Q5: ✓✓
	Reliability impact on Commuting and Other users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 and bridges the West Coastway railway line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
	Physical activity	The scheme should improve physical activity through the introduction of new footways and crossing points, along with a new bridge over the West Coastway railway line. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton. No Active Mode Appraisal has been undertaken.	N/A	N/A	N/A	
	Journey quality	The scheme should improve journey quality between the A27 and A259 by creating a new more direct route, designed to modern standards and as a result of bridging the West Coastway railway line	N/A	N/A	N/A	
	Accidents	COBALT has been used to assess the impact of the scheme on accidents. The scheme reduces the chance of an accident, largely due to the new high standard bypass design and associated reductions in queuing and congestion as a result of bridging the West Coastway railway line	Total Accidents Saved = 88 Total Casualties Saved by Scheme (Fatal) = 0 Total Casualties Saved by Scheme (Serious) = 11 Total Casualties Saved by Scheme (Slight) = 104	N/A	£3.33m	DIA 2.6.29: The scheme is expected to be Moderate Beneficial. Though a full appraisal has not been undertaken, it has been shown that the scheme would result in improved collision and casualty rates, and a lower severity of collision. In the area around the Lyminster Bypass (North) scheme, the benefit would be felt by all users and social groups who use the A284 corridor. As there were not more than 50 collisions over a five year period on any impacted links, the threshold for a quantative assessment of the impact on social groups and IMD quintiles has not been undertaken.
	Security	This scheme is not expected to change the level of security for general traffic, public transport passengers and freight. No Social Impact Appraisal (SIA) has been undertaken.	N/A	N/A	N/A	No Social Impact Appraisal (SIA) has been undertaken
	Access to services	Through the screening process, no significant change in accessibiliy was anticipated. Therefore a full quantitative assessment was not completed. The scheme is anticipated to shift traffic from the old route to the bypass route. This will improve access to local services and public transport in the communities along the old route. There are no services along the bypass area that will be impacted by this change. Outside the scope of the Scheme but under review for the future will be the A259 that borders the south of the Persimmon Homes developments (outside the scope of the discussed Scheme) reviewing defined acceptable walking distances and the possibility of providing bus access to the town on eastwards to shopping and leisure on the A259 (Sainsburys, golf club, etc) as well as access to Littlehampton town centre	N/A	N/A	N/A	DIA Para 2.12.4 indicates that there is not anticipated to be any significant change in terms of accessibility. Improvements in journay time are anticipated on local bus routes along the old route as traffic is re-routed onto the bypass. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
	Affordability	The scheme is anticipated to improve traffic flow and congestion along the route. This will have a beneficial impact to personal affordability due to reduced fuel costs. Overall a decrease in user charges: -£1.74m	N/A	Moderate Beneficial	N/A	DIA Para 2.12.8. - Analysis of personal affordability shows a moderate benefit as a result of the Lyminster Bypass (North) scheme. There is a benefit for each quintile, but it is disproportionate to the proportion of the population in the quintile for each quintile. The greatest benefits are seen in the area of Lyminster, Wick and towards Arundel to the north of the scheme. There is a slight disbenefit to the east of the District of Arun. Overall, the scheme is assessed to be Moderate Beneficial. Q1: ✓✓ / Q2: ✓✓ / Q3: ✓✓✓ / Q4: ✓✓ / Q5: ✓
	Severance	Through the screening process, no significant change in severace was anticipated. Therefore a full quantitative assessment was not completed. The scheme will reduce local severance. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton.	N/A	N/A	N/A	DIA Para 2.12.3: Analysis of the severance and accessibility have shown that there would be a minimal impact and hence they were not progressed to full quantitative assessment. In terms of severance, the Lyminster Bypass (North) scheme, and the section of the A284 to the north which joins it to the network experience increases in flow of 10% or more. However, this is in a rural area, and the only desire line has a new pegasus crossing. The scheme aids the north-south movement with the shared path for NMUs running along it. Additionally, the A284 through Lyminster and Wick experiences a reduction in flow of 10%, reducing severance here. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
	Option and non-use values	This scheme does not involve the loss or introduction of a new mode of transport.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The scheme is to be funded with £3m from Coast to Capital LEP, £3.76m from S106 developer contributions £18.9m funded by WSCC and the remaining £11.79m sought from the Department for Transport	N/A	N/A	-£22.91m	
	Indirect Tax Revenues	There would be a decrease in the tax being paid to the Exchequer from fuel taxes etc. due to a more direct route, reduction in congestion and an increase in average speeds.	N/A	N/A	-£1.33m	

High Growth Run All Periods

Appraisal Summary Table

Name of scheme:	A284 Lyminster Bypass	Date produced:	24 05 2022
Description of scheme:	The A284 Lyminster Bypass scheme consists of a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.		

Contact:	
Name	Mark Martin
Organisation	West Sussex County Council
Role	Promoter/Official

	Impacts	Summary of key impacts	Assessment: Quantitative	Assessment: Qualitative	Assessment: Monetary	Assessment: Distributional
Economy	Business users & transport providers	The scheme provides business user benefits, with nearly all of the benefits being from journey time savings totalling just under £15.1m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of just under £3m The scheme provides over 3.1m person hours time savings for business users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £15.07m Net journey time changes (£) 1 to 2min: £10.96m 3 to 5min: £5.59m > 5min: £0.00	N/A	£18.04m	
Economy	Reliability impact on Business users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 with grade separation from the rail line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Economy	Regeneration	Not Assessed	N/A	N/A	N/A	
Economy	Wider Impacts	In line with TAG guidance 10% uplift factor to the Business User Benefits as a proxy for output change in imperfectly competitive markets on GDP was applied	N/A	N/A	£1.80m	
Environmental	Noise	Most receptors will experience an impact of negligible magnitude. During the short-term, moderate and major adverse impacts are predicted to the south of the scheme. In the long term, the same area would receive a minor or moderate adverse impact. The assessment shows that noise sensitive receptors near the southern section of the Bypass at the intersection with the A259, which does not form part of this scheme, are likely to receive an increase in noise levels. Mitigation in the form of a 3m high noise barrier is committed and therefore some of these areas will experience a noise impact lower than presented. The southern section of the scheme i.e. A284 Lyminster Bypass (South), between the A259 and Toddington Nurseries, is being delivered by private developers as part of the North Littlehampton Strategic Development Location. Beneficial impacts will be experienced at noise sensitive receptors along the existing A284 over both short and long-term.	Households experiencing increased daytime noise in forecast year = 219 Households experiencing reduced daytime noise in forecast year = 318 Households experiencing increased night time noise in forecast year = N/A Households experiencing reduced night time noise in forecast year= N/A	N/A	-£0.18m	The distributional impact appraisal for noise indicates that residents in the middle of the income deprivation scale are likely to be most affected with disbenefits related to noise. Social groups related to elderly and children are unlikely to experience an impact on noise.
Environmental	Air Quality	Overall there is a net improvement in local air quality with the scheme, but there is a negative impact on regional emissions for NOx. The scheme does not result in any exceedances and does not cause any changes within Air Quality Management Areas.	Number of properties with an improvement for PM2.5 is 1501 and Number of properties with a deterioration for PM2.5 is 704 Number of properties with an improvement for NO2 is 1363 and Number of properties with a deterioration for PM2.5 is 842 Change in NO2 assessment scores over 60 year appraisal period (concentrations) is -70,330.87 Change in PM2.5 assessment scores over 60 year appraisal period (concentration) is -34,139.87	N/A	Present value of change in NO2 concentrations £0.74m Present value of change in PM2.5 concentrations £1.84m	Air quality analysis has shown that benefits are seen on the existing alignment with improved air quality. Slight disbenefits are seen on the A284 bypass and Fitzalan Link Road. The bypass is typically passing through rural areas without receptors. As a result the slight negative impact is unlikely to have a significant impact on any social group or receptor. The benefit seen on the existing alignment will particularly benefit the Q3 income quintile group it passes through as well as providing a positive benefit to the social groups or receptors in the area. There are no AQMA's within the air quality impact area.
Environmental	Greenhouse gases	Decrease in CO2e due to the new bypass offering a more direct and rail level crossing free route. (Values taken from TUBA Analysis)	Change in non-traded carbon over 60y (CO2e): -26,457 Change in traded carbon over 60y (CO2e): -149	N/A	£2.21m	
Environmental	Landscape	The Proposed Bypass is anticipated to result in adverse impacts on the greenfield character of the existing Site (including the loss of hedgerow sections, hedgerows with individual trees and mature trees), setting of listed buildings within 500m of the Site, local landscape character, views from the South Downs National Park and nearby residential receptors as a result of construction traffic, compound location and construction activities. During operation, adverse impacts are anticipated on the greenfield character of the site, Lyminster Conservation Area, listed buildings within 500m, local landscape character, South Downs National Park and nearby residential and PROW receptors from increased traffic, lighting and signage. Potential slight beneficial impacts may occur on the setting of listed buildings and views from around Lyminster where the Proposed Bypass reduces traffic.	N/A	Slight Adverse	N/A	
Environmental	Townscape	The main residential areas are located to the west within the village of Lyminster and to the south and west of the southern extent of the bypass within the north-west of Littlehampton. No assessment was undertaken	N/A	N/A	N/A	
Environmental	Historic Environment	Prior to mitigation, the Proposed Development has the potential for the loss or truncation of buried archaeological deposits. A suitable programme of investigation and mitigation (as defined by the NPPF) is considered sufficient following planning approval with West Sussex County Council. There is the potential for adverse impacts on built heritage assets including listed buildings and conservation areas. Construction works are anticipated to result in slight to moderate adverse impacts on the buried archaeological remains (should they be present). It is considered that the operational phase will result in slight to moderate adverse effects on built heritage features in the landscape during the operational phase.	N/A	Negligible (Designated heritage assets) Minor Adverse (Non-designated heritage assets) Moderate Adverse (Archaeology)	N/A	
Environmental	Biodiversity	Potential for neutral to moderate adverse impacts on protected species and BAP habitat. No potential impacts are considered likely on surrounding statutory or non-statutory sites.	N/A	Moderate Beneficial	N/A	
Environmental	Water Environment	The Proposed Bypass will result in the increase in impermeable surfaces through the construction of the alignment. This will result in an increase in surface water runoff and may also increase in the risk of potential contamination to surface waters. The scheme crosses the Black Ditch and its associated flood plain, and the proposed viaduct ensures that even for the critical flood event plus climate change, and considering the undefended scenario for the River Arun, there is no increase in flood risk as a result of the scheme	N/A	Neutral	N/A	
Social	Commuting and Other users	The scheme provides Commuting and Other user benefits, with most of the benefits being from journey time savings totalling just over £41m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of over £4.6m The scheme provides around 17.7m person hours time savings for commuting and other users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £41.02m Net journey time changes (£) 1 to 2min: £25.30m 3 to 5min: £18.86m > 5min: £0.00	N/A	£45.68m	DIA Para 2.3.15.The scheme is anticipated to show positive commuting and other user benefits for all quintile/economic groups. Distribution of these benefits is anticipated to be proportionate to the population of each quintile, with the exception of quintile 1 (0-20%), which sees a greater proportion of the benefit relative to the proportion of the population. Q1: ✓✓✓ Q2: ✓✓ Q3: ✓✓ Q4: ✓✓ Q5: ✓✓
Social	Reliability impact on Commuting and Other users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 and bridges the West Coastway railway line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Social	Physical activity	The scheme should improve physical activity through the introduction of new footways and crossing points, along with a new bridge over the West Coastway railway line. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton. No Active Mode Appraisal has been undertaken.	N/A	N/A	N/A	
Social	Journey quality	The scheme should improve journey quality between the A27 and A259 by creating a new more direct route, designed to modern standards and as a result of bridging the West Coastway railway line	N/A	N/A	N/A	
Social	Accidents	COBALT has been used to assess the impact of the scheme on accidents. The scheme reduces the chance of an accident, largely due to the new high standard bypass design and associated reductions in queuing and congestion as a result of bridging the West Coastway railway line	Total Accidents Saved = 88 Total Casualties Saved by Scheme (Fatal) = 0 Total Casualties Saved by Scheme (Serious) = 11 Total Casualties Saved by Scheme (Slight) = 104	N/A	£3.33m	DIA 2.6.29: The scheme is expected to be Moderate Beneficial. Though a full appraisal has not been undertaken, it has been shown that the scheme would result in improved collision and casualty rates, and a lower severity of collision. In the area around the Lyminster Bypass (North) scheme, the benefit would be felt by all users and social groups who use the A284 corridor. As there were not more than 50 collisions over a five year period on any impacted links, the threshold for a quantative assessment of the impact on social groups and IMD quintiles has not been undertaken.
Social	Security	This scheme is not expected to change the level of security for general traffic, public transport passengers and freight. No Social Impact Appraisal (SIA) has been undertaken.	N/A	N/A	N/A	No Social Impact Appraisal (SIA) has been undertaken
Social	Access to services	Through the screening process, no significant change in accessibiliy was anticipated. Therefore a full quantitative assessment was not completed. The scheme is anticipated to shift traffic from the old route to the bypass route. This will improve access to local services and public transport in the communities along the old route. There are no services along the bypass area that will be impacted by this change. Outside the scope of the Scheme but under review for the future will be the A259 that borders the south of the Persimmon Homes developments (outside the scope of the discussed Scheme) reviewing defined acceptable walking distances and the possibility of providing bus access to the town on eastwards to shopping and leisure on the A259 (Sainsburys, golf club, etc) as well as access to Littlehampton town centre	N/A	N/A	N/A	DIA Para 2.12.4 indicates that there is not anticipated to be any significant change in terms of accessibility. Improvements in journay time are anticipated on local bus routes along the old route as traffic is re-routed onto the bypass. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Affordability	The scheme is anticipated to improve traffic flow and congestion along the route. This will have a beneficial impact to personal affordability due to reduced fuel costs. Overall a decrease in user charges: -£1.74m	N/A	Moderate Beneficial	N/A	DIA Para 2.12.8. - Analysis of personal affordability shows a moderate benefit as a result of the Lyminster Bypass (North) scheme. There is a benefit for each quintile, but it is disproportionate to the proportion of the population in the quintile for each quintile. The greatest benefits are seen in the area of Lyminster, Wick and towards Arundel to the north of the scheme. There is a slight disbenefit to the east of the District of Arun. Overall, the scheme is assessed to be Moderate Beneficial. Q1: ✓✓ Q2: ✓✓ Q3: ✓✓✓ Q4: ✓✓ Q5: ✓
Social	Severance	Through the screening process, no significant change in severace was anticipated. Therefore a full quantitative assessment was not completed. The scheme will reduce local severance. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton.	N/A	N/A	N/A	DIA Para 2.12.3: Analysis of the severance and accessibility have shown that there would be a minimal impact and hence they were not progressed to full quantitative assessment. In terms of severance, the Lyminster Bypass (North) scheme, and the section of the A284 to the north which joins it to the network experience increases in flow of 10% or more. However, this is in a rural area, and the only desire line has a new pegasus crossing. The scheme aids the north-south movement with the shared path for NMUs running along it. Additionally, the A284 through Lyminster and Wick experiences a reduction in flow of 10%, reducing severance here. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Option and non-use values	This scheme does not involve the loss or introduction of a new mode of transport.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The scheme is to be funded with £3m from Coast to Capital LEP, £3.76m from S106 developer contributions £18.9m funded by WSCC and the remaining £11.79m sought from the Department for Transport	N/A	N/A	-£22.91m	
Public Accounts	Indirect Tax Revenues	There would be a decrease in the tax being paid to the Exchequer from fuel taxes etc. due to a more direct route, reduction in congestion and an increase in average speeds.	N/A	N/A	-£2.29m	

Low Growth Run AM IP PM

Appraisal Summary Table

Date produced:	24 05 2022
Name of scheme:	A284 Lyminster Bypass
Description of scheme:	The A284 Lyminster Bypass scheme consists of a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.

Contact:	
Name	Mark Martin
Organisation	West Sussex County Council
Role	Promoter/Official

	Impacts	Summary of key impacts	Assessment: Quantitative	Assessment: Qualitative	Assessment: Monetary	Assessment: Distributional
Economy	Business users & transport providers	The scheme provides business user benefits, with nearly all of the benefits being from journey time savings totalling just under £7.6m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of over £1.4m The scheme provides over 1.6m person hours time savings for business users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £7.56m Net journey time changes (£) 1 to 2min: £4.95m 3 to 5min: £3.47m > 5min: £0.00	N/A	£9.01m	
Economy	Reliability impact on Business users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 with grade separation from the rail line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Economy	Regeneration	Not Assessed	N/A	N/A	N/A	
Economy	Wider Impacts	In line with TAG guidance 10% uplift factor to the Business User Benefits as a proxy for output change in imperfectly competitive markets on GDP was applied	N/A	N/A	£0.90m	
Environmental	Noise	Most receptors will experience an impact of negligible magnitude. During the short-term, moderate and major adverse impacts are predicted to the south of the scheme. In the long term, the same area would receive a minor or moderate adverse impact. The assessment shows that noise sensitive receptors near the southern section of the Bypass at the intersection with the A259, which does not form part of this scheme, are likely to receive an increase in noise levels. Mitigation in the form of a 3m high noise barrier is committed and therefore some of these areas will experience a noise impact lower than presented. The southern section of the scheme i.e. A284 Lyminster Bypass (South), between the A259 and Toddington Nurseries, is being delivered by private developers as part of the North Littlehampton Strategic Development Location. Beneficial impacts will be experienced at noise sensitive receptors along the existing A284 over both short and long-term.	Households experiencing increased daytime noise in forecast year = 219 Households experiencing reduced daytime noise in forecast year = 318 Households experiencing increased night time noise in forecast year = N/A Households experiencing reduced night time noise in forecast year= N/A	N/A	-£0.18m	The distributional impact appraisal for noise indicates that residents in the middle of the income deprivation scale are likely to be most affected with disbenefits related to noise. Social groups related to elderly and children are unlikely to experience an impact on noise.
Environmental	Air Quality	Overall there is a net improvement in local air quality with the scheme, but there is a negative impact on regional emissions for NOx. The scheme does not result in any exceedances and does not cause any changes within Air Quality Management Areas.	Number of properties with an improvement for PM2.5 is 1501 and Number of properties with a deterioration for PM2.5 is 704 Number of properties with an improvement for NO2 is 1363 and Number of properties with a deterioration for PM2.5 is 842 Change in NO2 assessment scores over 60 year appraisal period (concentrations) is -70,330.87 Change in PM2.5 assessment scores over 60 year appraisal period (concentration) is -34,139.87	N/A	Present value of change in NO2 concentrations £0.74m Present value of change in PM2.5 concentrations £1.84m	Air quality analysis has shown that benefits are seen on the existing alignment with improved air quality. Slight disbenefits are seen on the A284 bypass and Fitzalan Link Road. The bypass is typically passing through rural areas without receptors. As a result the slight negative impact is unlikely to have a significant impact on any social group or receptor. The benefit seen on the existing alignment will particularly benefit the Q3 income quintile group it passes through as well as providing a positive benefit to the social groups or receptors in the area. There are no AQMA's within the air quality impact area.
Environmental	Greenhouse gases	Decrease in CO2e due to the new bypass offering a more direct and rail level crossing free route. (Values taken from TUBA Analysis)	Change in non-traded carbon over 60y (CO2e): -13,226 Change in traded carbon over 60y (CO2e): -93	N/A	£1.10m	
Environmental	Landscape	The Proposed Bypass is anticipated to result in adverse impacts on the greenfield character of the existing Site (including the loss of hedgerow sections, hedgerows with individual trees and mature trees), setting of listed buildings within 500m of the Site, local landscape character, views from the South Downs National Park and nearby residential receptors as a result of construction traffic, compound location and construction activities. During operation, adverse impacts are anticipated on the greenfield character of the site, Lyminster Conservation Area, listed buildings within 500m, local landscape character, South Downs National Park and nearby residential and PROW receptors from increased traffic, lighting and signage. Potential slight beneficial impacts may occur on the setting of listed buildings and views from around Lyminster where the Proposed Bypass reduces traffic.	N/A	Slight Adverse	N/A	
Environmental	Townscape	The main residential areas are located to the west within the village of Lyminster and to the south and west of the southern extent of the bypass within the north-west of Littlehampton. No assessment was undertaken	N/A	N/A	N/A	
Environmental	Historic Environment	Prior to mitigation, the Proposed Development has the potential for the loss or truncation of buried archaeological deposits. A suitable programme of investigation and mitigation (as defined by the NPPF) is considered sufficient following planning approval with West Sussex County Council. There is the potential for adverse impacts on built heritage assets including listed buildings and conservation areas. Construction works are anticipated to result in slight to moderate adverse impacts on the buried archaeological remains (should they be present). It is considered that the operational phase will result in slight to moderate adverse effects on built heritage features in the landscape during the operational phase.	N/A	Negligible (Designated heritage assets) Minor Adverse (Non-designated heritage assets) Moderate Adverse (Archaeology)	N/A	
Environmental	Biodiversity	Potential for neutral to moderate adverse impacts on protected species and BAP habitat. No potential impacts are considered likely on surrounding statutory or non-statutory sites.	N/A	Moderate Beneficial	N/A	
Environmental	Water Environment	The Proposed Bypass will result in the increase in impermeable surfaces through the construction of the alignment. This will result in an increase in surface water runoff and may also increase in the risk of potential contamination to surface waters. The scheme crosses the Black Ditch and its associated flood plain, and the proposed viaduct ensures that even for the critical flood event plus climate change, and considering the undefended scenario for the River Arun, there is no increase in flood risk as a result of the scheme	N/A	Neutral	N/A	
Social	Commuting and Other users	The scheme provides Commuting and Other user benefits, with most of the benefits being from journey time savings totalling just over £19.9m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of over £2.3m The scheme provides around 8.2m person hours time savings for commuting and other users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £19.94m Net journey time changes (£) 1 to 2min: £11.82m 3 to 5min: £10.24m > 5min: £0.00	N/A	£22.27m	DIA Para 2.3.15.The scheme is anticipated to show positive commuting and other user benefits for all quintile/economic groups. Distribution of these benefits is anticipated to be proportionate to the population of each quintile, with the exception of quintile 1 (0-20%), which sees a greater proportion of the benefit relative to the proportion of the population. Q1: ✓✓✓ Q2: ✓✓ Q3: ✓✓ Q4: ✓✓ Q5: ✓✓
Social	Reliability impact on Commuting and Other users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 and bridges the West Coastway railway line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Social	Physical activity	The scheme should improve physical activity through the introduction of new footways and crossing points, along with a new bridge over the West Coastway railway line. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton. No Active Mode Appraisal has been undertaken.	N/A	N/A	N/A	
Social	Journey quality	The scheme should improve journey quality between the A27 and A259 by creating a new more direct route, designed to modern standards and as a result of bridging the West Coastway railway line	N/A	N/A	N/A	
Social	Accidents	COBALT has been used to assess the impact of the scheme on accidents. The scheme reduces the chance of an accident, largely due to the new high standard bypass design and associated reductions in queuing and congestion as a result of bridging the West Coastway railway line	Total Accidents Saved = 88 Total Casualties Saved by Scheme (Fatal) = 0 Total Casualties Saved by Scheme (Serious) = 11 Total Casualties Saved by Scheme (Slight) = 104	N/A	£3.33m	DIA 2.6.29: The scheme is expected to be Moderate Beneficial. Though a full appraisal has not been undertaken, it has been shown that the scheme would result in improved collision and casualty rates, and a lower severity of collision. In the area around the Lyminster Bypass (North) scheme, the benefit would be felt by all users and social groups who use the A284 corridor. As there were not more than 50 collisions over a five year period on any impacted links, the threshold for a quantative assessment of the impact on social groups and IMD quintiles has not been undertaken.
Social	Security	This scheme is not expected to change the level of security for general traffic, public transport passengers and freight. No Social Impact Appraisal (SIA) has been undertaken.	N/A	N/A	N/A	No Social Impact Appraisal (SIA) has been undertaken
Social	Access to services	Through the screening process, no significant change in accessibiliy was anticipated. Therefore a full quantitative assessment was not completed. The scheme is anticipated to shift traffic from the old route to the bypass route. This will improve access to local services and public transport in the communities along the old route. There are no services along the bypass area that will be impacted by this change. Outside the scope of the Scheme but under review for the future will be the A259 that borders the south of the Persimmon Homes developments (outside the scope of the discussed Scheme) reviewing defined acceptable walking distances and the possibility of providing bus access to the town on eastwards to shopping and leisure on the A259 (Sainsburys, golf club, etc) as well as access to Littlehampton town centre	N/A	N/A	N/A	DIA Para 2.12.4 indicates that there is not anticipated to be any significant change in terms of accessibility. Improvements in journey time are anticipated on local bus routes along the old route as traffic is re-routed onto the bypass. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Affordability	The scheme is anticipated to improve traffic flow and congestion along the route. This will have a beneficial impact to personal affordability due to reduced fuel costs. Overall a decrease in user charges: -£1.74m	N/A	Moderate Beneficial	N/A	DIA Para 2.12.8. - Analysis of personal affordability shows a moderate benefit as a result of the Lyminster Bypass (North) scheme. There is a benefit for each quintile, but it is disproportionate to the proportion of the population in the quintile for each quintile. The greatest benefits are seen in the area of Lyminster, Wick and towards Arundel to the north of the scheme. There is a slight disbenefit to the east of the District of Arun. Overall, the scheme is assessed to be Moderate Beneficial. Q1: ✓✓ Q2: ✓✓ Q3: ✓✓✓ Q4: ✓✓ Q5: ✓
Social	Severance	Through the screening process, no significant change in severace was anticipated. Therefore a full quantitative assessment was not completed. The scheme will reduce local severance. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton.	N/A	N/A	N/A	DIA Para 2.12.3: Analysis of the severance and accessibility have shown that there would be a minimal impact and hence they were not progressed to full quantitative assessment. In terms of severance, the Lyminster Bypass (North) scheme, and the section of the A284 to the north which joins it to the network experience increases in flow of 10% or more. However, this is in a rural area, and the only desire line has a new pegasus crossing. The scheme aids the north-south movement with the shared path for NMUs running along it. Additionally, the A284 through Lyminster and Wick experiences a reduction in flow of 10%, reducing severance here. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Option and non-use values	This scheme does not involve the loss or introduction of a new mode of transport.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The scheme is to be funded with £3m from Coast to Capital LEP, £3.76m from S106 developer contributions £18.9m funded by WSCC and the remaining £11.79m sought from the Department for Transport	N/A	N/A	-£22.91m	
Public Accounts	Indirect Tax Revenues	There would be a decrease in the tax being paid to the Exchequer from fuel taxes etc. due to a more direct route, reduction in congestion and an increase in average speeds.	N/A	N/A	-£1.15m	

Low Growth Run All Periods

Appraisal Summary Table

Date produced:	24 05 2022
Name of scheme:	A284 Lyminster Bypass
Description of scheme:	The A284 Lyminster Bypass scheme consists of a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.

Contact:	
Name	Mark Martin
Organisation	West Sussex County Council
Role	Promoter/Official

	Impacts	Summary of key impacts	Assessment: Quantitative	Qualitative	Monetary	Distributional
Economy	Business users & transport providers	The scheme provides business user benefits, with nearly all of the benefits being from journey time savings totalling just under £14.4m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of over £2.5m The scheme provides around 3m person hours time savings for business users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £14.39m Net journey time changes (£) 1 to 2min: £9.27m 3 to 5min: £6.60m > 5min: £0.00	N/A	£16.96m	
Economy	Reliability impact on Business users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 with grade separation from the rail line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Economy	Regeneration	Not Assessed	N/A	N/A	N/A	
Economy	Wider Impacts	In line with TAG guidance 10% uplift factor to the Business User Benefits as a proxy for output change in imperfectly competitive markets on GDP was applied	N/A	N/A	£1.70m	
Environmental	Noise	Most receptors will experience an impact of negligible magnitude. During the short-term, moderate and major adverse impacts are predicted to the south of the scheme. In the long term, the same area would receive a minor or moderate adverse impact. The assessment shows that noise sensitive receptors near the southern section of the Bypass at the intersection with the A259, which does not form part of this scheme, are likely to receive an increase in noise levels. Mitigation in the form of a 3m high noise barrier is committed and therefore some of these areas will experience a noise impact lower than presented. The southern section of the scheme i.e. A284 Lyminster Bypass (South), between the A259 and Toddington Nurseries, is being delivered by private developers as part of the North Littlehampton Strategic Development Location. Beneficial impacts will be experienced at noise sensitive receptors along the existing A284 over both short and long-term.	Households experiencing increased daytime noise in forecast year = 219 Households experiencing reduced daytime noise in forecast year = 318 Households experiencing increased night time noise in forecast year = N/A Households experiencing reduced night time noise in forecast year= N/A	N/A	-£0.18m	The distributional impact appraisal for noise indicates that residents in the middle of the income deprivation scale are likely to be most affected with disbenefits related to noise. Social groups related to elderly and children are unlikely to experience an impact on noise.
Environmental	Air Quality	Overall there is a net improvement in local air quality with the scheme, but there is a negative impact on regional emissions for NOx. The scheme does not result in any exceedances and does not cause any changes within Air Quality Management Areas.	Number of properties with an improvement for PM2.5 is 1501 and Number of properties with a deterioration for PM2.5 is 704 Number of properties with an improvement for NO2 is 1363 and Number of properties with a deterioration for PM2.5 is 842 Change in NO2 assessment scores over 60 year appraisal period (concentrations) is -70,330.87 Change in PM2.5 assessment scores over 60 year appraisal period (concentration) is -34,139.87	N/A	Present value of change in NO2 concentrations £0.74m Present value of change in PM2.5 concentrations £1.84m	Air quality analysis has shown that benefits are seen on the existing alignment with improved air quality. Slight disbenefits are seen on the A284 bypass and Fitzalan Link Road. The bypass is typically passing through rural areas without receptors. As a result the slight negative impact is unlikely to have a significant impact on any social group or receptor. The benefit seen on the existing alignment will particularly benefit the Q3 income quintile group it passes through as well as providing a positive benefit to the social groups or receptors in the area. There are no AQMA's within the air quality impact area.
Environmental	Greenhouse gases	Decrease in CO2e due to the new bypass offering a more direct and rail level crossing free route. (Values taken from TUBA Analysis)	Change in non-traded carbon over 60y (CO2e): -23,309 Change in traded carbon over 60y (CO2e): -132	N/A	£1.95m	
Environmental	Landscape	The Proposed Bypass is anticipated to result in adverse impacts on the greenfield character of the existing Site (including the loss of hedgerow sections, hedgerows with individual trees and mature trees), setting of listed buildings within 500m of the Site, local landscape character, views from the South Downs National Park and nearby residential receptors as a result of construction traffic, compound location and construction activities. During operation, adverse impacts are anticipated on the greenfield character of the site, Lyminster Conservation Area, listed buildings within 500m, local landscape character, South Downs National Park and nearby residential and PROW receptors from increased traffic, lighting and signage. Potential slight beneficial impacts may occur on the setting of listed buildings and views from around Lyminster where the Proposed Bypass reduces traffic.	N/A	Slight Adverse	N/A	
Environmental	Townscape	The main residential areas are located to the west within the village of Lyminster and to the south and west of the southern extent of the bypass within the north-west of Littlehampton. No assessment was undertaken	N/A	N/A	N/A	
Environmental	Historic Environment	Prior to mitigation, the Proposed Development has the potential for the loss or truncation of buried archaeological deposits. A suitable programme of investigation and mitigation (as defined by the NPPF) is considered sufficient following planning approval with West Sussex County Council. There is the potential for adverse impacts on built heritage assets including listed buildings and conservation areas. Construction works are anticipated to result in slight to moderate adverse impacts on the buried archaeological remains (should they be present). It is considered that the operational phase will result in slight to moderate adverse effects on built heritage features in the landscape during the operational phase.	N/A	Negligible (Designated heritage assets) Minor Adverse (Non-designated heritage assets) Moderate Adverse (Archaeology)	N/A	
Environmental	Biodiversity	Potential for neutral to moderate adverse impacts on protected species and BAP habitat. No potential impacts are considered likely on surrounding statutory or non-statutory sites.	N/A	Moderate Beneficial	N/A	
Environmental	Water Environment	The Proposed Bypass will result in the increase in impermeable surfaces through the construction of the alignment. This will result in an increase in surface water runoff and may also increase in the risk of potential contamination to surface waters. The scheme crosses the Black Ditch and its associated flood plain, and the proposed viaduct ensures that even for the critical flood event plus climate change, and considering the undefended scenario for the River Arun, there is no increase in flood risk as a result of the scheme	N/A	Neutral	N/A	
Social	Commuting and Other users	The scheme provides Commuting and Other user benefits, with most of the benefits being from journey time savings totalling over £35.2m in user benefits. This is however supported by reductions in vehicle operating costs, with a benefit of just under £4m The scheme provides around 15.4m person hours time savings for commuting and other users. Lyminster Bypass (North) will be built largely off-line, so construction delays would not have a significant impact Maintenance costs of over £4m would be funded through the County's annual maintenance programme so do not require capital to be set aside, however they have been included in the assessment of costs and benefits.	Value of journey time changes(£): £35.23m Net journey time changes (£) 1 to 2min: £17.98m 3 to 5min: £20.57m > 5min: £0.00	N/A	£39.23m	DIA Para 2.3.15.The scheme is anticipated to show positive commuting and other user benefits for all quintile/economic groups. Distribution of these benefits is anticipated to be proportionate to the population of each quintile, with the exception of quintile 1 (0-20%), which sees a greater proportion of the benefit relative to the proportion of the population. Q1: ✓✓✓ Q2: ✓✓ Q3: ✓✓ Q4: ✓✓ Q5: ✓✓
Social	Reliability impact on Commuting and Other users	A 'stress-based' approach using TAG unit A1.3 has been used for the reliability impact assessments. The percentage stress in the without scheme scenario is 54% and the percentage stress in the with scheme scenario is 14%. The percentage stress in the with scheme scenario i.e new route is 60% As the stress values are below 75%, the qualititative value has been based on a stress value of 75% In qualitative terms, the addition of a new bypass, providing a new route between the A27 and A259 and bridges the West Coastway railway line, should significantly increase reliability to users. The existing route will also provide an alternative route during any incidents.	N/A	Neutral	N/A	
Social	Physical activity	The scheme should improve physical activity through the introduction of new footways and crossing points, along with a new bridge over the West Coastway railway line. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton. No Active Mode Appraisal has been undertaken.	N/A	N/A	N/A	
Social	Journey quality	The scheme should improve journey quality between the A27 and A259 by creating a new more direct route, designed to modern standards and as a result of bridging the West Coastway railway line	N/A	N/A	N/A	
Social	Accidents	COBALT has been used to assess the impact of the scheme on accidents. The scheme reduces the chance of an accident, largely due to the new high standard bypass design and associated reductions in queuing and congestion as a result of bridging the West Coastway railway line	Total Accidents Saved = 88 Total Casualties Saved by Scheme (Fatal) = 0 Total Casualties Saved by Scheme (Serious) = 11 Total Casualties Saved by Scheme (Slight) = 104	N/A	£3.33m	DIA 2.6.29: The scheme is expected to be Moderate Beneficial. Though a full appraisal has not been undertaken, it has been shown that the scheme would result in improved collision and casualty rates, and a lower severity of collision. In the area around the Lyminster Bypass (North) scheme, the benefit would be felt by all users and social groups who use the A284 corridor. As there were not more than 50 collisions over a five year period on any impacted links, the threshold for a quantative assessment of the impact on social groups and IMD quintiles has not been undertaken.
Social	Security	This scheme is not expected to change the level of security for general traffic, public transport passengers and freight. No Social Impact Appraisal (SIA) has been undertaken.	N/A	N/A	N/A	No Social Impact Appraisal (SIA) has been undertaken
Social	Access to services	Through the screening process, no significant change in accessibiliy was anticipated. Therefore a full quantitative assessment was not completed. The scheme is anticipated to shift traffic from the old route to the bypass route. This will improve access to local services and public transport in the communities along the old route. There are no services along the bypass area that will be impacted by this change. Outside the scope of the Scheme but under review for the future will be the A259 that borders the south of the Persimmon Homes developments (outside the scope of the discussed Scheme) reviewing defined acceptable walking distances and the possibility of providing bus access to the town on eastwards to shopping and leisure on the A259 (Sainsburys, golf club, etc) as well as access to Littlehampton town centre	N/A	N/A	N/A	DIA Para 2.12.4 indicates that there is not anticipated to be any significant change in terms of accessibility. Improvements in journay time are anticipated on local bus routes along the old route as traffic is re-routed onto the bypass. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Affordability	The scheme is anticipated to improve traffic flow and congestion along the route. This will have a beneficial impact to personal affordability due to reduced fuel costs. Overall a decrease in user charges: -£1.74m	N/A	Moderate Beneficial	N/A	DIA Para 2.12.8. - Analysis of personal affordability shows a moderate benefit as a result of the Lyminster Bypass (North) scheme. There is a benefit for each quintile, but it is disproportionate to the proportion of the population in the quintile for each quintile. The greatest benefits are seen in the area of Lyminster, Wick and towards Arundel to the north of the scheme. There is a slight disbenefit to the east of the District of Arun. Overall, the scheme is assessed to be Moderate Beneficial. Q1: ✓✓ Q2: ✓✓ Q3: ✓✓✓ Q4: ✓✓ Q5: ✓
Social	Severance	Through the screening process, no significant change in severace was anticipated. Therefore a full quantitative assessment was not completed. The scheme will reduce local severance. A 3m wide shared cycleway / footway will run from the northern end of the scheme along the west side of the carriageway to reach a signalised Pegasus crossing. The Pegasus crossing will provide a safe crossing point for cyclists, pedestrians and equestrians in addition to ensuring the continuity of the existing bridleway between Lyminster and Poling. From the crossing, the shared cycleway / footway will continue southwards down the east side of the road to link to similar facilities further south and continuing into Littlehampton.	N/A	N/A	N/A	DIA Para 2.12.3: Analysis of the severance and accessibility have shown that there would be a minimal impact and hence they were not progressed to full quantitative assessment. In terms of severance, the Lyminster Bypass (North) scheme, and the section of the A284 to the north which joins it to the network experience increases in flow of 10% or more. However, this is in a rural area, and the only desire line has a new pegasus crossing. The scheme aids the north-south movement with the shared path for NMUs running along it. Additionally, the A284 through Lyminster and Wick experiences a reduction in flow of 10%, reducing severance here. A full quantitative assessment was not completed to determine the impact on specific social groups and income quintiles.
Social	Option and non-use values	This scheme does not involve the loss or introduction of a new mode of transport.	N/A	N/A	N/A	
Public Accounts	Cost to Broad Transport Budget	The scheme is to be funded with £3m from Coast to Capital LEP, £3.76m from S106 developer contributions £18.9m funded by WSCC and the remaining £11.79m sought from the Department for Transport	N/A	N/A	-£22.91m	
Public Accounts	Indirect Tax Revenues	There would be a decrease in the tax being paid to the Exchequer from fuel taxes etc. due to a more direct route, reduction in congestion and an increase in average speeds.	N/A	N/A	-£2.02m	

Appendix B

AST SUMMARY WORKSHEETS

Economic Efficiency of the Transport System (TEE)

Non-business: Commuting	**ALL MODES**		**ROAD**	**BUS and COACH**	**RAIL**	**OTHER**
User benefits	**TOTAL**		**Private Cars and LGVs**	**Passengers**	**Passengers**	
Travel time	£8,271,540		£8,271,540			
Vehicle operating costs	£587,197		£587,197			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
COMMUTING	£8,858,737	*(1a)*	£8,858,737	0	0	0

Non-business: Other	**ALL MODES**		**ROAD**	**BUS and COACH**	**RAIL**	**OTHER**
User benefits	**TOTAL**		**Private Cars and LGVs**	**Passengers**	**Passengers**	
Travel time	£15,024,281		£15,024,281			
Vehicle operating costs	£1,870,910		£1,870,910			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
NET NON-BUSINESS BENEFITS: OTHER	£16,895,191	*(1b)*	£16,895,191	0	0	0

Business			**Goods Vehicles**	**Business Cars & LGVs**				
User benefits					**Passengers**	**Freight**	**Passengers**	
Travel time	£7,830,535		£5,502,018	£2,328,517				
Vehicle operating costs	£1,594,161		£1,137,689	£456,473				
User charges	£0		£0	£0				
During Construction & Maintenance	£0		£0	£0				
Subtotal	£9,424,696	*(2)*	£6,639,707	£2,784,990	0	0	0	0
Private sector provider impacts						**Freight**	**Passengers**	
Revenue	0							
Operating costs	0							
Investment costs	0							
Grant/subsidy	0							
Subtotal	0	*(3)*			0	0	0	0
Other business impacts								
Developer contributions	0	*(4)*						
NET BUSINESS IMPACT	£9,424,696	*(5) = (2) + (3) + (4)*						

TOTAL		
Efficiency Benefits (TEE)	£35,178,624	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table

	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
Local Government Fund	**TOTAL**		**INFRASTRUCTURE**			
Revenue	£0					
Operating Costs	£2,442,000					
Investment Costs	£0					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£2,442,000	*(7)*				
Central Government Funding: Transpo						
Revenue	£0					
Operating costs	£0					
Investment Costs	£20,470,000					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£20,470,000	*(8)*				
Central Government Funding: Non-Tra						
Indirect Tax Revenues	£1,237,095	*(9)*				

TOTALS		
Broad Transport Budget	£22,912,000	*(10) = (7) + (8)*
Wider Public Finances	£1,237,095	*(11) = (9)*

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

AMCB_Table

Model Map | Core Growth Run AM IP PM

Analysis of Monetised Costs and Benefits

Noise	-£180,000	*(12)*
Local Air Quality	£2,304,000	*(13)*
Greenhouse Gases	£1,186,000	*(14)*
Journey Quality	£0	*(15)*
Physical Activity	£0	*(16)*
Accidents	£3,333,000	*(17)*
Economic Efficiency: Consumer Users (Commuting)	£8,858,737	*(1a)*
Economic Efficiency: Consumer Users (Other)	£16,895,191	*(1b)*
Economic Efficiency: Business Users and Providers	£9,424,696	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-£1,237,095	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	£40,584,529	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	£22,912,000	*(10)*
Present Value of Costs (see notes) (PVC)	£22,912,000	*(PVC) = (10)*
OVERALL IMPACTS		
Net Present Value (NPV)	£17,672,529	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	1.77	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Economic Efficiency of the Transport System (TEE)

Non-business: Commuting	**ALL MODES**		**ROAD**	**BUS and COACH**	**RAIL**	**OTHER**
User benefits	**TOTAL**		**Private Cars and LGVs**	**Passengers**	**Passengers**	
Travel time	£10,331,772		£10,331,772			
Vehicle operating costs	£737,844		£737,844			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
COMMUTING	£11,069,616	*(1a)*	£11,069,616	0	0	0

Non-business: Other	**ALL MODES**		**ROAD**	**BUS and COACH**	**RAIL**	**OTHER**
User benefits	**TOTAL**		**Private Cars and LGVs**	**Passengers**	**Passengers**	
Travel time	£28,992,885		£28,992,885			
Vehicle operating costs	£3,557,311		£3,557,311			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
NET NON-BUSINESS BENEFITS: OTHER	£32,550,195	*(1b)*	£32,550,195	0	0	0

Business			**Goods Vehicles**	**Business Cars & LGVs**	**Passengers**	**Freight**	**Passengers**	
User benefits								
Travel time	£14,586,957		£10,101,827	£4,485,130				
Vehicle operating costs	£2,789,092		£1,971,497	£817,595				
User charges	£0		£0	£0				
During Construction & Maintenance	£0		£0	£0				
Subtotal	£17,376,049	*(2)*	£12,073,324	£5,302,725	0	0	0	0
Private sector provider impacts						**Freight**	**Passengers**	
Revenue	0							
Operating costs	0							
Investment costs	0							
Grant/subsidy	0							
Subtotal	0	*(3)*			0	0	0	0
Other business impacts								
Developer contributions	0	*(4)*						
NET BUSINESS IMPACT	£17,376,049	*(5) = (2) + (3) + (4)*						

TOTAL		
Efficiency Benefits (TEE)	£60,995,860	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table

	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
Local Government Fund	**TOTAL**		**INFRASTRUCTURE**			
Revenue	£0					
Operating Costs	£2,442,000					
Investment Costs	£0					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£2,442,000	*(7)*				
Central Government Funding: Transpo						
Revenue	£0					
Operating costs	£0					
Investment Costs	£20,470,000					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£20,470,000	*(8)*				
Central Government Funding: Non-Tra						
Indirect Tax Revenues	£2,167,621	*(9)*				

TOTALS		
Broad Transport Budget	£22,912,000	*(10) = (7) + (8)*
Wider Public Finances	£2,167,621	*(11) = (9)*

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

AMCB_Table

Model Map | Core Growth Run All Periods

Analysis of Monetised Costs and Benefits

Noise	-£180,000	*(12)*
Local Air Quality	£2,304,000	*(13)*
Greenhouse Gases	£2,091,000	*(14)*
Journey Quality	£0	*(15)*
Physical Activity	£0	*(16)*
Accidents	£3,333,000	*(17)*
Economic Efficiency: Consumer Users (Commuting)	£11,069,616	*(1a)*
Economic Efficiency: Consumer Users (Other)	£32,550,195	*(1b)*
Economic Efficiency: Business Users and Providers	£17,376,049	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-£2,167,621	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	£66,376,239	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	£22,912,000	*(10)*
Present Value of Costs (see notes) (PVC)	£22,912,000	*(PVC) = (10)*

OVERALL IMPACTS

Net Present Value (NPV)	£43,464,239	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	2.90	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Economic Efficiency of the Transport System (TEE)

Non-business: Commuting	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£8,926,608		£8,926,608			
Vehicle operating costs	£714,366		£714,366			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
COMMUTING	£9,640,974	*(1a)*	£9,640,974	0	0	0

Non-business: Other	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£15,737,799		£15,737,799			
Vehicle operating costs	£1,987,993		£1,987,993			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
NET NON-BUSINESS BENEFITS: OTHER	£17,725,792	*(1b)*	£17,725,792	0	0	0

Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers	
User benefits								
Travel time	£8,277,794		£5,916,015	£2,361,779				
Vehicle operating costs	£1,718,194		£1,267,778	£450,417				
User charges	£0		£0	£0				
During Construction & Maintenance	£0		£0	£0				
Subtotal	£9,995,988	*(2)*	£7,183,793	£2,812,196	0	0	0	0

Private sector provider impacts					Freight	Passengers	
Revenue	0						
Operating costs	0						
Investment costs	0						
Grant/subsidy	0						
Subtotal	0	*(3)*		0	0	0	0
Other business impacts							
Developer contributions	0	*(4)*					
NET BUSINESS IMPACT	£9,995,988	*(5) = (2) + (3) + (4)*					

TOTAL		
Efficiency Benefits (TEE)	£37,362,754	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table

	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
Local Government Fund	**TOTAL**		**INFRASTRUCTURE**			
Revenue	£0					
Operating Costs	£2,442,000					
Investment Costs	£0					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£2,442,000	*(7)*				
Central Government Funding: Transpo						
Revenue	£0					
Operating costs	£0					
Investment Costs	£20,470,000					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£20,470,000	*(8)*				
Central Government Funding: Non-Tra						
Indirect Tax Revenues	£1,330,057	*(9)*				

TOTALS		
Broad Transport Budget	£22,912,000	*(10) = (7) + (8)*
Wider Public Finances	£1,330,057	*(11) = (9)*

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

AMCB_Table

Model Map | High Growth Run AM IP PM

Analysis of Monetised Costs and Benefits

Noise	-£180,000	*(12)*
Local Air Quality	£2,304,000	*(13)*
Greenhouse Gases	£1,278,000	*(14)*
Journey Quality	£0	*(15)*
Physical Activity	£0	*(16)*
Accidents	£3,333,000	*(17)*
Economic Efficiency: Consumer Users (Commuting)	£9,640,974	*(1a)*
Economic Efficiency: Consumer Users (Other)	£17,725,792	*(1b)*
Economic Efficiency: Business Users and Providers	£9,995,988	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-£1,330,057	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	£42,767,697	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	£22,912,000	*(10)*
Present Value of Costs (see notes) (PVC)	£22,912,000	*(PVC) = (10)*
OVERALL IMPACTS		
Net Present Value (NPV)	£19,855,697	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	1.87	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Economic Efficiency of the Transport System (TEE)

Non-business: Commuting	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£11,071,189		£11,071,189			
Vehicle operating costs	£839,294		£839,294			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
COMMUTING	£11,910,483	*(1a)*	£11,910,483	0	0	0

Non-business: Other	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£29,953,244		£29,953,244			
Vehicle operating costs	£3,819,125		£3,819,125			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
NET NON-BUSINESS BENEFITS: OTHER	£33,772,369	*(1b)*	£33,772,369	0	0	0

Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers	
User benefits								
Travel time	£15,067,287		£10,485,001	£4,582,285				
Vehicle operating costs	£2,973,615		£2,154,888	£818,727				
User charges	£0		£0	£0				
During Construction & Maintenance	£0		£0	£0				
Subtotal	£18,040,902	*(2)*	£12,639,889	£5,401,012	0	0	0	0
Private sector provider impacts						Freight	Passengers	
Revenue	0							
Operating costs	0							
Investment costs	0							
Grant/subsidy	0							
Subtotal	0	*(3)*			0	0	0	0
Other business impacts								
Developer contributions	0	*(4)*						
NET BUSINESS IMPACT	£18,040,902	*(5) = (2) + (3) + (4)*						

TOTAL		
Efficiency Benefits (TEE)	£63,723,754	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table

	ALL MODES TOTAL		ROAD INFRASTRUCTURE	BUS and COACH	RAIL	OTHER
Local Government Fund						
Revenue	£0					
Operating Costs	£2,442,000					
Investment Costs	£0					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£2,442,000	*(7)*				
Central Government Funding: Transpo						
Revenue	£0					
Operating costs	£0					
Investment Costs	£20,470,000					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£20,470,000	*(8)*				
Central Government Funding: Non-Tra						
Indirect Tax Revenues	£2,286,657	*(9)*				
TOTALS						
Broad Transport Budget	£22,912,000	*(10) = (7) + (8)*				
Wider Public Finances	£2,286,657	*(11) = (9)*				

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

AMCB_Table

Model Map | High Growth Run All Periods

Analysis of Monetised Costs and Benefits

Noise	-£180,000	*(12)*
Local Air Quality	£2,304,000	*(13)*
Greenhouse Gases	£2,208,000	*(14)*
Journey Quality	£0	*(15)*
Physical Activity	£0	*(16)*
Accidents	£3,333,000	*(17)*
Economic Efficiency: Consumer Users (Commuting)	£11,910,483	*(1a)*
Economic Efficiency: Consumer Users (Other)	£33,772,369	*(1b)*
Economic Efficiency: Business Users and Providers	£18,040,902	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-£2,286,657	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	£69,102,096	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	£22,912,000	*(10)*
Present Value of Costs (see notes) (PVC)	£22,912,000	*(PVC) = (10)*
OVERALL IMPACTS		
Net Present Value (NPV)	£46,190,096	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	3.02	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Economic Efficiency of the Transport System (TEE)

Non-business: Commuting	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	**TOTAL**		**Private Cars and LGVs**	**Passengers**	**Passengers**	
Travel time	£7,124,035		£7,124,035			
Vehicle operating costs	£645,268		£645,268			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
COMMUTING	£7,769,304	*(1a)*	£7,769,304	0	0	0

Non-business: Other	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	**TOTAL**		**Private Cars and LGVs**	**Passengers**	**Passengers**	
Travel time	£12,819,939		£12,819,939			
Vehicle operating costs	£1,679,883		£1,679,883			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
NET NON-BUSINESS BENEFITS: OTHER	£14,499,822	*(1b)*	£14,499,822	0	0	0

Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers	
User benefits								
Travel time	£7,559,927		£5,410,304	£2,149,623				
Vehicle operating costs	£1,453,978		£1,009,676	£444,302				
User charges	£0		£0	£0				
During Construction & Maintenance	£0		£0	£0				
Subtotal	£9,013,905	*(2)*	£6,419,980	£2,593,926	0	0	0	0
Private sector provider impacts						**Freight**	**Passengers**	
Revenue	0							
Operating costs	0							
Investment costs	0							
Grant/subsidy	0							
Subtotal	0	*(3)*			0	0	0	0
Other business impacts								
Developer contributions	0	*(4)*						
NET BUSINESS IMPACT	£9,013,905	*(5) = (2) + (3) + (4)*						

TOTAL		
Efficiency Benefits (TEE)	£31,283,031	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table

	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
Local Government Fund	**TOTAL**		**INFRASTRUCTURE**			
Revenue	£0					
Operating Costs	£2,442,000					
Investment Costs	£0					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£2,442,000	*(7)*				
Central Government Funding: Transpo						
Revenue	£0					
Operating costs	£0					
Investment Costs	£20,470,000					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£20,470,000	*(8)*				
Central Government Funding: Non-Tra						
Indirect Tax Revenues	£1,151,173	*(9)*				

TOTALS		
Broad Transport Budget	£22,912,000	*(10) = (7) + (8)*
Wider Public Finances	£1,151,173	*(11) = (9)*

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

AMCB_Table

Model Map | Low Growth Run AM IP PM

Analysis of Monetised Costs and Benefits

Noise	-£180,000	*(12)*
Local Air Quality	£2,304,000	*(13)*
Greenhouse Gases	£1,102,000	*(14)*
Journey Quality	£0	*(15)*
Physical Activity	£0	*(16)*
Accidents	£3,333,000	*(17)*
Economic Efficiency: Consumer Users (Commuting)	£7,769,304	*(1a)*
Economic Efficiency: Consumer Users (Other)	£14,499,822	*(1b)*
Economic Efficiency: Business Users and Providers	£9,013,905	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-£1,151,173	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	£36,690,859	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	£22,912,000	*(10)*
Present Value of Costs (see notes) (PVC)	£22,912,000	*(PVC) = (10)*
OVERALL IMPACTS		
Net Present Value (NPV)	£13,778,859	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	1.60	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Economic Efficiency of the Transport System (TEE)

Non-business: Commuting	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£9,128,930		£9,128,930			
Vehicle operating costs	£775,497		£775,497			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
COMMUTING	£9,904,427	*(1a)*	£9,904,427	0	0	0

Non-business: Other	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL		Private Cars and LGVs	Passengers	Passengers	
Travel time	£26,103,924		£26,103,924			
Vehicle operating costs	£3,218,320		£3,218,320			
User charges	£0		£0			
During Construction & Maintenance	£0		£0			
NET NON-BUSINESS BENEFITS: OTHER	£29,322,244	*(1b)*	£29,322,244	0	0	0

Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers	
User benefits								
Travel time	£14,390,102		£10,163,207	£4,226,895				
Vehicle operating costs	£2,566,457		£1,791,268	£775,189				
User charges	£0		£0	£0				
During Construction & Maintenance	£0		£0	£0				
Subtotal	£16,956,559	*(2)*	£11,954,475	£5,002,084	0	0	0	0
Private sector provider impacts						Freight	Passengers	
Revenue	0							
Operating costs	0							
Investment costs	0							
Grant/subsidy	0							
Subtotal	0	*(3)*			0	0	0	0
Other business impacts								
Developer contributions	0	*(4)*						
NET BUSINESS IMPACT	£16,956,559	*(5) = (2) + (3) + (4)*						

TOTAL		
Efficiency Benefits (TEE)	£56,183,230	*(6) = (1a) + (1b) + (5)*

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

Public Accounts (PA) Table

	ALL MODES		ROAD	BUS and COACH	RAIL	OTHER
Local Government Fund	**TOTAL**		**INFRASTRUCTURE**			
Revenue	£0					
Operating Costs	£2,442,000					
Investment Costs	£0					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£2,442,000	*(7)*				
Central Government Funding: Transpo						
Revenue	£0					
Operating costs	£0					
Investment Costs	£20,470,000					
Contributions	£0					
Grant/Subsidy Payments	£0					
NET IMPACT	£20,470,000	*(8)*				
Central Government Funding: Non-Tra						
Indirect Tax Revenues	£2,019,582	*(9)*				

TOTALS		
Broad Transport Budget	£22,912,000	*(10) = (7) + (8)*
Wider Public Finances	£2,019,582	*(11) = (9)*

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

AMCB_Table

Model Map | Low Growth Run All Periods

Analysis of Monetised Costs and Benefits

Noise	-£180,000	*(12)*
Local Air Quality	£2,304,000	*(13)*
Greenhouse Gases	£1,945,000	*(14)*
Journey Quality	£0	*(15)*
Physical Activity	£0	*(16)*
Accidents	£3,333,000	*(17)*
Economic Efficiency: Consumer Users (Commuting)	£9,904,427	*(1a)*
Economic Efficiency: Consumer Users (Other)	£29,322,244	*(1b)*
Economic Efficiency: Business Users and Providers	£16,956,559	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-£2,019,582	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	£61,565,648	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	£22,912,000	*(10)*
Present Value of Costs (see notes) (PVC)	£22,912,000	*(PVC) = (10)*
OVERALL IMPACTS		
Net Present Value (NPV)	£38,653,648	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	2.69	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Appendix C

RISK REGISTER

PROJECT:	A284 Lyminster Bypass

									Current Risk Exposure												Post-mitigation Risk Exposure																	
Risk No	Title	Type	Category	Risk Description "There is a risk that..."	Cause "This is because..."	Risk Impact "If the event occurs, there will be the following consequence(s)..."	Risk Owner	Likelihood	Cost Impact	Schedule Impact	Reputational Impact	Score (Number)	Score	Likelihood (%)	Likelihood of No Risk Impact	Minimum Cost Impact (£)	Most Likely Cost Impact (£)	Maximum Cost Impact (£)	Cost Impact If No Risk Occurs	Risk Strategy	Risk Control / Action	Action Owner	Target Completion Date	Likelihood	Cost Impact	Schedule Impact	Reputational Impact	Score (Number)	Score	Likelihood (%)	Likelihood of No Risk Impact	Minimum Cost Impact (£)	Most Likely Cost Impact (£)	Maximum Cost Impact (£)	Cost Impact If No Risk Occurs	Assessment Assumptions	Contractual Ownership	Project Phase	Status	Reason for Risk Closure	Last Update	Risk Updates / Key Changes
102	Contamination Survey of T&L Crawley CPO Plots	Threat	Construction	The cost for surveying the T&L Crawley Plots will be over that allowed for in budget	the specific survey to be used is still under negotiation	Additional funds would be required. Duration of survey could be longer than anticipated	Martin, Mark (mmartin)	3. Probable (20-50%)	1. Very Low	1. Very Low	1. Very Low	3		35.00%	65.00%	0	38,500	77,000	0		A potential scope has been reviewed and priced with the cost consultants to instruct the budget. JACKSONS have been advised to allow time in the programme for the works on gaining entry	WSCC (Client)		2. Unlikely (5-20%)	1. Very Low	1. Very Low	1. Very Low	2		12.50%	87.50%	0	38,500	77,000	0				Open				
104	Acoustic fencing Standard	Threat	Construction	Current acoustic fencing proposal may not comply with new standards, and/or WSCCs preferred solution	ADC is reviewing the accoustic fencing on nearby schemes following disquiet with constituents	Redesign of fencing, additional cost	Martin, Mark (mmartin)	2. Unlikely (5-20%)	2. Low	2. Low	3. Medium	6		12.50%	87.50%	77,000	152,250	227,500	0		Engage with ADC and other road project managers to confirm designed solution is satisfactory	WSCC (Client)		1. Very Unlikely (1-5%)	3. Medium	1. Very Low	1. Very Low	3		2.50%	97.50%	227,500	491,750	756,000	0				Open			21 Oct 2020	
105	Vegetation Clearance Negotiations Fail	Threat	Construction	Not able to gain access for Vegetation clearance in January and limited time for clearance withing the permitted time period before bird nesting season.	Early access to clear vegetation in January 2022 is subject to agreement with a landowner	Programme delays, and rephasing of works may be required	Martin, Mark (mmartin)	2. Unlikely (5-20%)	5. Very High	5. Very High	5. Very High	10		12.50%	87.50%	1,522,500	1,986,250	2,450,000	0		Access agreed in principal. Agreement to be organised and signed off as priority	WSCC (Client)		1. Very Unlikely (1-5%)	3. Medium	2. Low	1. Very Low	3		2.50%	97.50%	227,500	491,750	756,000	0	Assumption is full timescales for CPO Full access granted in Febvuary 2022. Clearance organised for majority of landowners in January 2022 through negotiation to avoid missing the bird nesting season constraints.			Open	Reopened	21 Oct 2020	
106	Planning Permission Expiry	Threat	Construction	Planning Permission expires before works begin	Planning permission expires on the 9th May 2022. A substantial start is required before that date	Re apply for planning permission with significant delay and cost increase	Martin, Mark (mmartin)	3. Probable (20-50%)	5. Very High	5. Very High	5. Very High	15		35.00%	65.00%	1522500	1986250	2450000	0		Discharge of planning conditions being completed. Jacksons confirming works schedule in order to confirm with planning the key activities which will be viewed as a start on site. DfT bid being submitted ASAP to avoid delays	WSCC (Client)		1. Very Unlikely (1-5%)	1. Very Low	1. Very Low	1. Very Low	1		2.50%	97.50%	0	38500	77000	0	Provided the mitigation work is completed and planning is satisfied the risk becomes negligible. Until the mitigation the risk is high			Open			
107	Potential design changes	Threat	Design	Further design changes are required beyond those planned anticipated during the drawing up of the cotnract	Viaduct design is not finalised but action owner is different so listed seperately. The non material ammendments have not been completed and negotiaitons are still raising accomodation works	Redesign of elements.	Martin, Mark (mmartin)	3. Probable (20-50%)	2. Low	3. Medium	1. Very Low	9		35.00%	65.00%	77,000	152,250	227,500	0		Current ammendments to be sent to planning Negotiation of accomodation works continuing	WSCC (Client)		2. Unlikely (5-20%)	1. Very Low	1. Very Low	1. Very Low	2		12.50%	87.50%	0	38,500	77,000	0				Open			21 Oct 2020	
108	Viaduct Design Changes	Threat	Design	Current design	Viaduct design is being reviewed and EWN being sent to Jacksons for late submission, and lack of detail in soft submission.	redesign, delay and Increased Cost	Martin, Mark (mmartin)	3. Probable (20-50%)	3. Medium	1. Very Low	1. Very Low	9		35.00%	65.00%	227,500	491,750	756,000	0		Jacksons to respond to queries and clairfications promptly. include Pile testing report into design	Jacksons		3. Probable (20-50%)	2. Low	1. Very Low	1. Very Low	6		35.00%	65.00%	77,000	152,250	227,500	0				Open				
109	Changes to standards	Threat	Construction	Changes to standards and guidance impacting elements of highways design and vertical alignment due to the design being based on DMRB	DMRB could be changed after design stage and prior to construction, whilst land is being purchased	Re-design works / Delay to planning permission and additional cost	Martin, Mark (mmartin)	3. Probable (20-50%)	2. Low	2. Low	2. Low	6		35.00%	65.00%	77,000	152,250	227,500	0		#1. Re-assess the design in line with the standard's changes. Removable once cleared Public Enquiry, until then is a risk. Currently reviewed Accoustic Fencing standards and Cycle Path standards			2. Unlikely (5-20%)	2. Low	2. Low	2. Low	4		12.50%	87.50%	77,000	152,250	227,500	0	Design has been confirmed. Technically an active issue until construction begins but risk is minimal	Jackson Civil Engineering Group Ltd		Open		21 Oct 2020	WSCC have updated standards in communication with Jacksons
110	Additional Delay to Southern Bypass	Threat	Construction	Southern section of the A284 is due to be delivered by December 2021. Already delayed due to Covid-19 restrictions. Further delays could affect Lyminster Bypass	The scheme whilst mostly finished still requires safety barries over the train bridges before officially opening	Impact to construction access for Northern bypass	Martin, Mark (mmartin)	2. Unlikely (5-20%)	3. Medium	4. High	3. Medium	8		12.50%	87.50%	227,500	491,750	756,000	0		Engagement with Persimmon is ongoing alongside that with WSCC Persimmon Homes liaison. Draft an access agreement and traffic plan with persimmon homes	Martin, Mark (mmartin)		1. Very Unlikely (1-5%)	2. Low	3. Medium	2. Low	3		2.50%	97.50%	77,000	152,250	227,500	0			WSCC (Client)	Open			21 Oct 2020	For the advanced pile testing work an agreement is in place with persimmon homes and that should form the basis for any future agreement
112	Poor Public Relations	Threat	Construction	The delivery of the scheme will result in poor public relations	The public and nearby landowners may be adversely affected by the scheme during construction or hold a negative perception of it currently. Changes to delivery or cost could also contribute	The support the scheme currently has will be diminished	Martin, Mark (mmartin)	4. Likely (50-70%)	0. None	0. None	3. Medium	12		60.00%	40.00%	0	0	0	0		#1. Prepare communication plan, sell benefits, hold open days for public feedback (communications plan prepared as part of major scheme business case, confirm that still valid)#2. Allowance in budget for a Public Relations Management and publicity materials #3. Proactively seek and maintain a positive relationship with the Parish and District Councillors	Martin, Mark (mmartin)		3. Probable (20-50%)	0. None	0. None	2. Low	6		35.00%	65.00%	0	0	0	0			WSCC (Client)	Stage 5 - Construction	Open		21 Oct 2020	Key drivers or this risk are detailed in the register. There is a residual risk, but very low. Communications plan and actions to be monitored as part of monthly progress meetings
113	Protests	Threat	Scheme Preparation	Protests will lead to progress disruption	Public/special interest group disatisfaction with elements of the the scheme	Delays and disruption leading to additional costs	Martin, Mark (mmartin)	1. Very Unlikely (1-5%)	2. Low	2. Low	4. High	4		2.50%	97.50%	77,000	152,250	227,500	0		#1. Ensure that appropriate stakeholder consultation / information is carried out (including Policy)#2. Ensure reports and publicity highlight environmental benefits and mitigations in place#3. Ensure that project team have a wider understanding of local issues and asses whether there are any indications that environmental protests may be an issue.	Martin, Mark (mmartin)		1. Very Unlikely (1-5%)	2. Low	1. Very Low	4. High	4		2.50%	97.50%	77,000	152,250	227,500	0	No concerns raised to date regarding environment issues other than noise and dust related. Other local schemes have also not faced protests	WSCC (Client)		Open		21 Oct 2020	No significant negative noises from environmental pressure groups to date. Concerns about junction options at northern end.
114	Ground conditions in Black Ditch Flood Plain	Threat	Construction	Ground conditions worst than anticipated around Black Ditch viaduct solution due to poor ground conditions (more than expected)	Poor ground conditions Insufficient GI works undertaken	Further works, additional viaduct design costs, additional material requirements	Martin, Mark (mmartin)	2. Unlikely (5-20%)	3. Medium	4. High	2. Low	8		12.50%	87.50%	227,500	491,750	756,000	0		#1. Further site investigation works to be undertaken, to feed the detail design - COMPLETE #2 2021 Preliminary pile testing will provide more certainty to final pile design	Martin, Mark (mmartin)		2. Unlikely (5-20%)	2. Low	2. Low	2. Low	4		12.50%	87.50%	77,000	152,250	227,500	0	Awaiting feedback from Pile testing. With survey work already completed	WSCC (Client)	Stage 5 - Construction	Open		21 Oct 2020	Awaiting Pile testing completion and report to close out this risk
115	Decrease Pile Length	Opportunity	Construction	The piles that are required for use on the viaduct are shorter than design allowance leading to a cost saving	Ground conditions are better than GI suggested and there is an opportunity for cost reduction	Reduction in cost		2. Unlikely (5-20%)	1. Very Low	1. Very Low	0. None	2		12.50%	87.50%	0	38,500	77,000	0		Pile Testing is occuring prior to construction. Following report design will be reassessed	Martin, Mark (mmartin)		3. Probable (20-50%)	1. Very Low	1. Very Low	0. None	3		35.00%	65.00%	0	38,500	77,000	0				Stage 5 - Construction	Open			
116	Ground conditions to North of Scheme (Minimal GI Completed)	Threat	Construction	Ground conditions at the Northern end of the scheme different / worse than initially envisaged and require redesign or repricing	Ground conditions are different to what was anticipated, including worse or poorer than envisaged due to insufficient GI works undertaken	Further works, additional viaduct design costs, additional material requirements	Martin, Mark (mmartin)	3. Probable (20-50%)	3. Medium	3. Medium	1. Very Low	9		35.00%	65.00%	227,500	491,750	756,000	0		#1. GIs to be completed in CPO plots 2 and 3 prior to works commencement. Until data is received the risk remains an unknown	Jacksons		2. Unlikely (5-20%)	1. Very Low	3. Medium	1. Very Low	6		12.50%	87.50%	0	38,500	77,000	0	Contractor advises "It is difficult to evaluate this, however we think it is unlikely that there will be significant change and remain hopeful that the GI should just confirm current assumptions. May be prudent to allow a small risk"	WSCC (Client)		Open		21 Oct 2020	23/07/2019: Newly identified risk
117	2m AOD assumption	Threat	Construction	A designated area for dig and replace to north of scheme has a lower formation level	the final gformation is unknown	Substantial temporary works	Martin, Mark (mmartin)	3. Probable (20-50%)	4. High	4. High	3. Medium	12		35.00%	65.00%	756,000	1,139,250	1,522,500	0		Survey to be completed ASAP? Jacksons to confirm. Can update programme to incorporate	Jacksons		3. Probable (20-50%)	4. High	3. Medium	2. low	12		35.00%	65.00%	756,000	1,139,250	1,522,500	0				Open				
119	Ground contaminations (General Unknown)	Threat	Construction	Unforeseen contamination encountered during construction	Contamination surveys undertaken as part of the planning process, this is a residual risk.	Further works, additional material requirements, surcharge duration delays	Martin, Mark (mmartin)	3. Probable (20-50%)	3. Medium	3. Medium	1. Very Low	9		35.00%	65.00%	227,500	491,750	756,000	0		Survey of area of T&L Crawley's request also area with known hydrocarbons and also Japenese knotweed area. This risk is concerned with other areas	Martin, Mark (mmartin)		3. Probable (20-50%)	3. Medium	3. Medium	1. Very Low	9		35.00%	65.00%	227,500	491,750	756,000	0	The existing site investigation has identified a volume of material that is classified as contaminated, we calculate this to be 970m3. This view is based on water samples and testing that we have carried out within the Persimmon land, the contaminants found relate to elevated levels of fertiliser products. The risk for any additional or varied contamination remain a client held risk	WSCC (Client)	Stage 5 - Construction	Open		21 Oct 2020	23/07/2019: 'Contaminants identified and mitigations defined and included in the programme and costs. Further works needed at the Norther end
120	Contamination Survey of T&L Crawley CPO Plots	Threat	Construction	The cost for surveying the T&L Crawley Plots will be over that allowed for in budget	the specific survey to be used is still under negotiation	Additional funds would be required. Duration of survey could be longer than anticipated	Martin, Mark (mmartin)	3. Probable (20-50%)	1. Very Low	1. Very Low	1. Very Low	3		35.00%	65.00%	0	38,500	77,000	0		A potential scope has been reviewed and priced with the cost consultants to instruct the budget. JACKSONS have been advised to allow time in the programme for the works on gaining entry	WSCC (Client)		2. Unlikely (5-20%)	1. Very Low	1. Very Low	1. Very Low	2		12.50%	87.50%	0	38,500	77,000	0				Open				
123	Additional COVID-19 Safe to Work practices	Threat	Construction	Additional Costs to facilitate Covid-19 Safe to work practices - if more requirements are added	Covid-19 is an ongoing issue and further restrictions can be placed prior to or during construction period	Delay to Programme Additional costs	Jacksons	3. Probable (20-50%)	3. Medium	1. Very Low	1. Very Low	9		35.00%	65.00%	227,500	491,750	756,000	0		COVID-19 restrictions and current guidance has been costed in Target Price	Martin, Mark (mmartin)		2. Unlikely (5-20%)	2. Low	1. Very Low	1. Very Low	4		12.50%	87.50%	77,000	152,250	227,500	0	Included in target price	Jackson Civil Engineering Group Ltd		Open		21 Oct 2020	
124	Unexpected Ecological Constraints	Threat	Environment / Ecology	Ecological constraints and / or requirements increase as a consequence of site investigations. Timescales of ecological mitigation delay start construction	Due to site investigation work, ecological requirements may increase. Under licence specific time periods are required for removing animals under licence.	Delays to programme Additional costs	Martin, Mark (mmartin)	4. Likely (50-70%)	4. High	5. Very High	4. High	20		60.00%	40.00%	756,000	1,139,250	1,522,500	0		#1. Survey all areas prior to work commencement and plan clearance strategy and clearly fit in programme #2. Negotiate access to clear species and vegetation prior to work commencement#3 Manage areas cleared prior to work commencement to make sure no returns	Martin, Mark (mmartin)		2. Unlikely (5-20%)	3. Medium	4. High	3. Medium	8		12.50%	87.50%	227,500	491,750	756,000	0	As part of the preliminary design stage ecological investigations have been undertaken and the outcomes have informed the design.	Jackson Civil Engineering Group Ltd		Open		23 Oct 2020	Initial and secondary surveys complete. Plans are now in the programme to allow early clearance where feasible and to avoid risks to programme in relation to Water Voles, Badgers and 1 bat roost.
125	Accuracy of Topographical Survey	Threat	Construction	Accuracy of topographic survey information, specifically in CPO Plots 2 and 3 is innacurate and will require redesign or programme change or repricing	A lot of material has been left in the area to compost in the intervening period betweek works	Delays additional cost	Jacksons	5. Very Likely (>70%)	2. Low	4. High	2. Low	20		85.00%	15.00%	77,000	152,250	227,500	0		Survey land in Plots 2 and 3 as soon as access allows. Allocated allowance in budget	Jacksons		2. Unlikely (5-20%)	1. Very Low	3. Medium	1. Very Low	6		12.50%	87.50%	0	38,500	77,000	0	Some areas of the site are yet to be surveyed, any additional costs as a result of a difference between the current assumed values and the final actual values remain a client held risk at this stage. Contractor has stated that "We believe the likelihood of changes to the design to be low, assume a risk value of £50k"			Open			
126	Survey Risk	Threat	Construction	Incorrect, or wrong information used from surveys to instruct the design	Survey information may have been appropriated and used to instruct the design where it was not originally intended	redesign, delays additional cost	Martin, Mark (mmartin)	3. Probable (20-50%)	3. Medium	4. High	2. Low	12		35.00%	65.00%	227,500	491,750	756,000	0		Jacksons to review and accept/adopt all underlying surveys and where not suitable organise additional surveys where time allows	Jacksons		2. Unlikely (5-20%)	2. Low	3. Medium	1. Very Low	6		12.50%	87.50%	77,000	152,250	227,500	0	Survey Risk for information informing design (excluding topographical risk) contractor has advised "the likelihood of changes to the design to be low, assume a risk value of £75k"			Open			
127	Additional Land needs to be purchased	Threat	Construction	Additional land is required	CPO Plans and requirements are incorrect	Increased Cost	Martin, Mark (mmartin)	2. Unlikely (5-20%)	3. Medium	3. Medium	3. Medium	6		12.50%	87.50%	227,500	491,750	756,000	0		Review land requirements. Liaison between negotiation team and construction team regularly.	Martin, Mark (mmartin)		2. Unlikely (5-20%)	2. Low	2. Low	2. Low	4		12.50%	87.50%	77,000	152,250	227,500	0	CPO plan errors will require negotiation and additional land take. Unlikely to be new landowners given the amount of negotiation that has already occurred. Any issues likely to be dealt with alongside the ongoingwork. Assume 10% of fee allowance from contractor			Open			

Project Value (£)	35,000,000.00
Project Duration (weeks)	88

Probability Impact Matrix

Cost Impact	Schedule Impact			Very High	High	Medium	Low	Very Low
				> 70 %	50 % - 70 %	20 % - 50 %	5 % - 20 %	< 5 %
				VH	H	M	L	VL
				5	4	3	2	1
Very High	>£1522.5m	>6 wks	VH	-5	-25	-20	-15	-10	-5
High	£756m - £1522.5m	3 wks - 6 wks	H	-4	-20	-16	-12	-8	-4
Medium	£227500k - £756000k	1 wks - 3 wks	M	-3	-15	-12	-9	-6	-3
Low	£77000k - £227500k	0 wks - 1 wks	L	-2	-10	-8	-6	-4	-2
Very Low	<£77000k	<0 wks	VL	-1	-5	-4	-3	-2	-1

Very Low	Low	Medium	High	Very High	Issue		Schedule Impact	Cost Impact		
< 5 %	5 % - 20 %	20 % - 50 %	50 % - 70 %	> 70 %	100%					
VL	L	M	H	VH	I					
1	2	3	4	5	6					
						6	Showstopper			
5	10	15	20	25	30	5	>6 wks	>£1522.5m	£2,450,000	Very High
4	8	12	16	20	24	4	3 wks - 6 wks	£756m - £1522.5m	£1,522,500	High
3	6	9	12	15	18	3	1 wks - 3 wks	£227500k - £756000k	£756,000	Medium
2	4	6	8	10	12	2	0 wks - 1 wks	£77000k - £227500k	£227,500	Low
1	2	3	4	5	6	1	<0 wks	<£77000k	£77,000	Very Low

Rating	1 Very Low	2 Low	3 Medium	4 High	5 Very High
Probability	< 5 %	5 % - 20 %	20 % - 50 %	50 % - 70 %	> 70 %
Cost	<£77000k	£77000k - £227500k	£227500k - £756000k	£756m - £1522.5m	>£1522.5m
Time	<0 wks	0 wks - 1 wks	1 wks - 3 wks	3 wks - 6 wks	>6 wks
Reputation					

1 Very Low	2 Low	3 Medium	4 High	5 Very High
< 5 %	5 % - 20 %	20 % - 50 %	50 % - 70 %	> 70 %
<£77000k	£77000k - £227500k	£227500k - £756000k	£756m - £1522.5m	>£1522.5m
<0 wks	0 wks - 1 wks	1 wks - 3 wks	3 wks - 6 wks	>6 wks
Negligible Impact	Stakeolder relations strained / some negative reporting in media on the project	Dmanage to stakeholder relationships / Negative effect on WSCC reputation	Threat to cora prpoject objectives / Significant impact on WSCC creadibility	Threat to project survival / Reporting to media

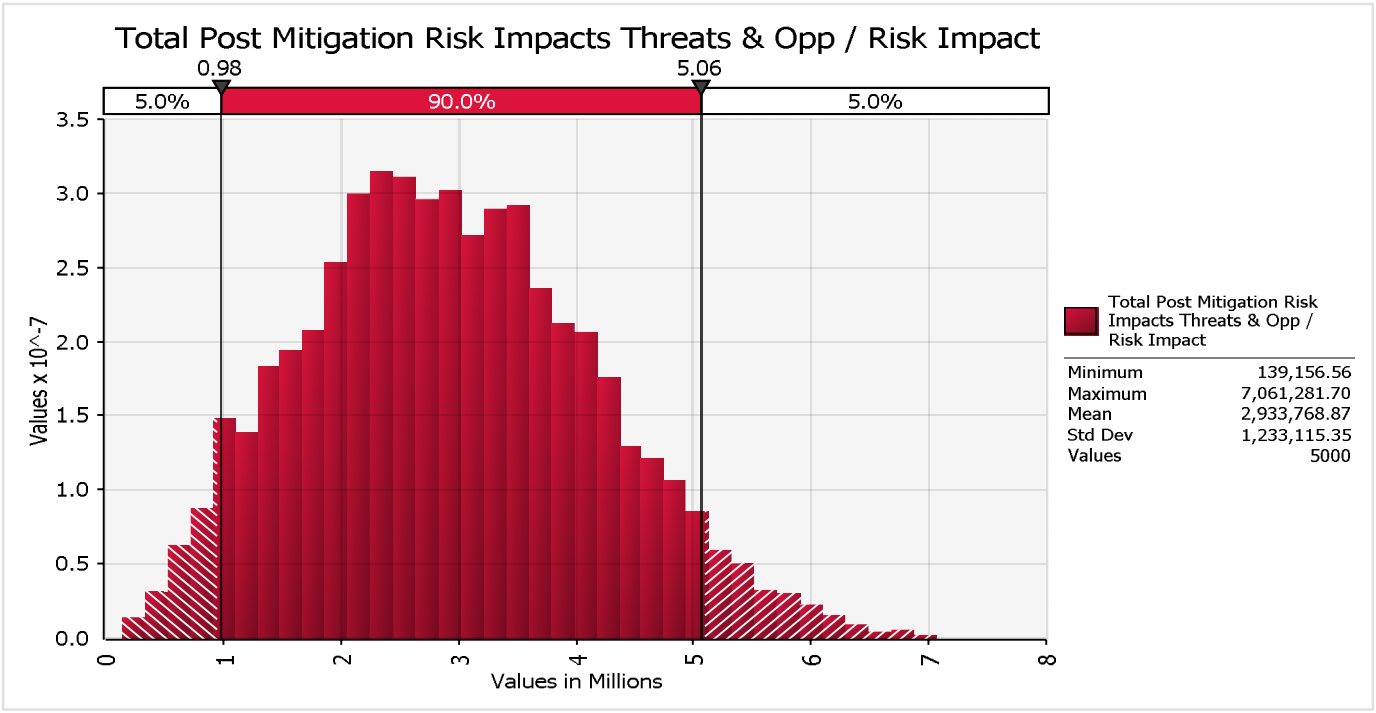
		(%)
1. Very Unlikely (1-5%)	VL	3%
2. Unlikely (5-20%)	L	13%
3. Probable (20-50%)	M	35%
4. Likely (50-70%)	H	60%
5. Very Likely (>70%)	VH	85%
6. Issue (100%)	I	100%

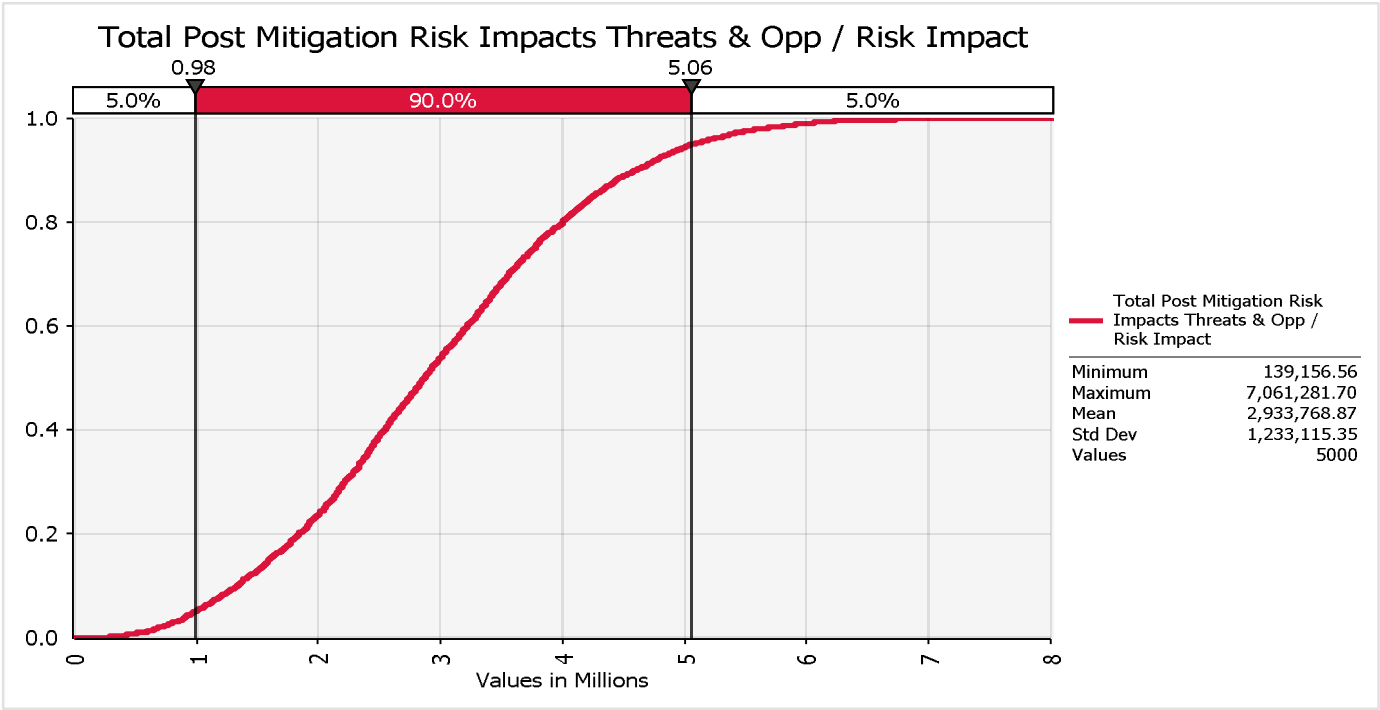
	Min	Min	Most Likely	Max
1. Very Low	VL	£0	£38,500	£77,000
2. Low	L	£77,000	£152,250	£227,500
3. Medium	M	£227,500	£491,750	£756,000
4. High	H	£756,000	£1,139,250	£1,522,500
5. Very High	VH	£1,522,500	£1,986,250	£2,450,000
6. Showstopper	Nil			

@RISK Output Report for Total Post Mitigation Risk Impacts Threats & Opp / Risk Impact AN76

Performed By: Dassi, Sunain

Date: Wednesday, December 29, 2021 12:27:51 PM



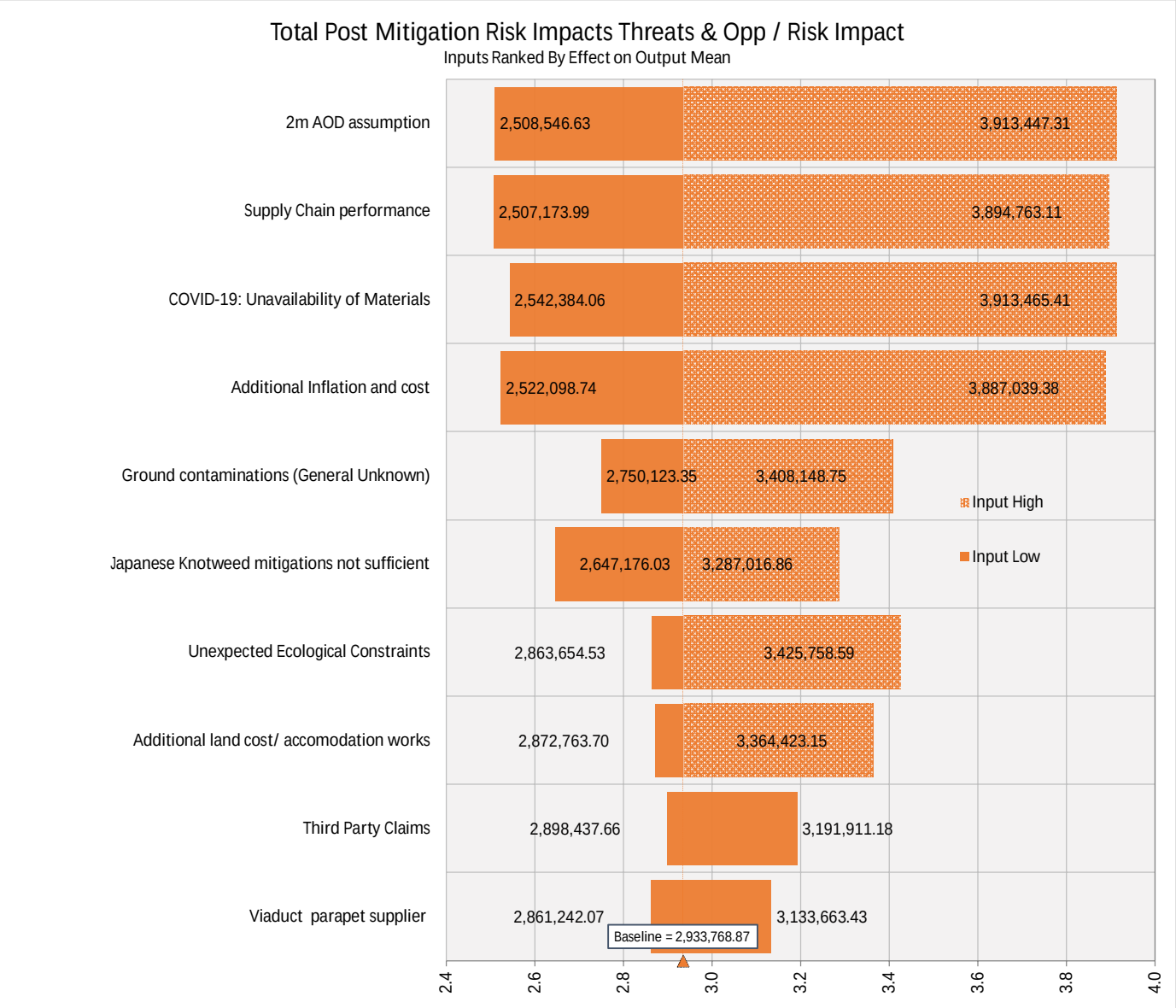


@RISK Output Report for Total Post Mitigation Risk Impacts Threats & Opp / Risk Impact AN76

Performed By: Dassi, Sunain

Date: Wednesday, December 29, 2021 12:27:51 PM

Summary Statistics for Total Post Mitigation Risk Impacts Threats & Opp / Risk Impact			
Statistics		Percentile	
Minimum	139,157	1.0%	556,197.48
Maximum	7,061,282	2.5%	763,462.83
Mean	2,933,769	5.0%	982,091.02
Std Dev	1,233,115	10.0%	1,330,278.24
Variance	1.52057E+12	15.0%	1,592,471.85
Skewness	0.275486086	20.0%	1,837,202.26
Kurtosis	2.687823982	25.0%	2,047,042.74
Median	2,862,361	30.0%	2,214,134.94
Mode	2,402,436	35.0%	2,390,072.12
Left X	982,091	40.0%	2,542,111.14
Left P	5%	50.0%	2,862,361.42
Right X	5,061,569	60.0%	3,217,973.44
Right P	95%	65.0%	3,390,404.07
Diff X	4,079,478	70.0%	3,559,589.82
Diff P	90%	75.0%	3,766,604.03
#Errors	0	80.0%	3,996,828.07
Filter Min	Off	85.0%	4,240,370.89
Filter Max	Off	90.0%	4,593,995.91
#Filtered	0	95.0%	5,061,568.59
		97.5%	5,480,297.52
		99.0%	5,955,508.64



@RISK Output Report for Total Post Mitigation Risk Impacts Threats & Opp / Risk Impact AN76

Performed By: Dassi, Sunain

Date: Wednesday, December 29, 2021 12:27:51 PM

Total Post Mitigation Risk Impacts Threats & Opp / Risk Impact

Values in Millions

@RISK Output Report for Total Post Mitigation Risk Impacts Threats & Opp / Risk Impact AN76

Performed By: Dassi, Sunain

Date: Wednesday, December 29, 2021 12:27:51 PM

Change in Output Statistic for Total Post Mitigation Risk Impacts Threats & Opp / Risk Impact				
Rank	Name	Cell	Lower	Upper
1	2m AOD assumption	AN20	2,508,547	3,913,447
2	Supply Chain performance	AN34	2,507,174	3,894,763
3	COVID-19: Unavailability of Materials	AN39	2,542,384	3,913,465
4	Additional Inflation and cost	AN47	2,522,099	3,887,039
5	Ground contaminations (General Unki	AN22	2,750,123	3,408,149
6	Japanese Knotweed mitigations not su	AN51	2,647,176	3,287,017
7	Unexpected Ecological Constraints	AN27	2,863,655	3,425,759
8	Additional land cost/ accomodation w	AN48	2,872,764	3,364,423
9	Third Party Claims	AN69	2,898,438	3,191,911
10	Viaduct parapet supplier	AN74	2,861,242	3,133,663

Appendix D

SCHEME COSTS

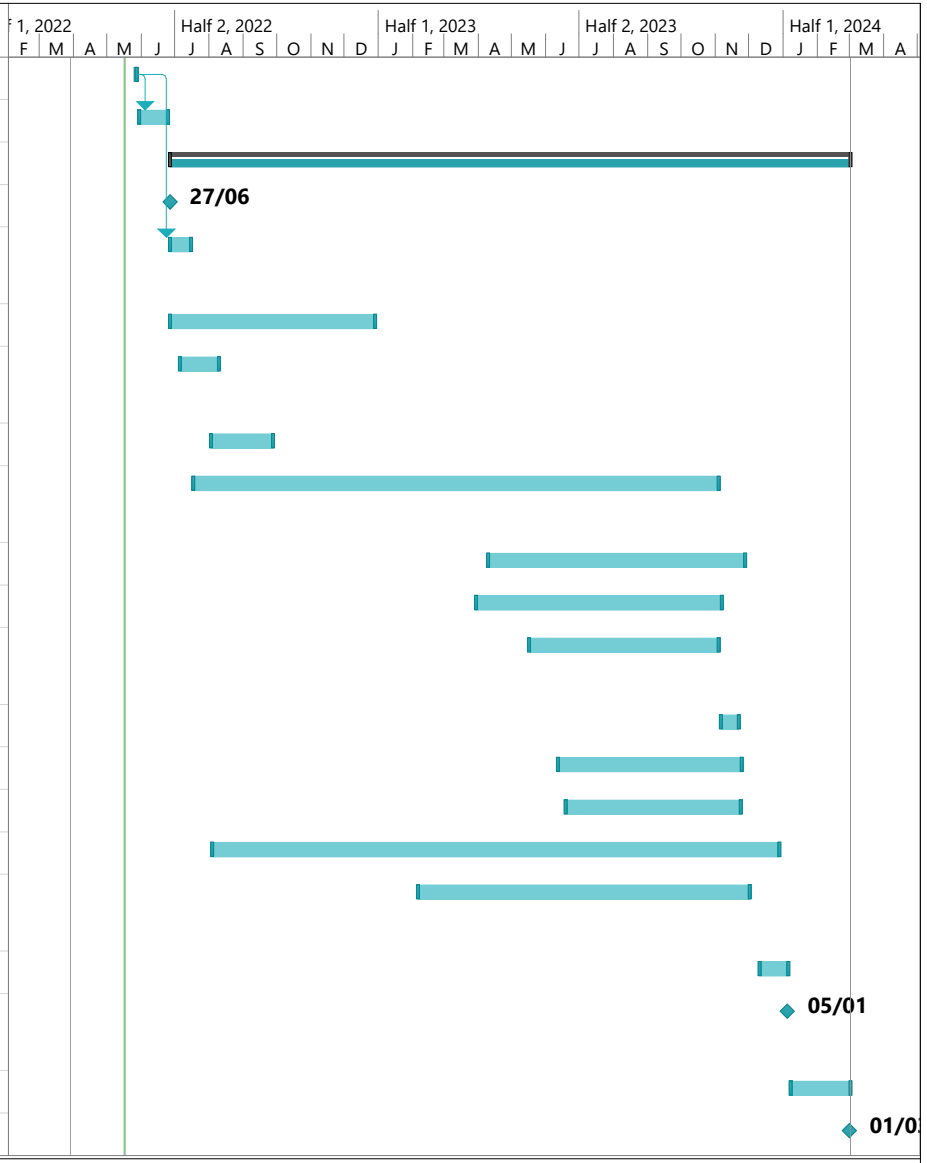
A284 Lyminster Bypass (North) Budget

Budget Line	Budget - Dec 21	Spend	Outstanding Spend
WSCC Overheads	£ 671,957.42	£ 485,321.92	£ 186,635.50
WSP Temp PM	£ 21,061.33	£ 21,061.33	£ -
Client PM Fees	£ 650,896.09	£ 464,260.59	£ 186,635.50
Design costs & Pre Construction Costs	£ 3,043,385.88	£ 2,867,448.04	£ 175,937.84
Historic Design Costs	£ 1,082,101.57	£ 1,082,101.57	£ -
Jacksons Detailed Design	£ 1,960,000.00	£ 1,784,527.10	£ 175,472.90
SSE Lighting Check	£ 819.37	£ 819.37	
SSE Lighting - Design	£ 464.94		
CPO & Public Inquiry	£ 178,826.71	£ 143,218.62	£ 35,608.09
Public Inquiry	£ 171,766.61	£ 136,158.52	£ 35,608.09
2014 Valuation Office Agency - Estimate for Road Scheme	£ 1,200.00	£ 1,200.00	£ -
2015 Valuation Office Agency - Estimate for Road Scheme	£ 800.00	£ 800.00	£ -
2019 Valuation Office Agency - Advice	£ 4,000.00	£ 4,000.00	£ -
2019 Valuation Office Agency - Additional Advice	£ 1,060.10	£ 1,060.10	£ -
Construction costs	£ 24,875,200.84	£ 563,476.00	£ 24,311,724.84
Preliminary Pile Testing	£ 1,304,596.27	£ 563,476.00	£ 741,120.27
Vegetation Clearance (Enabling Works)	£ 370,000.00	£ -	£ 370,000.00
Construction ContMain Works	23,020,604.57	£ -	£ 23,020,604.57
Water Supply	40,000.00		£ 40,000.00
Land Drainage	50,000.00		£ 50,000.00
Cemar	£ 20,000.00	£ -	£ 20,000.00
Site Survey Costs - T&L Crawley Plots	£ 70,000.00		£ 70,000.00
Archaeology	£ 561,600.00	£ -	£ 561,600.00
Archaeology	£ 561,600.00	£ -	£ 561,600.00
STATS diversions	£ 95,696.54	£ -	£ 95,696.54
SSE	£ 25,172.90	£ -	£ 25,172.90
BT	£ 38,023.64	£ -	£ 38,023.64
Southern Water	£ 32,500.00	£ -	£ 32,500.00
Land Acquisition	£ 2,381,467.20	£ 26,500.00	£ 2,354,967.20
Land Acquisition Costs	£ 2,263,967.20	£ 24,000.00	£ 2,239,967.20
Accomodation Costs	£ 50,000.00		
Council Agent Costs	£ 65,000.00	£ -	£ 65,000.00
Land Compensation payments	£ 1,000.00	£ 1,000.00	£ -
Goodchild Stables as compound	£ 1,500.00	£ 1,500.00	£ -
Professional Fees	£ 1,647,121.25	£ 554,919.63	£ 1,092,201.62
Design, Planning & Survey Consultants	£ 479,284.37	£ 336,072.24	£ 143,212.13
NEC & Costs consultants	£ 807,545.56	£ 90,026.00	£ 717,519.56
Property Consultants	£ 360,291.32	£ 128,821.39	£ 231,469.93
SUB TOTAL	£ 33,455,255.84	£ 4,640,884.21	£ 28,814,371.63
Risk Pot	£ 3,996,828.00	£ -	£ 3,996,828.00
Risk	£ 3,996,828.00	£ -	£ 3,996,828.00
TOTAL	£ 37,452,083.84	£ 4,640,884.21	£ 32,811,199.63

Appendix E

PROGRAMME

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		Contract Award	1 day	Fri 27/05/22	Fri 27/05/22	
2		Mobilisation	20 days	Mon 30/05/22	Fri 24/06/22	1
3		**Construction works**	**440 days**	**Mon 27/06/22**	**Fri 01/03/24**	
4		Access Date for Main Wo	0 days	Mon 27/06/22	Mon 27/06/22	
5		Complete Site establishment and clearance	15 days	Mon 27/06/22	Fri 15/07/22	1
6		Stat diversions	133 days	Mon 27/06/22	Wed 28/12/22	
7		Working platforms and haul roads	25 days	Wed 06/07/22	Tue 09/08/22	
8		Fencing	40 days	Wed 03/08/22	Tue 27/09/22	
9		Mainline earthworks and drainage	340 days	Mon 18/07/22	Fri 03/11/23	
10		Landscaping	166 days	Mon 10/04/23	Mon 27/11/23	
11		Ducting	158 days	Thu 30/03/23	Mon 06/11/23	
12		Kerbing and footpaths (not viaduct)	123 days	Wed 17/05/23	Fri 03/11/23	
13		VRS	12 days	Mon 06/11/23	Tue 21/11/23	
14		Surfacing	120 days	Mon 12/06/23	Fri 24/11/23	
15		Street furniture	114 days	Mon 19/06/23	Thu 23/11/23	
16		Viaduct construction	366 days	Thu 04/08/22	Thu 28/12/23	
17		Brookfield culvert and tie in to A284	215 days	Mon 06/02/23	Fri 01/12/23	
18		Demobilisation	20 days	Mon 11/12/23	Fri 05/01/24	
19		planned Completion - bypass ready for opening	0 days	Fri 05/01/24	Fri 05/01/24	
20		Completion with float	40 days	Mon 08/01/24	Fri 01/03/24	
21		Contract Completion Date	0 days	Fri 01/03/24	Fri 01/03/24	



Project: Lyminster high level pro
Date: Tue 17/05/22

Task	Inactive Task	Manual Summary Rollup	External Milestone
Split	Inactive Milestone	Manual Summary	Deadline
Milestone	Inactive Summary	Start-only	Progress
Summary	Manual Task	Finish-only	Manual Progress
Project Summary	Duration-only	External Tasks	

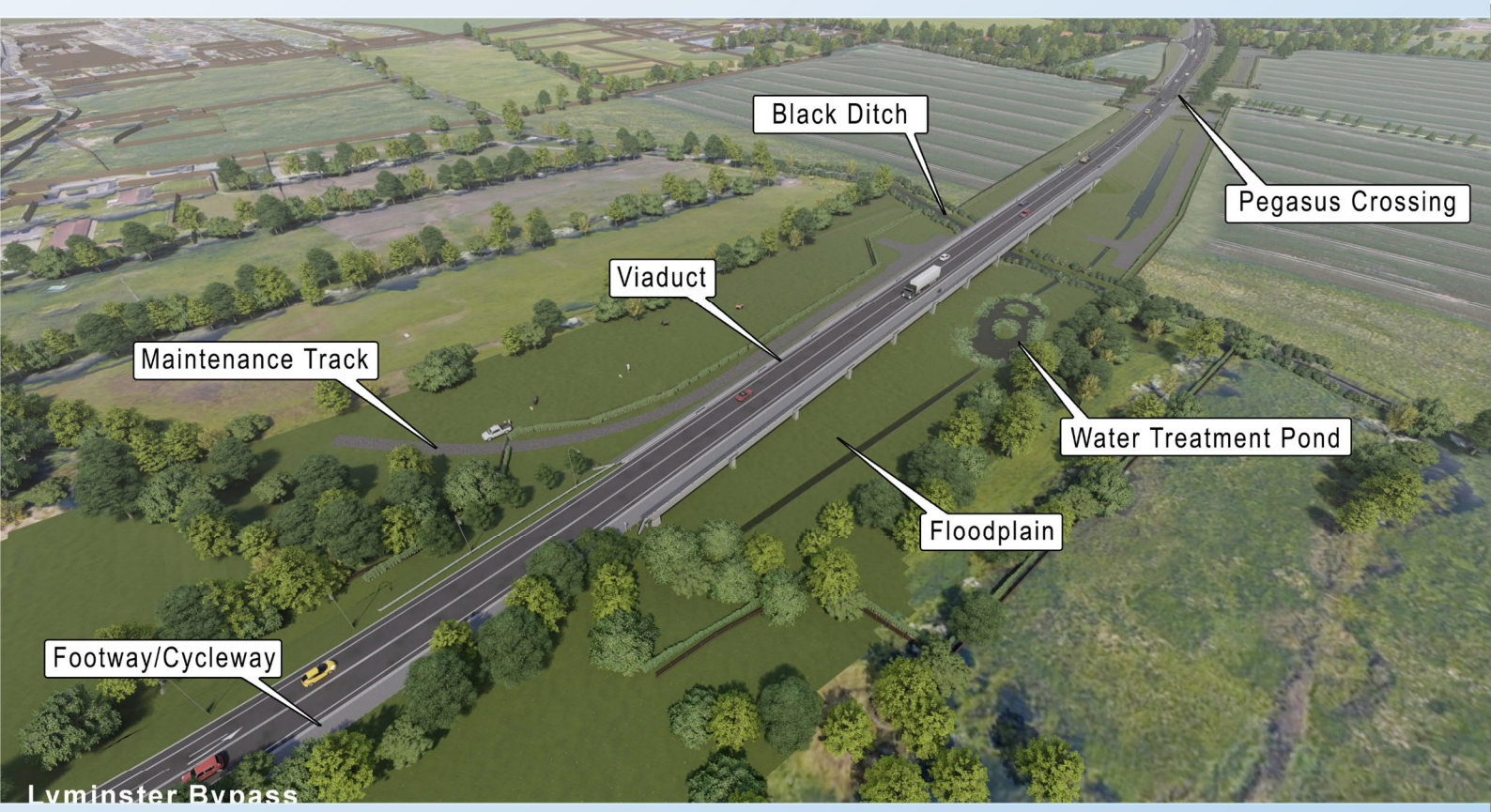
Appendix F

BENEFITS REALISATION PLAN

West Sussex County Council

A284 Lyminster Bypass (North)

Benefits Realisation Plan



March 2022

Internal

West Sussex County Council

A284 Lyminster Bypass (North)

Benefits Realisation Plan

Type of document (version) Internal

Project no. 70048270

Date: March 2022

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Quality control

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Prepared by	Rajat Bose			
Signature				
Checked by	Alan Cowan			
Signature				
Authorised by	Darren Pacey			
Signature				
Project number	70048270			
Report number	BRP			
File reference	\\uk.wspgroup.com\Central Data\Projects\700482xx\70048270 - Lyminster Bypass 2018 Planning Application\WIP\16 DfT Business Case\FBC\Appendix F - BRP\2022-03-02 - A284 Lyminster Bypass BRP.docx			

Contents

Tables

Figures

1 Introduction

1.1.1. This document is the Benefits Realisation Plan for the A284 Lyminster Bypass (North) project (the scheme). It enables the benefits that are expected to be delivered by the scheme to be planned for, managed, tracked and realised. It forms a part of the Full Business Case (FBC) submitted by West Sussex County Council (WSCC) and should be read in conjunction with both the FBC and the Monitoring and Evaluation Plan.

1.1.2. The most important element of a successful project is that it delivers its intended outcomes. No project which fails to deliver what is planned of it can be considered a success.

1.1.3. The Department for Transport's guidance on Transport Business Cases (January 2013) therefore requires scheme promoters to include an outline of a Benefits Realisation Plan as part of the Outline Business Case, followed by a completed Benefits Realisation Plan as part of the Full Business Case.

1.1.4. Detailed guidance is given in the "Guide for Effective Benefits Management in Major Projects" document from the Infrastructure and Projects Authority (October 2017). This aligns with Cabinet Office advice in "Assurance of benefits realisation in major projects – supplementary guidance". These documents reflect the Government's concern for effective benefits realisation for all types of public project and are not specific to transport schemes.

1.1.5. The benefits management process spans all stages of project development, and involves asking the following questions:

- What benefits do we intend the scheme to achieve?
- What is the value of these benefits?
- How can these benefits be realised by the scheme?
- Are these benefits being realised by the scheme?
- What, if anything, should we change?

1.1.6. These questions arise at the various stages of scheme development – for example Strategic Outline Business Case, Outline Business Case and Full Business Case. By FBC stage, the benefits will have been defined, so the most important question (highlighted) is "how can these benefits be realised".

1.1.7. The different stages of benefits realisation are expressed in different ways in the various guidance notes. The "Guide for Effective Benefits Management" defines them as:

- Define success
- Identify and quantify
- Value and appraise
- Plan to realise
- Work to realise

- Review performance

1.1.8. The principles are very simple. We need to be clear what the scheme is for, by defining the intended benefits. We need to design and deliver the scheme in a way that will deliver these benefits. We need to know whether the benefits are really being achieved, and we need to be prepared to make changes if it appears that benefits are not being achieved in full.

1.1.9. The benefits cycle, as described in the Cabinet Office guidance, is illustrated in Figure 1-1 below.

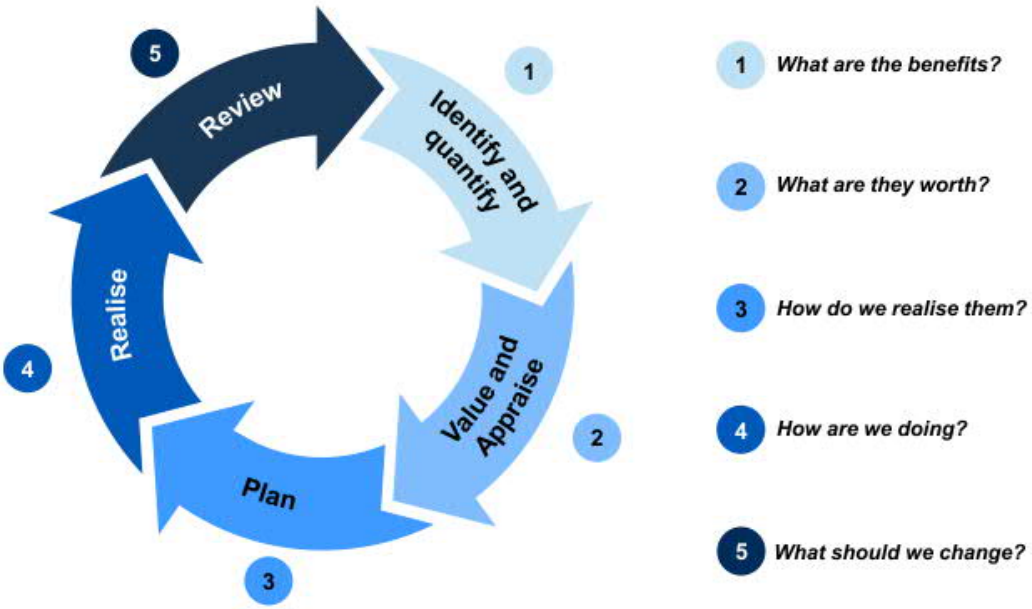

Figure 1-1 - The benefits cycle

1.1.10. There will be some overlap between these stages. Again, at the FBC stage, just prior to delivery of the scheme, the main task (highlighted) is to plan for the realisation of the defined benefits.

2 The Scheme

2.1 Location

2.1.1. Littlehampton is in Arun District, which is one of the coastal districts in West Sussex. The town has merged with the settlements of Rustington and East Preston to create an urban area with a combined population of 48,200. This makes Littlehampton the second largest built-up area in Arun District and provides 46% of the jobs available in Arun. The Arun Local Plan (adopted July 2018) has allocations for regeneration, development and sustainable urban extensions, including the North of Littlehampton SDL.

2.1.2. The primary north-south route between Littlehampton and the A27 is via the A284, which passes through the villages of Lyminster and Wick, crossing the West Coastway rail line at a level crossing. Delay caused by the level crossing leads to unreliable and long journey times for people using the route and poor air quality for local residents. The problems are compounded by the existing alignment, which has several tight bends and local accesses, making the route a significant constraint on future development in the area.

2.2 Description

2.2.1. The primary north-south route between Littlehampton and the A27 is via the A284, which passes through the villages of Lyminster and Wick, crossing the West Coastway rail line at a level crossing. Delay caused by the level crossing leads to unreliable and long journey times for people using the route and poor air quality for local residents. The problems are compounded by the existing alignment, which has several tight bends and local accesses, making the route a significant constraint on future development in the area.

2.2.2. The Combined A284 Lyminster Bypass scheme will comprise a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.

2.2.3. The Combined A284 Lyminster Bypass will be delivered in two parts. Lyminster Bypass (South), between A259 and Toddington Nurseries, is being funded and delivered by developers. Works began January 2020 and are awaiting the installation of safety features on the bridge over the railway before opening the road to the public. This element is not the subject of this business case.

2.2.4. The remaining Lyminster Bypass (North), from Toddington Nurseries to the A284 north of Lyminster village, will be delivered by West Sussex County Council (WSCC), and is the subject of this Benefits Realisation Plan.

2.2.5. The scheme is shown in Figure 2-1.

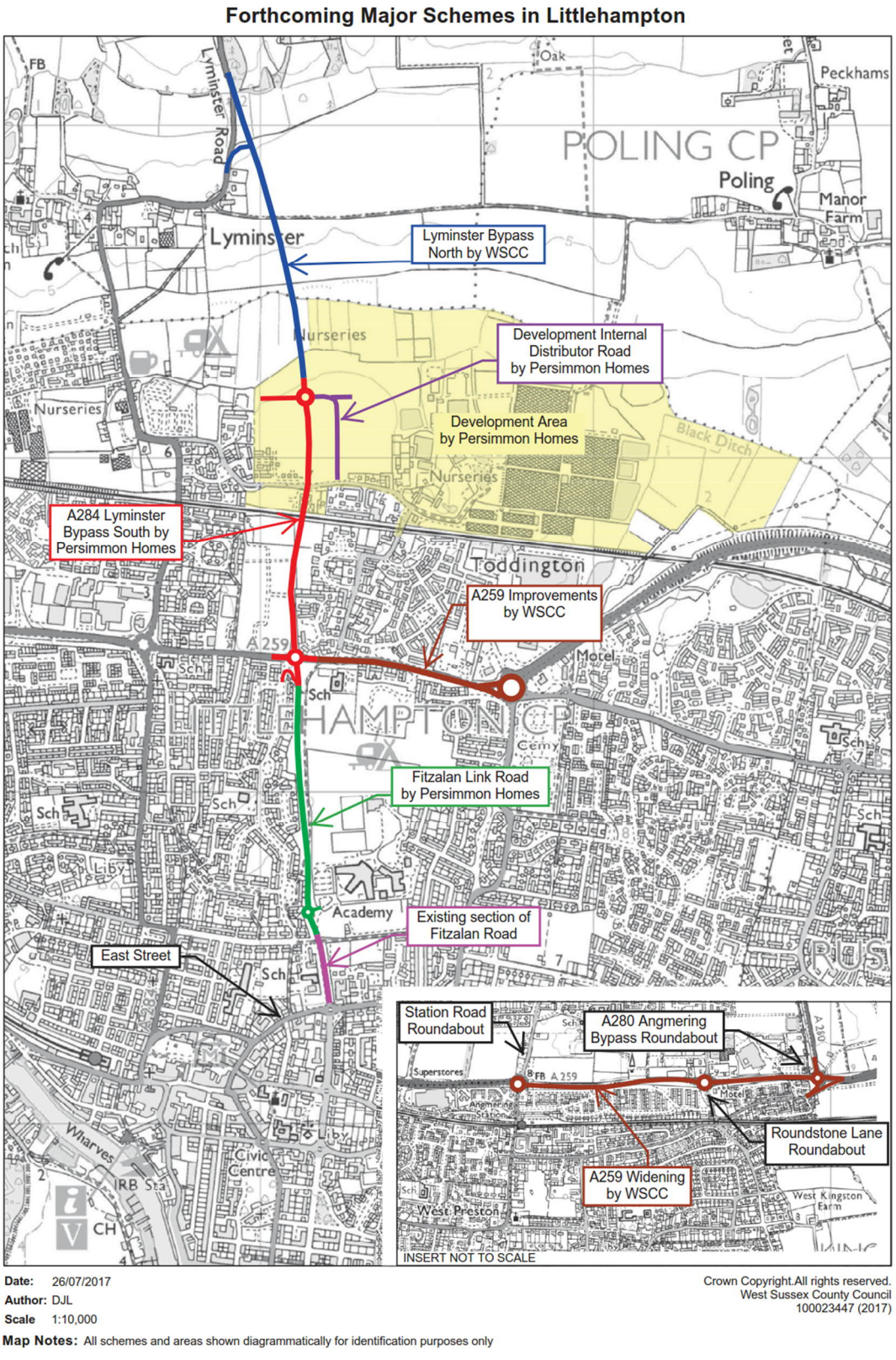

Figure 2-1 - Lyminster Bypass (North)

3 Defining Success

3.1 What benefits do we intend the scheme to achieve?

3.1.1. The first step in the benefits cycle is to define what success looks like.

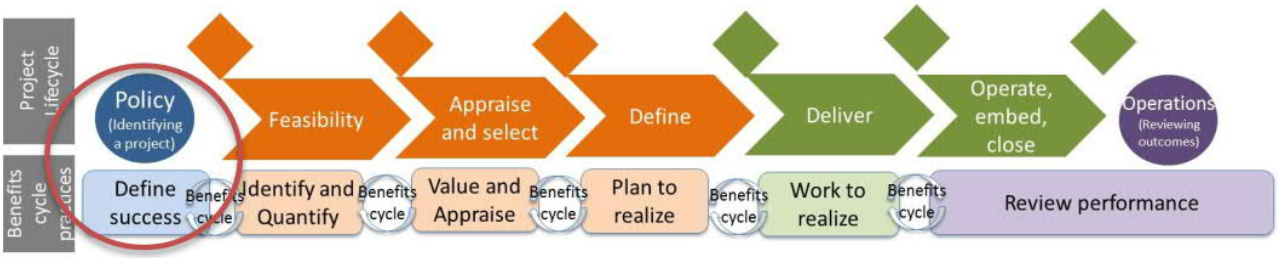

Figure 3-1 - Benefits cycle: Define success

3.2 Objectives

3.2.1. The scheme meets a series of objectives that align with the strategic aims of West Sussex County Council, their funding partner Coast to Capital LEP and DfT. These are:

- Provide vehicles with a shorter and less congested route with reduced journey times, avoiding the level crossing
- Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new homes and 700 new jobs
- Improve local environmental quality
- Improve local road safety
- Fulfil the above criteria while providing good value for money for the taxpayer.

3.2.2. These objectives relate closely to the policies, opportunities and problems which were described in detail in the Strategic Case of the OBC and have been updated in the FBC.

3.3 Economic benefits

3.3.1. As with most highway schemes, some of the benefits can be both quantified and monetised, enabling us to forecast in some detail the extent to which the scheme should achieve them. The economic benefits that can be monetised in this way are:

- The value of reductions in greenhouse gas emissions
- The value of time savings for different classes of user
- The value of savings in vehicle operating costs for different classes of user
- The value of accident savings
- Changes in revenues from indirect taxation

3.3.2. These benefits clearly relate to many of the specific scheme objectives – for example the time and cost savings are expected to help to create the conditions which stimulate local development.

3.3.3. The forecasting and evaluation of the expected monetised economic benefits was described in the Economic Case of the OBC and has been updated in the FBC.

4 Valuation and Appraisal

4.1 What is the value of these benefits?

4.1.1. The next steps in the benefits cycle are to quantify, value and appraise the intended benefits:

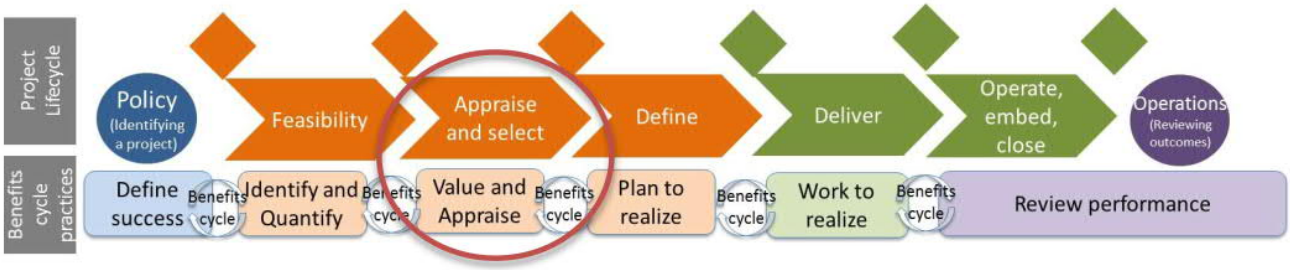

Figure 4-1 - Benefits cycle: Value and appraise

4.1.2. The benefits detailed in Paragraph 3.3.1 cannot all be expressed in monetary terms, although they will have financial, economic and societal impacts. They are, however, in all cases a direct consequence of the changes in traffic flow and re-routing which the scheme will cause. These expected changes have been quantified through the traffic modelling and forecasting that was undertaken at SOBC and OBC stages and updated for the FBC. The results are set out in East Arun Traffic Model (EATM) Local Model Validation Report and the Forecasting Report.

Economic benefits

4.1.3. The economic benefits detailed in Paragraph 3.3.1 have been quantified and monetised at both OBC and FBC stages, at increasing levels of detail and confidence, in line with Transport Appraisal Guidance (TAG). In conjunction with the forecast scheme costs, the results have critically informed decisions on the both the design of the scheme and the financial approvals to date. The results of the appraisal are set out in the Economic Case of the FBC.

5 Benefits Realisation Plan

5.1 How will these benefits be realised by the scheme?

5.1.1. The scheme is now at the FBC stage, equivalent to Gate 3 in the Cabinet Office guidance. A plan for the realisation of the benefits is now in place. It involves identifying and selecting the benefits that the project team will concentrate on realising, allocating responsibility for delivering each benefit, and determining the best metric for tracking progress.

5.1.2. At the FBC stage, the design of the scheme, and the programme for its construction have been settled, and expected benefits have been re-forecast. This is the critical point at which to check that the scheme is still on track to achieve intended benefits. The purpose of the Plan to Realise is to put in place appropriate mechanisms so that there is a clear understanding of the roles, responsibilities, timescales and governance arrangements required for realising and reviewing benefits.

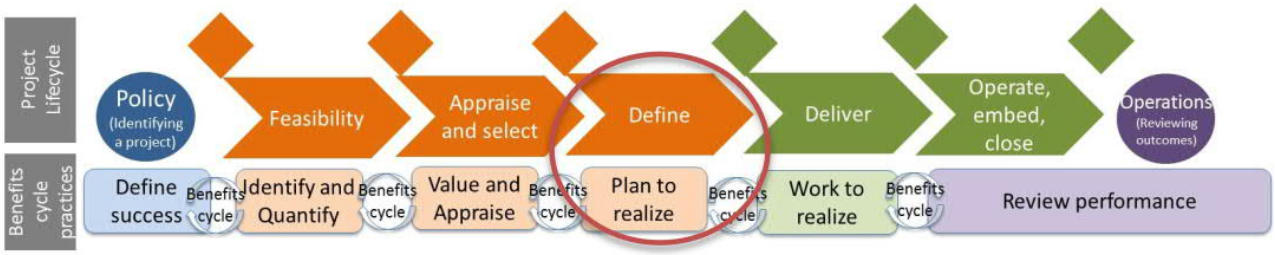

Figure 5-1 - Benefits cycle: Plan to realise

Costs

5.1.3. The Financial Case of the FBC sets out the finalised costs of the scheme, including the costs of monitoring and reporting on delivery, as detailed in the Monitoring and Evaluation Plan.

Project plan

5.1.4. The Management Case of the FBC includes the Project Plan. This sets out all key project tasks and their duration, the interdependencies between them, and the key milestones and gateways. Certain elements of the programme have built in tolerance and contingency to account for risks identified in the risk register. The detailed project plan and risk register are appended to the FBC.

Roles and responsibilities

5.1.5. Roles and responsibilities and governance arrangements have also been finalised in the Management Case of the FBC. Overall the benefits realisation

strategy is owned by Matt Davey as the Senior Responsible Owner and managed by Mark Martin as the Project Manager.

5.2 Outcomes

5.2.1. The logic map below is taken from the FBC and shows how the scheme is expected to deliver the benefits. The figure shows the relationship between the constructed scheme and the outcomes and impacts in the area.

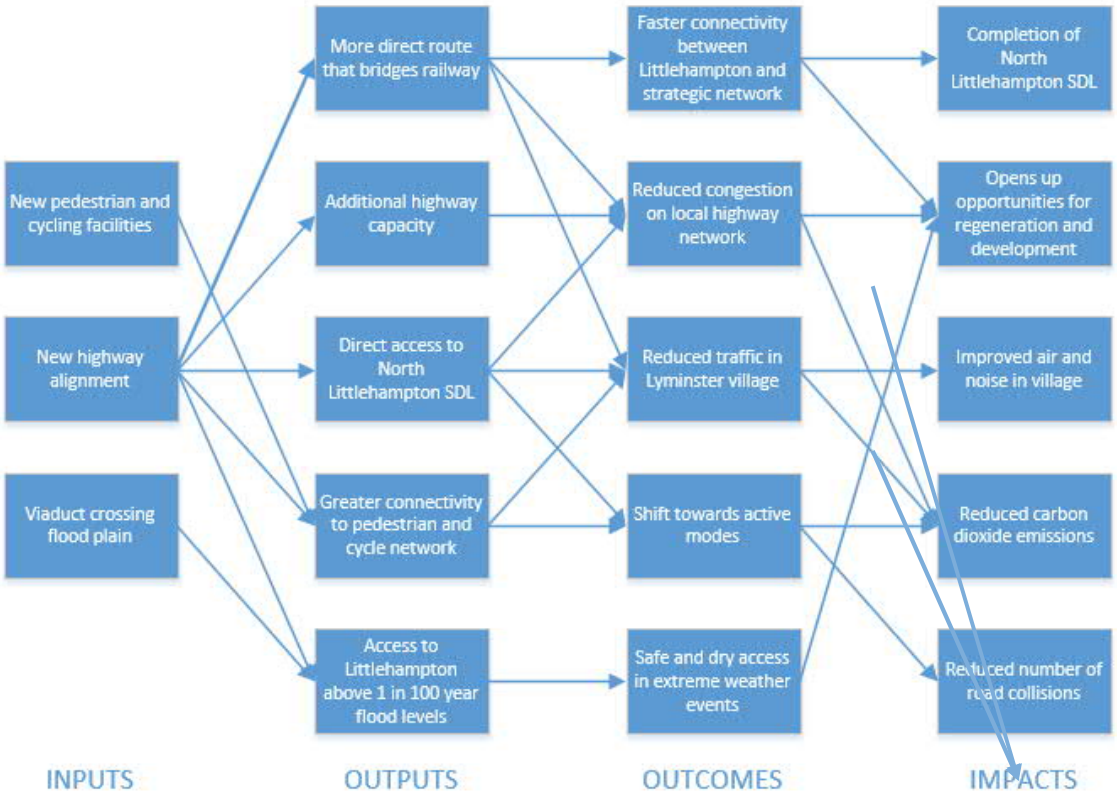

Figure 5-2 –Logic map

5.3 Benefits to be realised

5.3.1. To determine whether the project benefits are being realised, the outcomes need to be converted into measurable indicators. The proposed indicators are set out in Table 5-1. It provides the framework against which the anticipated benefits will be planned for, tracked and realised. The data required is set out in the Monitoring and Evaluation Plan.

5.3.2. The strategy starts with the scheme objectives and follows a logical progression:

- Scheme objectives – as set out in the Strategic Case of the FBC
- Key beneficiaries – who will experience the benefits
- Enabling changes – what the scheme needs to deliver in order to achieve each objective
- Data Requirement – the data required to measure the benefits

- Benefit owners – who has responsibility for delivering the benefits

Table 5-1 – Benefit Realisation Strategy

Scheme Objectives	Key beneficiaries	Enabling changes	Data Requirement	Benefit owners
Scheme Objective 1: Provide vehicles with a shorter and less congested route with reduced journey times, avoiding the level crossing	UK Public	The results will also be compared against the modelled impacts to assess how they perform against the expected impacts.	Counts and journey time information will also be used to monitor impacts of car usage and congestion Public transport (PT) origin/destination (of users) flows along the scheme, forecast flows versus actual. Information will also be collected on other key routes, not covered by the scheme to compare the scheme impact. Classified volume counts, including Cycling and Pedestrian counts along the scheme corridors.	West Sussex County Council
Scheme Objective 2: Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new	UK Public	Build rate within 10% of planned build	Housing completion figures from North Littlehampton SDL	West Sussex County Council

homes and 700 new jobs				
Scheme Objective 3: Improve local environmental quality	UK Public	To monitor whether the standards for ambient concentrations of NOx, and PM10 emissions as set by the Air Quality (England) Regulations 2000 and the Air Quality Standards Regulations 2010 continue to meet the current level of compliance	Measure the NOx, and PM10 emissions along the scheme corridors. Status of measures to mitigate ecological impacts Status of measures to mitigate flood risk impacts – completed scheme drawings	West Sussex County Council
Scheme Objective 4: Improve local road safety	UK Public	Reduction in collision rates in the network	Reduced collision rates on network within study impact area.	West Sussex County Council
Scheme Objective 5: Fulfil the above criteria while providing good value for money for the taxpayer	UK Public	The mode share and journey time within the range which would have given a BCR>2	Counts and journey time information will also be used to monitor impacts of car usage and congestion Public transport (PT) origin/destination (of users) flows along the scheme, forecast flows versus actual. Information will also be collected on other key routes, not covered by the	West Sussex County Council

			scheme to compare the scheme impact. Classified volume counts, including Cycling and Pedestrian counts along the scheme corridors.	

5.4 Consideration of potential disbenefits

5.4.1. It is important that potential disbenefits are also considered. This is implicit in the appraisal of economic benefits where, for example, the value of time savings on individual routes in the study area may be either positive or negative, and the result of the appraisal is the net benefit – in other words the aggregate value of the time savings achieved by the scheme. The same applies to each of the economic benefits assessed. Overall, the appraisal considers the extent to which the overall benefits of the scheme will exceed the economic cost of delivering it. The results are set out in the Economic Case of the FBC.

5.4.2. Other potential disbenefits are related to noise, air quality, and other environmental impacts. These have been assessed and, wherever possible, quantified and the results summarised in the Appraisal Summary Tables and the Economic Case of the FBC

6 Work to Realise

6.1 Are these benefits being realised by the scheme?

6.1.1. The realisation of the benefits begins with the construction of the scheme and will continue throughout its operation and use:

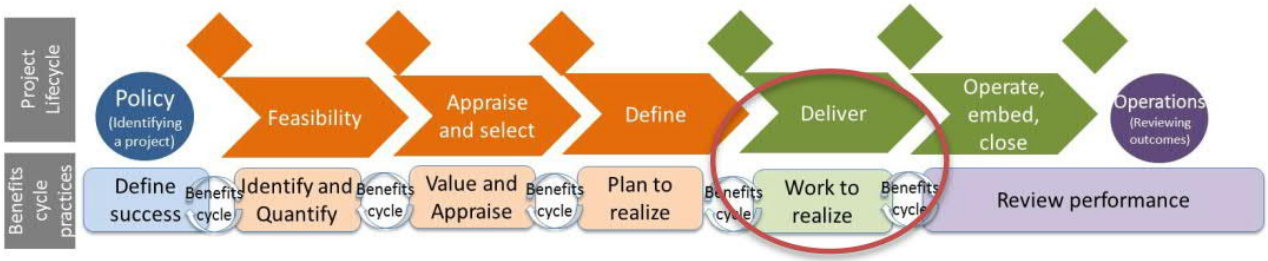

Figure 6-1 - Benefits cycle: Work to realise

Monitoring and evaluation

6.1.2. The impacts of the scheme and achievement of its key benefits will be monitored both before, during and after construction (one year after and five years after). The proposals are set out in full in the Monitoring and Evaluation Plan.

7 Review Performance

7.1 What, if anything, should we change?

7.1.1. The final stage of the benefits realisation cycle is to review the performance of the scheme, and to take any actions that are necessary to ensure that the benefits continue to be delivered:

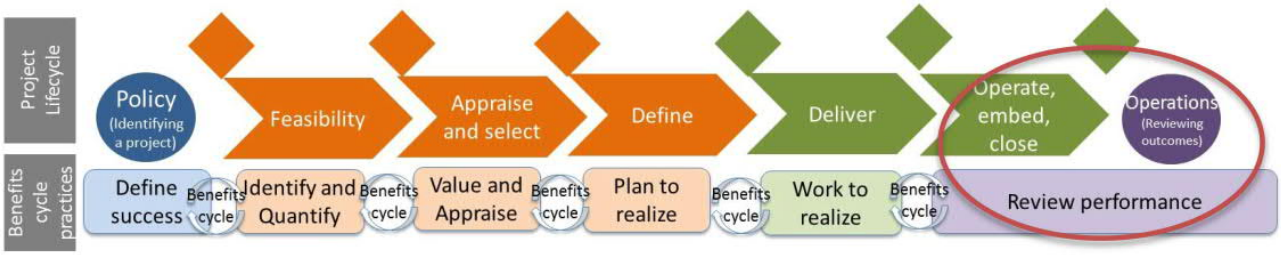

Figure 7-1 - Benefits cycle: Review performance

7.1.2. Every stage of the benefits cycle involves review and feedback of the scheme's ability to achieve benefits. For example, outputs from the traffic modelling have been used to assess the expected performance of new and existing junctions, and to identify where improvements could be made to the design. This process is described in the Transport Assessment which was considered as part of the Development Consent Order (DCO) process.

7.1.3. Once the scheme is complete, and monitoring has been undertaken in line with the Monitoring and Evaluation Report, it will be important to review its overall performance and consider whether the intended benefits have been, or are being, achieved and:

- what lessons can be learnt to inform decisions on similar schemes in future
- what actions are needed to address areas where benefits are not being achieved

Learning lessons

7.1.4. The "Five years after" Monitoring and Evaluation report, which will be shared with stakeholders and published on the WSCC and DfT websites, will specifically address the question of which benefits have, or have not been achieved, and will consider the lessons that can be learnt from the scheme.

Remedial actions

7.1.5. Traffic data collected within a year of the opening of the scheme will identify whether it is performing as expected, in terms of route choices, relief to the existing bridges and roads, and performance of junctions. If it becomes clear that the scheme is not working as effectively as it should, remedial action could be undertaken including, for example, adjustments to traffic signal timings, signing and lining.

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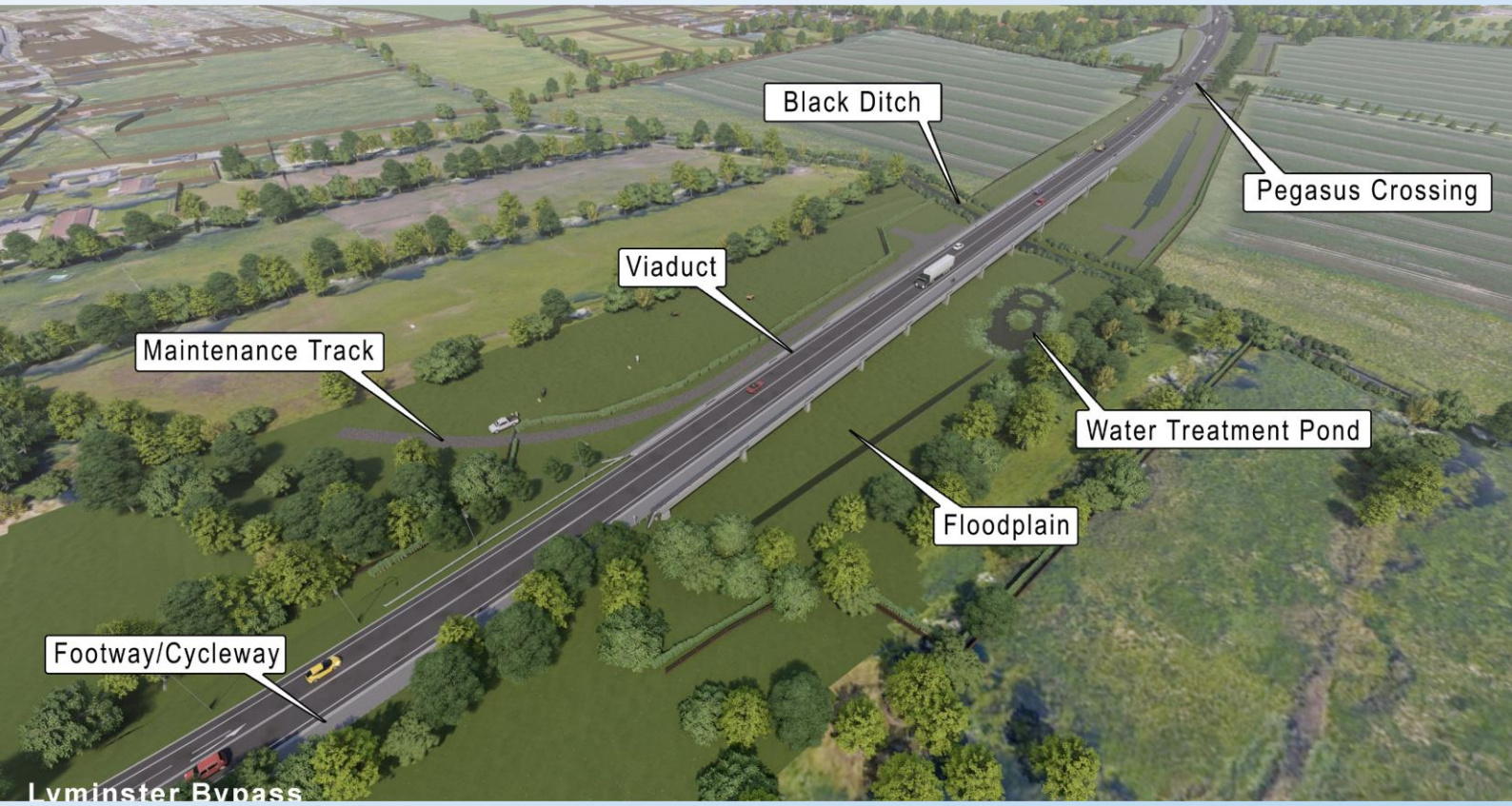
Appendix G

MONITORING AND EVALUATION PLAN

West Sussex County Council

A284 LYMINSTER BYPASS (NORTH)

Monitoring and Evaluation Plan



NOVEMBER 2021

INTERNAL

West Sussex County Council

A284 LYMINSTER BYPASS (NORTH)

Monitoring and Evaluation Plan

TYPE OF DOCUMENT (VERSION) INTERNAL

PROJECT NO. 70048270

DATE: NOVEMBER 2021

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Signature				
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APPENDICES

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1 INTRODUCTION

1.1.1. This document is the Monitoring and Evaluation Plan for the Lyminster Bypass (North) project (the scheme). It forms a part of the Full Business Case (FBC) submitted by West Sussex County Council (WSCC) and should be read in conjunction with the FBC.

1.2 REQUIREMENTS FOR MONITORING AND EVALUATION

1.2.1. Monitoring and evaluation are important elements of any major project. They help to determine the extent to which it is meeting its objectives and delivering the expected benefits, helping to improve future decision making. They are defined in HM Treasury's 'Magenta Book' as follows:

- **Monitoring** seeks to check progress against planned targets. It can be defined as the formal reporting and evidencing that spend and outputs are successfully delivered, and milestones met
- **Evaluation** is the assessment of the initiative's effectiveness and efficiency during and after implementation. It seeks to measure the causal effect of the scheme on planned outcomes and impacts and assessing whether the anticipated benefits have been realised, how this was achieved, or if not, why not.

1.2.2. DfT's Transport Business Cases guidance (August 2021) requires that the FBC should:

- set out the approach to managing the realisation and a credible plan for the evaluation of benefits.

1.2.3. The DfT 'Monitoring and Evaluation Strategy' (March 2013) sets out a framework for enhancing the generation of good quality monitoring and evaluation evidence, to be integrated into Departmental decision making and delivered within a robust and proportionate governance framework. It aims to provide greater accountability and a stronger evidence base for future decision making and communication activities.

1.2.4. Specific guidance is set out in DfT's 'Monitoring and Evaluation Framework for Local Authority Major Schemes' (September 2012). This framework has been followed by WSCC in preparing this plan.

1.3 LEVELS OF MONITORING AND EVALUATION

1.3.1. The framework aims to make the process consistent and proportional, by defining three levels of monitoring and evaluation:

- **Standard** (for all schemes)
- **Enhanced** (for schemes costing over £50 million)
- **Fuller evaluation** (only when specifically requested by DfT).

1.3.2. The DfT has confirmed this scheme will be subject to the standard level of monitoring.

2 SCHEME BACKGROUND AND CONTEXT

2.1 LOCATION

2.1.1. Littlehampton is in Arun District, which is one of the coastal districts in West Sussex. The town has merged with the settlements of Rustington and East Preston to create an urban area with a combined population of 48,200. This makes Littlehampton the second largest built-up area in Arun District and provides 46% of the jobs available in Arun. The Arun Local Plan (adopted July 2018) has allocations for regeneration, development and sustainable urban extensions, including the North of Littlehampton SDL.

2.1.2. The primary north-south route between Littlehampton and the A27 is via the A284, which passes through the villages of Lyminster and Wick, crossing the West Coastway rail line at a level crossing. Delay caused by the level crossing leads to unreliable and long journey times for people using the route and poor air quality for local residents. The problems are compounded by the existing alignment, which has several tight bends and local accesses, making the route a significant constraint on future development in the area.

2.2 DESCRIPTION

2.2.1. The primary north-south route between Littlehampton and the A27 is via the A284, which passes through the villages of Lyminster and Wick, crossing the West Coastway rail line at a level crossing. Delay caused by the level crossing leads to unreliable and long journey times for people using the route and poor air quality for local residents. The problems are compounded by the existing alignment, which has several tight bends and local accesses, making the route a significant constraint on future development in the area.

2.2.2. The Combined A284 Lyminster Bypass scheme will comprise a realignment of the A284 to the north of Littlehampton to provide a 1.8km bypass to the east of Lyminster and Wick villages, between a new junction on the A259 and connecting with the existing A284 at a point 600m south of the A27 at Crossbush. The proposed alignment bridges the West Coastway railway line at Toddington.

2.2.3. The Combined A284 Lyminster Bypass will be delivered in two parts. Lyminster Bypass (South), between A259 and Toddington Nurseries, is being funded and delivered by developers. Works began January 2020 and their current programme indicates the scheme being open to traffic winter 2021. This element is not the subject of this business case.

2.2.4. The remaining Lyminster Bypass (North), from Toddington Nurseries to the A284 north of Lyminster village, will be delivered by West Sussex County Council (WSCC), and is the subject of this Monitoring and Evaluation Plan.

2.2.5. The scheme is shown in Figure 2-1.

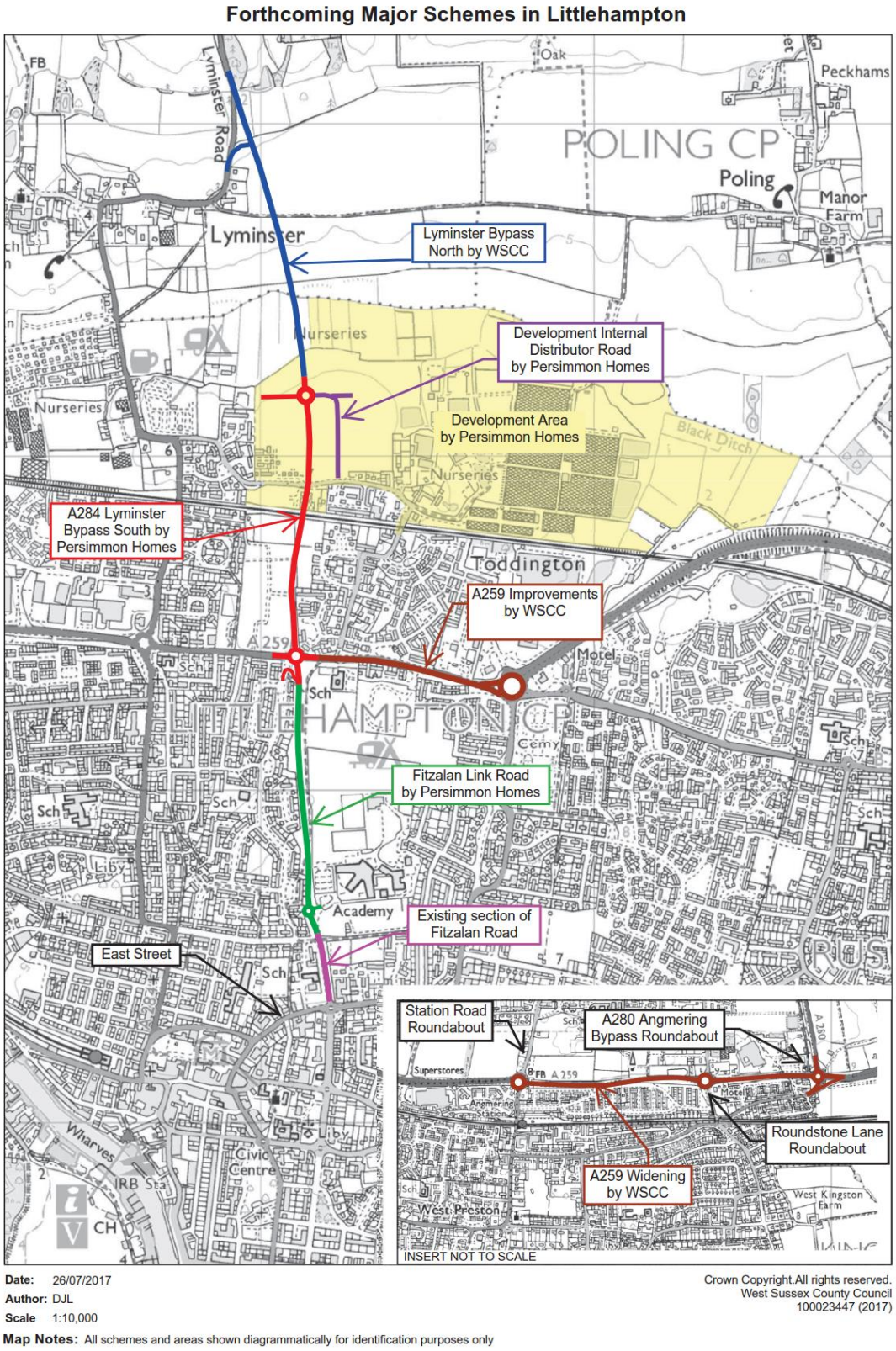


Figure 2-1 - Lyminster Bypass North

2.3 COST AND FUNDING

2.3.1. The current forecast cost of the scheme is £21.63m. Details are given in the financial case of the Outline Business Case. This will be updated in the Full Business Case once the contractor target price has been received.

2.3.2. Funding sources for the scheme are as follows:

Table 2-1 – Funding Sources

Source	Total
S106 Contributions	£3.76m
Coast to Capital LEP	£3.00m
WSCC	£3.08m
DfT	£11.79m
TOTAL	**£21.63m**

2.4 TIME FRAME

2.4.1. The Outline Business Case for the scheme was originally developed for submission to Coast to Capital LEP, and was updated for submission to the DfT in January 2021. It was approved for Programme Entry in June 2021.

2.4.2. Planning consent is required for the scheme, which was granted in May 2018.

2.4.3. Compulsory Purchase powers have been used to acquire all land required to deliver the scheme. Objections to the Orders were resolved and withdrawn with the exception of one, which triggered a Public Inquiry that took place 10-11 August 2021. The Secretary of State (SoS) found in favour the scheme, issuing a Decision Notice in September 2021.

2.4.4. The Full Business Case will be updated following receipt of the SoS decision and the target price from the appointed contractor, Jackson CE. It is expected to be submitted to the DfT November 2021.

2.4.5. Construction is anticipated to begin on site in March 2022 with the scheme being opened to traffic in November 2023.

2.5 WIDER DELIVERY CONTEXT

2.5.1. Lyminster Bypass (South) is being delivered by Persimmon Homes as part of the North Littlehampton Strategic Development Location. Highway works are now largely complete and is planned to be opened for public access November 2021.

2.5.2. A259 Corridor Improvement is another adjacent scheme being delivered by WSCC. It is currently under construction with works expected to be completed December 2022.

2.5.3. The A27 Arundel Bypass scheme delivered by National Highways will affect traffic operations at the Crossbush junction between the A27 and A284. The Preferred Route was published on 15 October

2020. A Development Consent Order is expected to be submitted to the Planning Inspectorate Q4 2021 / Q1 2022.

3 SCHEME OBJECTIVES AND OUTCOMES

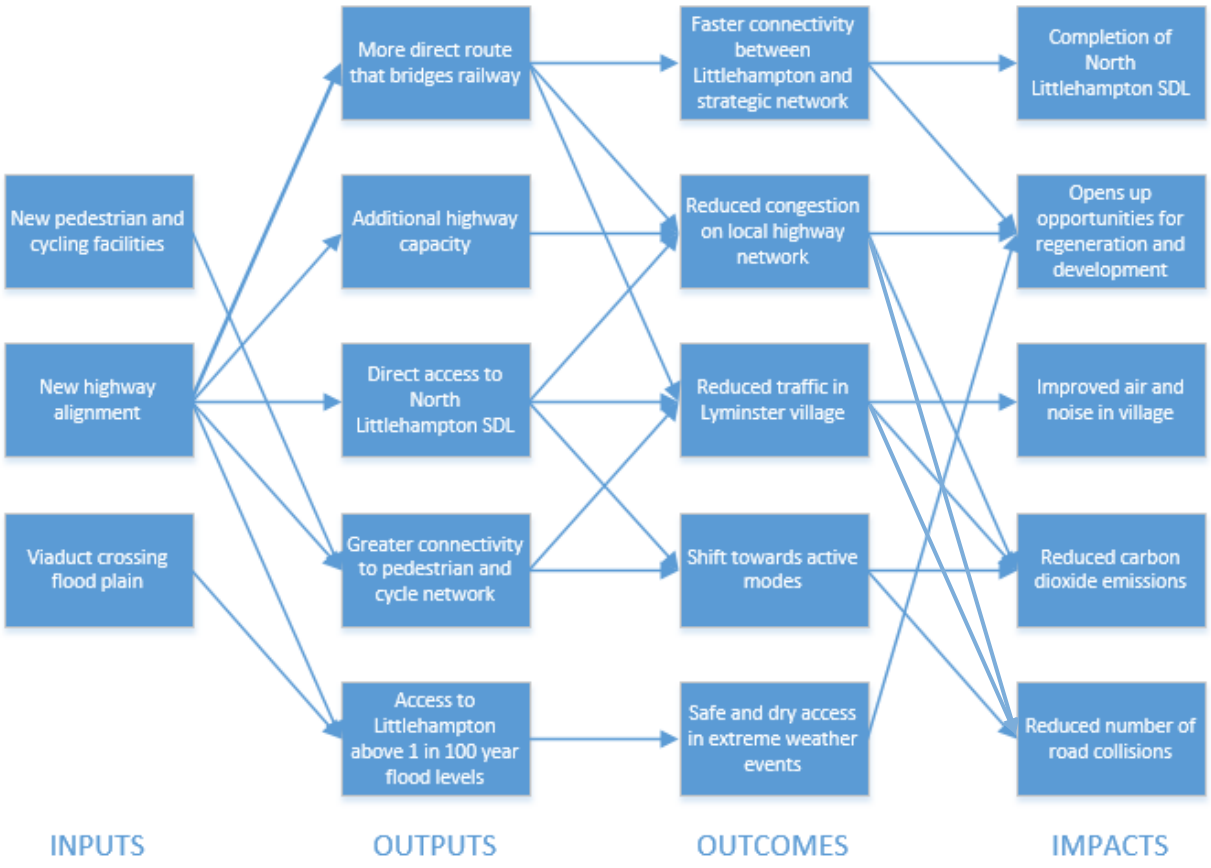
3.1 OBJECTIVES

3.1.1. The scheme meets a series of objectives that align with the strategic aims of West Sussex County Council, their funding partner Coast to Capital LEP and DfT. These are:

- Provide vehicles with a shorter and less congested route with reduced journey times, avoiding the level crossing
- Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new homes and 700 new jobs
- Improve local environmental quality
- Improve local road safety
- Fulfil the above criteria while providing good value for money for the taxpayer.

3.2 OUTCOMES

3.2.1. The logic map below shows the relationship between the constructed scheme and the outcomes and impacts in the area.



4 EVALUATION APPROACH

4.1 AIMS

4.1.1. In accordance with the DfT's Framework, the Monitoring and Evaluation Plan seeks to:

- provide accountability for the investment
- provide evidence to inform future spending decisions
- help to show which schemes deliver cost-effective transport solutions
- enhance the operational effectiveness of future schemes
- identify lessons learnt that can be applied to other schemes.

4.2 TYPES OF MEASURE

4.2.1. The following types of measure will be monitored, as defined in the DfT framework:

- **Inputs** – what is being invested to deliver the scheme
- **Outputs** – what has been delivered, and how it is being used
- **Outcomes** – intermediate effects of the scheme, such as changes in traffic flow
- **Impacts** – longer-term effects on wider social and economic outcomes, such as economic growth.

4.3 STAGES OF MONITORING

4.3.1. This Monitoring and Evaluation Plan will be agreed with the DfT before construction starts, and before any new data collection is programmed to take place.

4.3.2. The monitoring process will be split into three stages:

- Pre-construction and during construction (monitoring)
  - Baseline data will be collected before scheme construction starts
  - Data to monitor scheme delivery will be collected during construction.
- One-year after (monitoring and evaluation)
  - Data to monitor scheme performance will be collected at least one year (but less than two years) after scheme opening
  - An initial 'One Year After' report will be published within two years of scheme opening, focusing on the scheme's outcomes.
- Five-years after (monitoring and evaluation)
  - Further data will be collected up to approximately five years after scheme opening
  - A final 'Five Years After' report will be published within six years of scheme opening, based on analysis of both the Stage 2 and Stage 3 data, including an assessment of the wider impacts of the scheme.

4.4 MEASURES TO BE MONITORED

4.4.1. The measures which will be monitored for the evaluation of the scheme are set out in Table 4-1.

Table 4-1 – Measures to be monitored

Measure	Data to be used	Rationale for inclusion	Data collection methods	Frequency of data collection	Target / Output
Delivered Scheme	Scheme definition at full funding approval stage. Completed, as-built, scheme drawings. Logged design iterations	Design Confirmation – to ensure that the scheme has been delivered as identified in the Business Case	Analysis of key project documents by the scheme's Project Manager with support from WSCC transport team and delivery partners. The Project Manager will be expected to maintain a complete record of drawings, undertake change control as required, and provide the record of these changes and their impacts for monitoring	On-going throughout the construction until opening. To include in the 'one year after' report	Identification of significant changes to the scheme since funding approval
Costs	Actual outturn costs once scheme is completed by each stage/corridor. Forecasted scheme costs at time of funding approval by each stage/corridor.	Need to understand actual outturn costs and variations from forecast and to learn lessons that may impact future projects of a similar nature	Compare bid capital with outturn costs, explaining reasons for any variance.	Before, and after construction. To include outturn costs in the 'one year after' report.	Percentage outturn cost overruns or savings and identification of the reasons
Construction Programme	Actual completion date of the scheme Planned completion date of the construction programme.	Progress against key milestones, monitoring of construction works, project plan assessment	Analysis of key construction milestones from key project documents by the scheme's Project Manager with support from WSCC transport team and delivery partners. If there are variations, also collect information recorded for the reason of the delays	Before, and after construction. To include construction milestones in the 'one year after' report	Percentage overruns in key milestones and identification of the reasons/lessons learnt The monitoring will be for the total spend.

Measure	Data to be used	Rationale for inclusion	Data collection methods	Frequency of data collection	Target / Output
Scheme Objective 1: Provide vehicles with a shorter and less congested route with reduced journey times, avoiding the level crossing	Counts and journey time information will also be used to monitor impacts of car usage and congestion Public transport (PT) origin/destination (of users) flows along the scheme, forecast flows versus actual. Information will also be collected on other key routes, not covered by the scheme to compare the scheme impact. Classified volume counts, including Cycling and Pedestrian counts along the scheme corridors.	To monitor traffic volumes, turning movements. Also monitor the impact of the congestion as a result of any changes to the non-motorised or public transport system	Classified volume count information to be collected using AI sensors. Car usage data will be collected using a combination of WSCC fixed sites (some installed already some due to be installed) and then AI sensors to plug the gaps. Journey time data to be collected using Trafficmaster and AI sensors Public transport data to be collected from the operators through MCL, who would provide the data collected ETM transaction data.	Before construction, one year and five years after scheme implementation.	The results will also be compared against the modelled impacts to assess how they perform against the expected impacts.
Scheme Objective 2: Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new homes and 700 new jobs	Housing completion figures from North Littlehampton SDL	To help understand if the scheme supported the delivery of planned development in North Littlehampton SDL	Obtain housing build out rates within North Littlehampton SDL, from planning team, focusing on sites in the scheme area	One year and five years after scheme implementation.	Build rate within 10% of planned build

Measure	Data to be used	Rationale for inclusion	Data collection methods	Frequency of data collection	Target / Output
Scheme Objective 3: Improve local environmental quality	Measure the NO_x, and PM_{10} emissions along the scheme corridors.	To calculate the cumulative benefits of the proposed scheme	A baseline desk study has been undertaken in 2018, utilising available data from ADC's latest air quality progress report. The same methodology will be undertaken for the monitoring and evaluation.	Before construction, one year and five years after scheme implementation.	To monitor whether the standards for ambient concentrations of NO_x, and PM_{10} emissions as set by the Air Quality (England) Regulations 2000 and the Air Quality Standards Regulations 2010 continue to meet the current level of compliance
	Status of measures to mitigate ecological impacts	The ecological impact assessment concluded that through the construction phase there would be a temporary loss of habitat for a number of protected species which would result in short to medium term negative effects of varying significance, dependent upon the species.	Analysis of key project documents by the scheme's Project Manager with support from WSCC transport team and delivery partners. The Project Manager will be expected to maintain a complete record of drawings, undertake change control as required, and provide the record of these changes and their impacts for monitoring	One year after construction	Identification of significant changes to the mitigation measures since funding approval
	Status of measures to mitigate flood risk impacts – completed scheme drawings	The flood risk assessment concluded that the proposed bypass will not be at risk of flooding or increase flood risk for all the design scenarios considered, including the ultraconservative 1 in 200 climate change scenario, thereby providing betterment over the existing situation.	Analysis of key project documents by the scheme's Project Manager with support from WSCC transport team and delivery partners. The Project Manager will be expected to maintain a complete record of drawings, undertake change control as required, and provide the record of these changes and their impacts for monitoring	One year after construction	Identification of significant changes to the mitigation measures since funding approval

Measure	Data to be used	Rationale for inclusion	Data collection methods	Frequency of data collection	Target / Output
Scheme Objective 4: Improve local road safety	Reduced collision rates on network within study impact area.	To help understand if the scheme supported the shift towards a safer transport system.	STATS19 accident data	Before construction, one year and five years after scheme implementation.	Reduction in collision rates in the network -
Scheme Objective 5: Fulfil the above criteria while providing good value for money for the taxpayer	Counts and journey time information will also be used to monitor impacts of car usage and congestion Public transport (PT) origin/destination (of users) flows along the scheme, forecast flows versus actual. Information will also be collected on other key routes, not covered by the scheme to compare the scheme impact. Classified volume counts, including Cycling and Pedestrian counts along the scheme corridors.	To help understand if the scheme results in the expected mode share and journey time saving	Classified volume count information to be collected using AI sensors. Car usage data will be collected using a combination of WSCC fixed sites (some installed already some due to be installed) and then AI sensors to plug the gaps. Journey time data to be collected using Trafficmaster and AI sensors Public transport data to be collected from the operators (Compass and Stagecoach), who would provide the data collected through ETM transaction data. If only origin information is available, primary bus stop user surveys will need to be undertaken.	Before construction, one year and five years after scheme implementation.	The mode share and journey time within the range which would have given a BCR>2

5 DATA REQUIREMENTS AND DATA COLLECTION METHODS

5.1 SCHEME BUILD

5.1.1. Data on the progress of the construction works will be collected continuously throughout the construction period and monitored against the project plan and key milestones on a monthly basis.

5.1.2. Progress will be reported in the 'One Year After' report within two years of the scheme opening.

5.1.3. This report will also review the effectiveness of engagement with Stakeholders during construction and upon the opening of the scheme, to learn lessons that can be applied to other schemes. Details of the principal stakeholders and WSCCs communication with them are set out in Section 8.

5.1.4. The report will also report on how risks were identified, managed, mitigated and costed if they could not be mitigated during construction.

5.1.5. The main source of data on scheme build, including risk management and stakeholder management, will be the regular reports to the Project Board, which will meet monthly. The Project Manager is responsible for day to day execution of the project plan, for monitoring the progress of the project, and for maintaining a Risk Register/Log.

5.2 COSTS

5.2.1. Out-turn data on all expenditure associated with the scheme will be monitored against spending plans on a monthly basis throughout the delivery period using WSCC's financial monitoring system.

5.2.2. To enable comparisons to be made, costs will be reported as actual (out-turn) expenditure by financial year in at least the level of detail given the Financial Case of the FBC:

- Construction contracts
- Utilities
- Land
- Fees (Design, surveys, procurement, supervision etc).

5.2.3. Where a variation in cost is attributable to an element of risk identified in the construction contract, this will be highlighted. A sum of money has been set aside by WSCC for risks which materialise during the project (the risk allocation). This process is described within the management case of the FBC. Any drawdown of this risk allocation will be recorded and described.

5.2.4. If there have been cost over-runs, or if savings have been made, the reasons for these will also be identified.

5.2.5. Total expenditure will be disaggregated by funding stream, and compared with that in the FBC:

- Government Funding (DfT Local Majors Fund)
- Coast to Capital Local Enterprise Partnership (LEP)
- Developer funding through S106 contributions
- Local contribution (WSCC).

5.2.6. As the DfT funding is fixed, any cost increase will be borne by WSCC.

5.2.7. Expenditure will be reported in the 'One Year After' report within two years of the scheme opening and updated as necessary in the final report.

5.2.8. The main source of data on project costs will be the regular reports of Project Manager to the Project Board, which includes a Senior Finance Officer, whose responsibility is to ensure the project is being run in accordance with WSCC financial processes and that the budget of the project is reported and factored into the council's overall budget. Day to day project budgets will be manged by the Project Manager in consultation with the Senior Responsible Officer, against projected expenditure.

5.3 DELIVERED SCHEME

5.3.1. Any changes to the scheme since funding approval will be monitored during delivery and reported in detail in the post-opening report within one year of the scheme opening, together with a clear map of the delivered scheme.

5.3.2. Any changes to the associated mitigation measures will be monitored during delivery and the reasons for such changes outlined in the 'One Year After' report.

5.4 TRAVEL DEMAND

5.4.1. For establishing the baseline, data would be collected at sites which are listed in Table 5-1. These would be made up of National Highways and WSCC permanent ATCs, at key locations on main A class roads including on the A284 between Lyminster and Crossbush and also on Ford Road.

5.4.2. For establishment of post-opening traffic flows, data would be collected from the same sites as those for the baseline. This will take place at least 12 months after the completion of the scheme to allow for establishment of more permanent traffic trends, once drivers have become used to the new routes and mapping and navigation aids have been updated to the new road's layout, and repeated five years after opening to verify established travel patterns.

Table 5-1 – Traffic Data Collection

ID	Data Type	Location
1	WebTRIS ATC	TMU Site 5761 – A27 between A284 near Arundel (east) and A284 near Arundel (west)
2	WebTRIS ATC	TMU Site 5763 – A27 between A280 and A284 near Arundel (east)
3	WSCC ATC	446 – A284 Lyminster Road north of bends
4	WSCC ATC	1524 – C17 Ford, Ford Road, just south of junction with Tortington
5	WSCC ATC	1335 – A259 Climping, Bridge Rd, just west of River Arun
6	WSCC ATC	1333 – A259 Littlehampton Bypass, just east of River Arun
7	WSCC ATC	1334 – A259 Rustington Bypass
8	WSCC ATC	4158 – A280 Angmering, Water Lane

ID	Data Type	Location
9	WSCC ATC	A259 between Wick roundabout and new Fitzalan Link roundabout – new site installed as part of A259 project
10	WSCC ATC	A259 between new Fitzalan Link roundabout and Bodyshop roundabout – new site installed as part of A259 project
11	WSCC ATC	A259 west of Station Road – new site installed as part of A259 project
12	WSCC ATC	A259 west of A280 – new site installed as part of A259 project
13	Automatic Camera Count	A284 south of A27 Crossbush
14	Automatic Camera Count	Existing A284 in Lyminster village
15	Automatic Camera Count	A284 – new alignment
16	Automatic Camera Count	A284 Arundel Road
17	Automatic Camera Count	Fitzalan Road, south of Fitzalan link extension

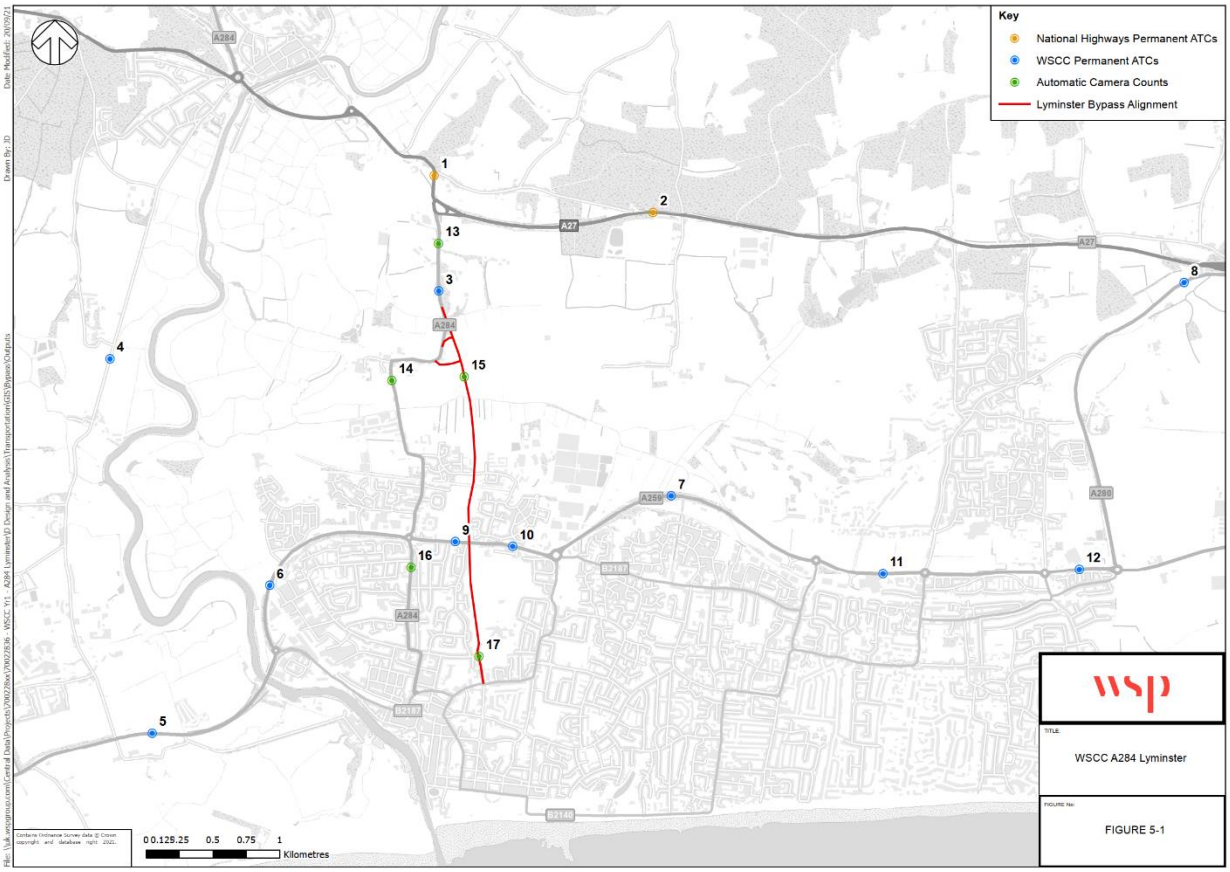


Figure 5-1 - Count Locations

5.4.3. The WSCC permanent traffic count site on the A284 will be a key location for data collection before and after scheme construction. The site is located a few metres to the north of where the northern tie-in construction is shown to terminate; The counter produces classified vehicle data and speed data in addition to measuring the volume of traffic.

5.4.4. Sites without a permanent counter will be collected using new automatic camera installations. These use the Vivacity Sensor platform, which provide a real time and historic dataset for objects interacting within their field of view. These will be located on suitable nearby lighting columns and are capable of capturing classified vehicle data and speeds, as well as pedestrian and cycle movements. These cameras will therefore be suitable for capturing the anticipated increase in walking and cycling in the scheme study area.

5.4.5. The surveys will pick up the combined effects of this scheme and the developer delivered roads, along with the build out of the strategic development sites, as the construction periods will run in parallel. It will not be possible to isolate the impact of Lyminster Bypass (North) alone. This also applies to all other indicators to be monitored.

5.5 BUS SURVEYS

5.5.1. Compass and Stagecoach provide bus services in the study area. As part of the monitoring and evaluation, the operators will be requested to provide information related to passenger boarding at bus stops along the corridor and parallel routes. Besides this, data related to schedule adherence for the base case, as well as during the monitoring and evaluation phase, will also be requested.

5.6 TRAVEL TIMES AND RELIABILITY

5.6.1. Monitoring the scheme's impacts on travel times is very important, as they are critical to the success of the scheme and the generation of economic benefits.

5.6.2. The scheme is expected to reduce travel times in two ways:

- It will enable some drivers to choose shorter, quicker routes avoiding the level crossing in Lyminster village
- It will create extra road capacity and reduce congestion and delay on roads relieved of traffic.

5.6.3. Journey time data will be collected one the following two routes:

- **Route 1** – Crossbush to A259 via Lyminster village
- **Route 2** – Crossbush to A259 via new alignment.

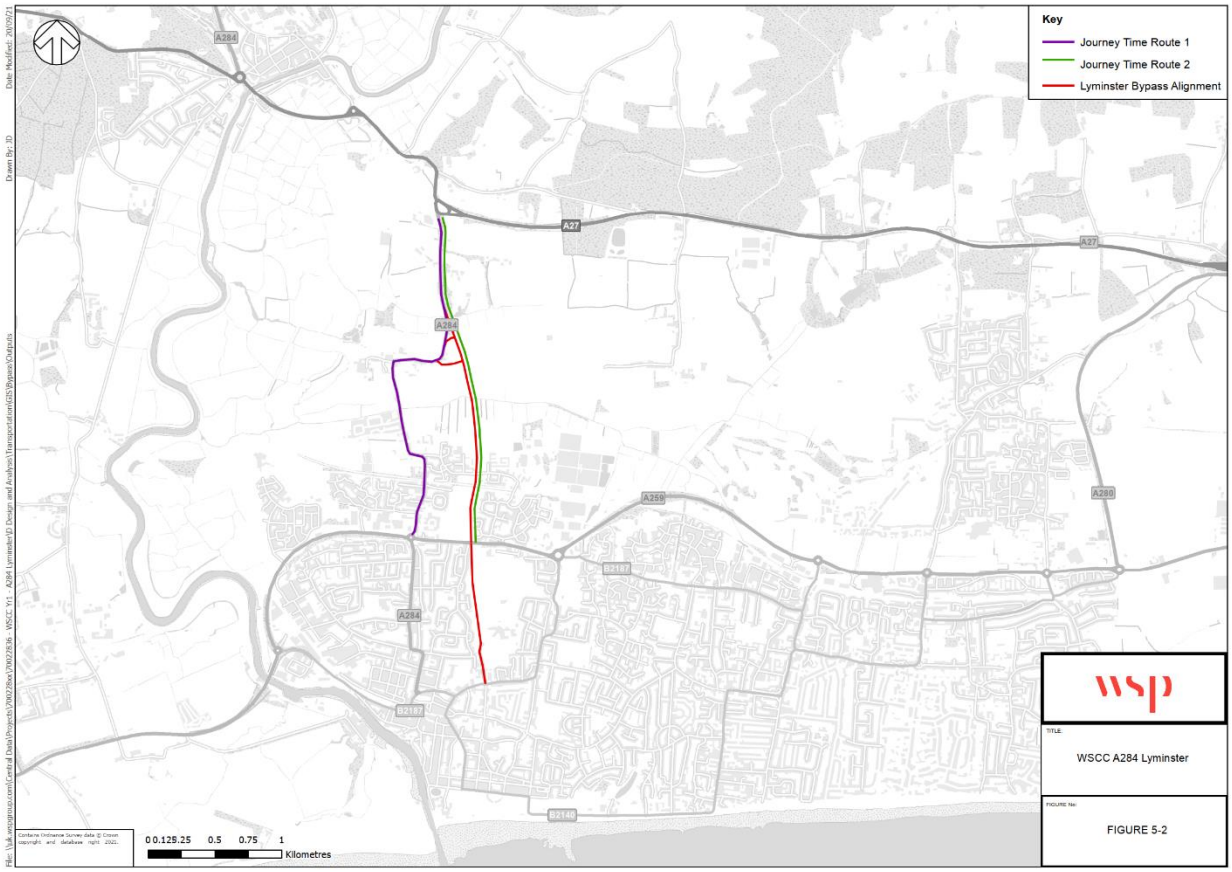


Figure 5-2 - Journey Time Routes

5.6.4. Data is made available from the DfT for Local Authorities for this purpose via CTrack and Inrix.

5.6.5. As with traffic data, journey times will be collected prior to construction, one year and five years after completion.

5.7 IMPACT ON THE ECONOMY

5.7.1. WSCC has selected a set of core economic objectives as metrics for assessing the impact of an intervention. These relate to the delivery of development at “impact sites”, and are set as follows:

- Jobs connected to the intervention (Full-Time Equivalents)
- Commercial floorspace created (sqm, by class)
- Housing units starts
- Housing units completed.

5.7.2. Impact sites are defined as those which have contributed to the intervention, even if planning consent has been granted without being conditional on the completion of the intervention. In this case, key developments that have contributed to the scheme are the North Littlehampton SDA and Courtwick Farm.

5.7.3. Annual monitoring reports are produced by Arun District Council (ADC) setting out planning consents and completions within the District. These reports will be examined to check on the rate of delivery of the planned housing, commercial space and employment development at these core impact sites.

5.8 AIR QUALITY MONITORING

5.8.1. A baseline desk study was undertaken in 2018, utilising available data from ADC’s latest air quality progress report. Furthermore, information on the location of nearby Air Quality Management Areas (AQMAs) and designated ecological habitats (e.g., Sites of Special Scientific Interest (SSSIs)) from the Department for Environment, Food and Rural Affairs (Defra), and aerial mapping and satellite imagery, have been used to establish locations of human and ecological receptors sensitive to the potential impacts on air quality arising from the Proposed Development.

5.9 CARBON

5.9.1. The scheme is forecast to achieve a reduction in emissions of carbon and other greenhouse gases, compared with the emissions that would occur in a “do minimum” situation. It is not possible to measure this impact directly. However, greenhouse gas emissions are a direct consequence of the burning of fuel by vehicles using the road network, and changes in emissions can be estimated from changes in traffic volume and speed.

5.9.2. The Local Authority Basic Carbon Tool published by DfT will be used to calculate carbon emissions for the routes corresponding with the two journey time routes.

5.10 SCHEME OBJECTIVES

5.10.1. The metrics used to evaluate the scheme objectives set out in Section 4 are set out in Table 5-2.

Table 5-2 – Metrics to Monitor Scheme Objectives

Objective	Metric	Additional Data to Standard Monitoring?
Provide vehicles with a shorter and less congested route with reduced journey times, avoiding the level crossing	Delivered Scheme, Journey time comparison	No
Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new homes and 700 new jobs	Completion rate of North Littlehampton SDL, measured under Impact on the Economy	No
Improve local environmental quality	Carbon emissions estimate	No
Improve local road safety	No. of road collisions and KSI (Killed and Seriously Injured) rates per billion vehicle kilometres	Yes
Fulfil the above criteria while providing good value for money for the taxpayer	Qualitative estimate of impact on BCR	Yes

5.10.2. Information on collection of the additional metrics not discussed elsewhere is set out below.

IMPROVE LOCAL ROAD SAFETY

5.10.3. WSCC has access to Road Traffic Collisions data supplied by Sussex Police. Data from this will be extracted to compare accident rates on major roads within a study area similar to that used for traffic flows. Data will be collected prior to construction, one year after opening and five years after opening. Statistics will be examined for:

- numbers of road collisions and KSI (Killed and seriously injured) rates per billion vehicle kilometres
- road collisions by vehicle type
- number and severity of casualties
- breakdown of casualties for vulnerable road users and others.

REVIEW OF VALUE FOR MONEY

5.10.4. For the ‘One Year After’ report, this will be done simply by re-calculating the present value of costs, PVC, based on the actual out-turn costs which by then will be available. The present value of benefits (PVB) will not be adjusted, as it will be too soon to determine the longer-term traffic impacts on which this depends.

5.10.5. In the event of a change in the VfM category from what was anticipated, this will reported in the ‘One Year After’ report, together with a qualitative discussion of the possible reasons, based on the other

measures that have been monitored (especially traffic changes) and any known external factors (such as development and economic growth).

5.10.6. For the 'Five Years After' report, the approach to recalculating BCR will depend on whether other monitoring shows that the traffic impacts of the scheme appear to be significantly different from those which were forecast. The key metrics to determine this will be:

- The volume of traffic using the new bypass
- The volume of traffic still using the route through Lyminster village
- Travel times across the two routes.

5.10.7. This data set will give a good overall picture of the main traffic movements in and around the study area, and on the scheme. It will be compared with the modelled opening year traffic flows, adjusted using the growth factors assumed in the original economic assessment, and with the forecast journey times.

If no significant change in traffic impacts

5.10.8. If it is clear that the observed traffic patterns five years after opening are a good fit with those forecast in the scheme appraisal, the original value of PVB will be assumed to be reliable and will not be changed. The PVC will be re-calculated with any further adjustments to costs and the BCR will be calculated.

5.10.9. In the event of a change in the VfM category from what was anticipated, this will be reported in the 'Five Years After' monitoring report.

If there is a significant change in the traffic impacts

5.10.10. If the observed traffic patterns five years after opening are not a good fit with those forecast in the scheme appraisal, the forecast PVB would not be applicable. It would not be cost-effective, or even feasible, to repeat the full economic appraisal with the benefit of hindsight, and to attempt to do so would not be proportionate. The objective, in this situation, would be to understand the reasons why things had not worked out as expected, and to learn how future appraisals can be made more reliable. The approach taken will therefore be to examine the underlying traffic patterns to determine:

- whether the differences observed are likely to be associated with an increase or a decrease in scheme benefits. For example, if the time savings for users of the scheme are greater than forecast, or experienced by a larger number of users, it is reasonable to assume that the benefits would be greater. The converse is also true.
- whether the observed data shows a different overall rate of traffic growth than forecast, and whether this is in line with national trends, or is a result of unexpected levels of local growth and development.
- whether the observed data suggests that the scheme is not performing in the way that was forecast. For example, if users are continuing to use to use the existing bridges, rather than diverting to the scheme, or if the expected journey time savings are not occurring.

5.10.11. Depending on what can be learnt from the basic traffic data, a proportionate approach will be taken to the re-calculation of the PVB to determine a new BCR. This would involve factoring the PVB to reflect a more, or less, optimistic view of the monetised benefits resulting from the scheme. An updated VfM category will be determined according to the DfT criteria.

5.10.12. In the event of a change in the VfM category from what was anticipated, this will be reported in the 'Five Years After' report, together with a detailed discussion of the possible reasons, based on the other measures that have been monitored (especially traffic changes) and any known external factors (such as development and economic growth). Any limitations or uncertainties in the conclusions that can be drawn will be highlighted, together with any recommendations for:

- Improvements to the way schemes are assessed in future
- Work to identify possible remedial measures that might address deficiencies in the scheme.

6 RESOURCING AND GOVERNANCE

6.1.1. WSCC own the Monitoring and Evaluation Plan, with responsibility for delivery resting with the Project Manager. The data collection programme has been designed so that all data is collected via permanent count sites or data that is easily available, so the cost of producing the monitoring reports are simply WSCC staff time, as part of the Project Manager's duties.

6.1.2. Scheme monitoring and evaluation will be manged by the Project Board. The governance of the project is set out in the Management Case of the OBC, and is summarised below:

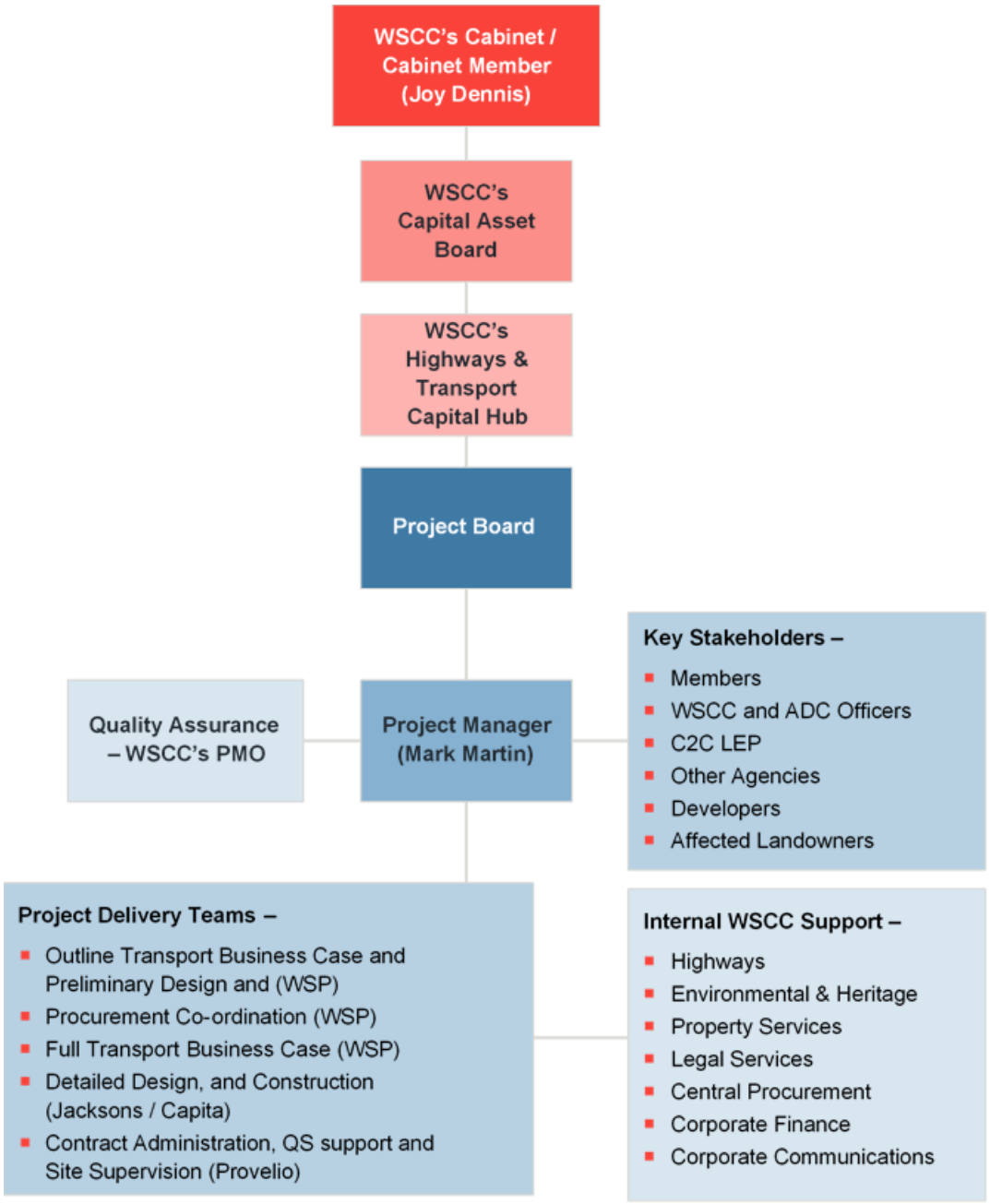


Figure 6-1 - Project Governance

7 DELIVERY PLAN

7.1.1. The timeframe for data collection, progress reporting back to the Department and reporting of monitoring and evaluation findings is set out as follows.

7.1.2. The monitoring process will be split into three stages:

- **Pre-construction and during construction (monitoring)**
  - Baseline data will be collected (and historical data adjusted) before scheme construction starts. The provisional date for this is February 2022.
  - Data to monitor scheme delivery will be collected during construction.
- **One year after (monitoring and evaluation)**
  - Data to monitor scheme performance will be collected at least one year (but less than two years) after scheme opening. The provisional date for this is November 2024.
  - An initial 'One Year After' report will be published within two years of scheme opening, focusing on the scheme's outcomes. The provisional date for this is November 2025.
- **Five years after (monitoring and evaluation)**
  - Further data will be collected up to approximately five years after scheme opening. The provisional date for this is November 2028.
  - A final 'Five Years After' report will be published within six years of scheme opening, based on analysis of data collected since baseline data. The provisional date for this is November 2029.

7.1.3. Data collected one year and five years post opening (2024 and 2028), will be compared against the baseline data to quantify the extent of benefits realised. The '1 year after' and '5 year after' evaluation reports will set out the results of the analysis, highlighting any interesting and emerging trends.

7.1.4. We are currently in discussions with WSCC to finalise the detailed costs of the plan. Once this is finalised a plan and a monitoring cost will be developed for the scheme. However, at present the following information is available which would assist in generating the overall scheme costs:

- AI Cameras: £4,500 per site
- Bus Patronage data: £4,500 per annum.

7.1.5. The above does not include the labour costs associated with monitoring, analysis and reporting of the outputs/findings.

7.1.6. The risk management and QA for the monitoring and evaluation will be as per the details provided in the Management Case.

8 DISSEMINATION PLAN

8.1.1. A consultation and communication strategy has been developed for the scheme, which seeks to achieve the following overarching aims:

- Meeting the requirements of the Localism Act and WSCC's Statement of Community Involvement (SCI) which obligate developers/scheme promoters to consult with communities prior to submitting planning applications
- Ensuring that all stakeholders are aware of, interested in, and able to contribute to the consultation
- Enabling the local community to give timely feedback on the proposals so that the plans can be refined accordingly to take into account local opinion
- Informing the final proposed design for the route and ensure that the design is supported by stakeholders and the wider community.

8.1.2. Consultation has been ongoing with landowners, local residents, Lyminster and Crossbush Parish Council. Other parish councils, Littlehampton Town Council, local District and County Council members have been kept informed via the North Littlehampton Steering Group and the Joint Eastern Arun Area Committee (JEAAC) Highways and Transport sub-group.

8.1.3. This Monitoring and Evaluation Plan will be agreed with the DfT prior to the submission of the FBC. It will be published on the project website (https://www.westsussex.gov.uk/roads-and-travel/roadworks-and-projects/road-projects/lyminster-bypass-north/) for the purposes of local accountability and transparency. The DfT may also provide links to it from their own website.

8.1.4. Progress on scheme construction will be reported though monthly highlight reports, as set out in the OBC Management Case. The content of these reports is made available to the Highways and Transport Hub, Capital Asset Board, elected Members and the WSCC Cabinet.

8.1.5. Monitoring will be undertaken before and during construction, and after the opening of the scheme. A 'One Year After' evaluation report will be produced within two years of the scheme opening, followed by a 'Five Years After' report within six years of the scheme opening.

8.1.6. The evaluation reports will also be published on WSCC's project website. The DfT may provide links to it from their own website and may publish meta-analysis of evaluation reports from time to time.

9 CONCLUSION - HOW LESSONS WILL BE LEARNED

9.1.1. The scheme will represent a significant investment of public money in Arun District by private developers, Coast to Capital LEP, WSCC and the central government. Monitoring and evaluation are therefore essential, not only to demonstrate that the investment has delivered the desired impacts, but also to inform and enlighten future decision makers, both locally and nationally. In this way future investment can be targeted to provide the best value for money.

9.1.2. For this to happen, the monitoring and evaluation will be:

- **Carefully planned**, so it captures all the information needed.
  (This plan provides a clear rationale for the monitoring to be undertaken)

- **Timely**, so the lessons can be learnt as soon as possible
  (Reports will be made one year, and five years after opening)

- **Shared** with those, including DfT, other local authorities and stakeholders, who can benefit from the knowledge gained.

9.1.3. Lessons will be learnt by seeking answers to the following questions:

- **Delivery:** Was the scheme delivered as planned? If not, what changes had to be made, and why? What impact did these have? Could they have been foreseen or avoided? What went well and what went less well?

- **Cost:** How accurate were the cost estimates? If out-turn costs were different from expectations, why was this, and what actions were taken? Were the allowances for quantified risk and optimism bias reasonable, or should a different approach be taken in future? What impact did any cost changes have on the overall value for money?

- **Traffic:** Did the scheme have the expected impacts on traffic movement in and around Lyminster? Has traffic reduced within the village by the expected amount? Have journey times reduced? If not, what are the reasons? Has there been an increase in walking and cycling in the area? If there are differences, are they due to scheme specific, local or national factors affecting traffic demand. Were there any unintended consequences? Did the traffic model provide a realistic forecast of future growth and the effects of the scheme? If there are differences, are they enough to raise questions about the VfM category attributed to the scheme?

- **Economy:** Is there evidence yet that the scheme has contributed to economic regeneration and growth in Littlehampton? Has it helped to change perceptions of the town by residents, local businesses and new investors? Have there been any unintended consequences?

- **Environment:** Were the environmental impacts of the scheme in line with expectations? Has mitigation been effective? Have there been any unintended impacts, and, if so, how might they have been foreseen, or avoided with future schemes?

- **Community:** Has public support for the scheme increased or reduced since its completion? How effective was engagement with the public and stakeholders during construction? What went well and what went less well? Were there any unforeseen issues and if so, how were they resolved?

- **External factors**: By the time of the "5-years after" monitoring report, there may have been changes in policy on transport, the environment and the economy, as well as changes in external circumstances affecting future decision-making both locally and nationally. Is there evidence that investment in major local infrastructure schemes of this type can deliver long-term benefits and provide resilient solutions for local communities?

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