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LYMINSTER BYPASS TRANSPORT BUSINESS CASE

Outline Transport Business Case

20/11/2014

Quality Management

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20/11/2014

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1 Executive summary

1.1 Introduction

1.1.1 This Outline Transport Business Case presents the evidence base in favour of the proposed Lyminster Bypass north of Littlehampton in West Sussex. The document has been prepared in accordance with the Department for Transport guidance on the five business case model. Guidance was published in April 2013, and requires the following five cases to be considered:

- Strategic Case
- Economic Case
- Financial Case
- Commercial Case
- Management Case

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 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, allowing for the potential closure of the Wick level crossing by Network Rail.

1.2.3 The A284 Lyminster Bypass will be delivered in two parts. The southern section of the bypass (between A259 and Toddington Nurseries) is being funded and delivered by developers. The remaining northern section (Toddington Nurseries to the A284 north of Lyminster village) has some developer funding and requires further funding, and will be delivered by West Sussex County Council (WSCC). This northern section is the subject of this Transport Business Case.

1.3 Strategic case

1.3.1 The A284 Lyminster Bypass 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 in the North of Littlehampton area. The objectives align with the Coast to Capital Local Enterprise Partnership's (LEP) vision around creating the right conditions for growth, jobs and investment.

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 and Cost to Capital LEP. These are:

- Provide motorists with a shorter and less congested route with reduced journey times

- Support the North Littlehampton SDL and thus contribute directly to the delivery of 1,260 new homes and 700 new jobs
- Facilitate closure of the existing level crossing gate at Wick, which would further reduce journey times and delay
- 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. These are:

- **A27 – Arundel Bypass and Crossbush** – 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 the Lyminster Bypass. The Department for Transport and the Highways Agency have been undertaking the A27 Corridor Feasibilty Study, which includes consideration of Arundel Bypass, to inform the Roads Investment Strategy in the Government Autumn Statement. An interim scheme for a minor improvement at Crossbush has been previously submitted for Pinch Point funding, but has so far not been granted funding. The Highways Agency are currently proposing to take forward one of two alternative minor schemes at Crossbush for a further funding bid, depending on the outcome of the A27 Corridor Feasibilty Study for Arundel. Highway improvements at Crossbush or Arundel could be expected to significantly enhance the benefits for Lyminster Bypass, with the degree of enhancement dependant on the final design for any A27 improvements.
- **North Littlehampton Strategic Development Location (SDL)** – The southern section of the bypass is being delivered as part of the North Littlehampton SDL scheme, so the timing of this is crucial to completing the northern section covered by this TBC. Planning conditions require that the southern bypass is open before the 350th house is occupied. The developers' current proposals are for the southern bypass to be open in summer 2017. The southern bypass needs to be completed prior to completion of the northern bypass.
- **Wick Level Crossing** – Completion of the Lyminster Bypass has the potential to allow the level crossing at Wick to be closed, improving safety and reducing Network Rail's maintenance commitment. This is a scheme that Network Rail will consider in the future

1.4 Economic case

1.4.1 The Economic case sets out the assessment of 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.

Table 1.1: Value for Money statement

	Assessment	Detail
Initial BCR	24.716	Calculated using WebTAG guidance
Adjusted BCR	25.855	Includes wider impacts
Qualitative assessment	Largely beneficial	Key improvements in journey quality and community severance
Key risks, sensitivities	Initial BCR range 13.441 to 30.784	Variation in cost and benefit uncertainty assessed according to WebTAG guidance
Value for money category	Very High	Initial and Adjusted BCRs are in Very High category, which is supported by qualitative assessment

1.4.2 The information presented in the economic case indicates that the proposed Lyminster Bypass is considered **Very High** value for money.

1.5 Financial case

1.5.1 The Financial case provides a detailed cost estimate and a breakdown of how the scheme will be funded. The total scheme cost is expected to be £8.68m, of which £3.16m is secured. The remaining £5.52m is sought from Coast to Capital LEP to complete the scheme. Annual budget cover is set out in table 1.2.

Table 1.2: Annual budget cover

FY	Cost	S106	LEP
2015-16	£814,971	£164,971	£650,000
2016-17	£3,982,066	£1,593,475	£2,388,591
2017-18	£3,879,788	£1,398,554	£2,481,234
TOTAL	**£8,676,825**	**£3,157,000**	**£5,519,825**

1.6 Commercial case

1.6.1 The Commercial case has considered options relating to procurement of the scheme. A procurement workshop was held on the 29 April 2014 to address the following questions

- What are the contracting and procurement options available for the scheme?
- How will the contracting/procurement options secure the economic, social and environmental factors outlined in the economic case for the scheme?
- Is the contracting and procurement strategy being proposed robust?
- Is the risk transfer supported by incentives (positive or negative) that prompt the intended outcomes, e.g. will the contractor lose money if there are any cost overruns?
- Is there a developed market for the proposed procurement approach and financing arrangements?

- How confident are we that appropriate contractual/commercial arrangement can be defined to make the structure and risk transfer work in practice?
- Is the proposed risk allocation consistent with the cost estimate?
- How does the mechanism incentivise performance, efficiency and innovation?
- Does the contracting authority have or have access to appropriate resources to manage the preferred procurement and subsequent contract management?

1.6.2 The outcomes of the workshop and subsequent discussion highlighted that a Design and Build procurement strategy through the restricted procedure is considered the preferred option, with the preferred supplier determined through a 70% quality / 30% price split. This generates a number of advantages including:

- A quicker start on site.
- A single point of responsibility for delivering the project following procurement
- Securing the involvement of a contractor for pre-contract services on a competitive basis, to obtain input on buildability, sequencing and subcontractor selection.
- Retaining greater client involvement in the pre-selection and appointment of subcontractors.
- Motivating the design and construction team to drive down cost and to drive in value.
- Transferring a greater degree of design and other construction risk to the contractor.
- Option to include a break clause following completion of the design

1.7 Management case

1.7.1 The Management case 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 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

1.7.2 Owing to the constraints associated with the proposed southern bypass, a three stage approach is proposed for the delivery of the scheme as follows:

Stage One

- Complete preliminary designs and environmental impact assessment
- Complete Transport Business Case and obtain funding approval from the Coast to Capital LEP
- Obtain planning consent for the scheme by June 2015

Stage Two (Subject to progress on the delivery of the southern bypass)

- Undertake land acquisition by negotiation or CPO
- Procure Design and Build contract for the detailed design and construction with a break clause which allows the contract to be ended at the completion of detailed design and target costing
- Undertake detailed design and agree target cost of the scheme
- Obtain full funding approval from LEP by April 2016

Stage Three

- Proceed to construction by October 2016 subject to funding, land acquisition and progress on the delivery of the southern bypass

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

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 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 draft Arun Local Plan has allocations for regeneration, development and sustainable urban extensions, including the North of Littlehampton strategic mixed use development.

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 The A284 Lyminster Bypass scheme (as shown in figure 2.1) 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, allowing for the potential closure of the Wick level crossing.

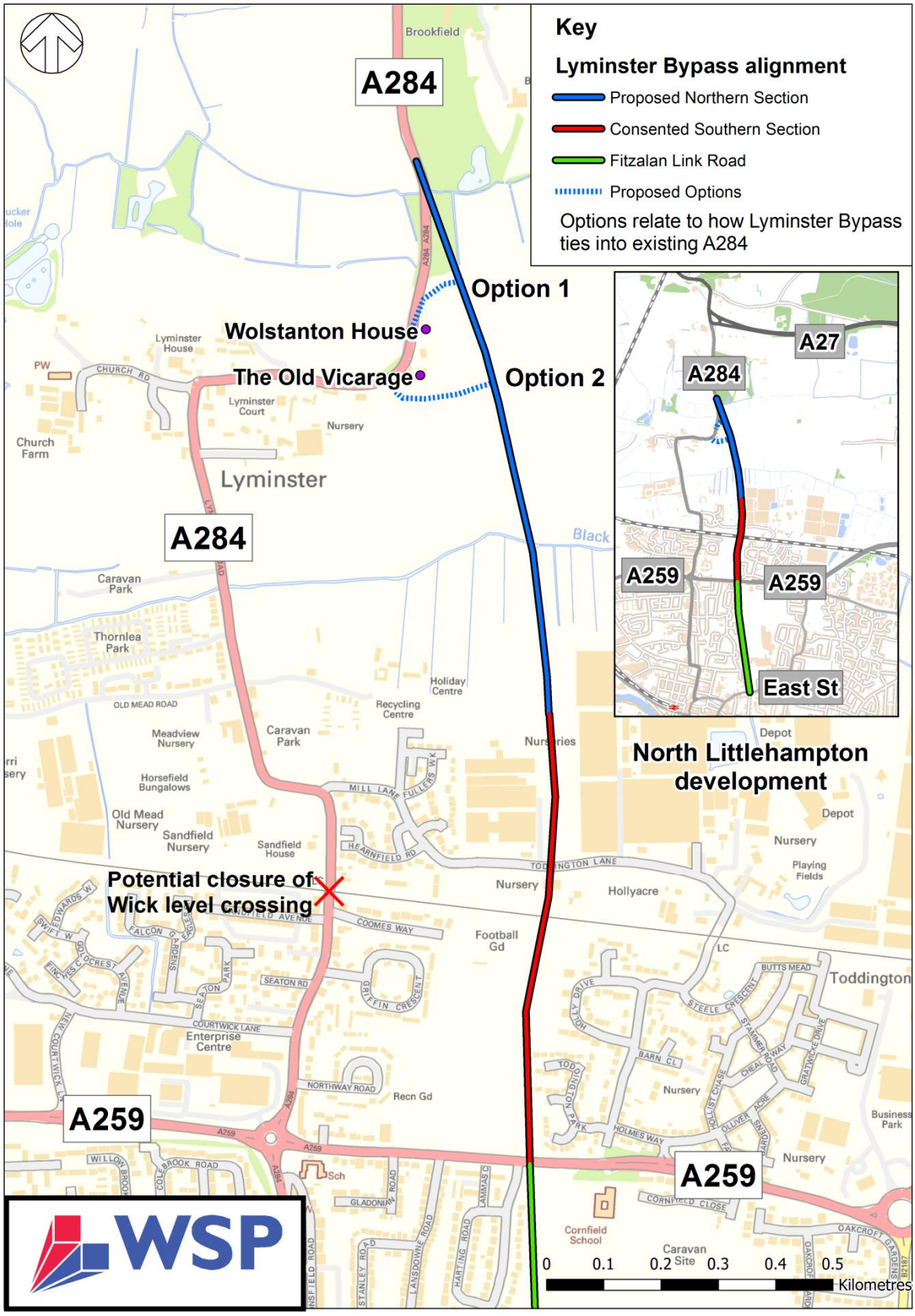

Figure 2.1: Lyminster Bypass

2.2.2 The Lyminster Bypass scheme will be delivered in two parts. The southern section of the bypass (between A259 and Toddington Nurseries) is being funded and delivered by developers. The remaining northern section (Toddington Nurseries to the A284 north of Lyminster village) has some developer funding and requires further funding, and will be delivered by West Sussex County Council (WSCC). This northern section is the subject of this Transport Business Case.

2.3 Purpose of report

2.3.1 The purpose of this report is to set out the Outline Transport Business Case (TBC) for the scheme, thereby forming the primary evidence base for the Lyminster Bypass funding bid. The TBC has been completed in accordance with the Department for Transport's guidance document, "The Transport Business Cases" (January 2013). The Outline TBC contains a detailed assessment of the scheme options in sufficient detail to allow an investment decision to be made, but as not all of the information is currently available, the TBC will subsequently be updated for a Full Transport Business Case.

2.4 Report structure

2.4.1 This Transport Business Case has been structured in accordance with the DfT's best practice five case model approach, with arguments set out in each of the following areas:

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

3 Strategic case

3.1 Introduction

3.1.1 The information presented in the Strategic case sets out the need for the project and how the preferred option meets this need and aligns with the aims and objectives of West Sussex County Council and Coast to Capital Local Enterprise Partnership (LEP). 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
- Options

3.2 Business strategy

3.2.1 Coast to Capital is one of 39 Local Enterprise Partnerships set up in 2011 to deliver investments to drive economic growth and job creation. The Coast to Capital region covers Brighton and Hove, London Borough of Croydon, Gatwick Diamond, Lewes, and West Sussex, so works in close partnership with West Sussex County Council to deliver these objectives.

3.2.2 The A284 Lyminster Bypass 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 in the North of Littlehampton area. The objectives align with the Coast to Capital vision around creating the right conditions for growth, jobs and investment.

3.2.3 The Lyminster Bypass will support local objectives within the draft Arun Local Plan (Policy SP21) to strengthen the north-south links between Littlehampton and A27. It supports an aim in the West Sussex Transport Plan 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 the Lyminster Bypass scheme 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 A new bridge over the railway will be provided by the developer for the North Littlehampton Strategic Development Location (SDL). Access to the bridge from the north without the 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 southern bypass. This is a longer road 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 south east 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 of 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 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. In 2013 the Average Annual Daily Traffic (AADT) 24 hour two-way flow on the A284 through Lyminster was 10,900 vehicles, with the Average Annual Weekday Traffic (AAWT) 24 hour two-way flow being 12,600 vehicles. Weekday peak hour two-way flows were 880vph in the AM peak (08:00-09:00) and 925vph in the PM peak (17:00-18:00).

3.3.9 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.

3.3.10 In the most recent three year period there have been five collisions resulting in slight injury and one resulting in serious injury on the A284 between the A27 and the A259.

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 WebTAG and the Design Manual for Roads and Bridges (DMRB). The East Arun Traffic Model (EATM) has been built to an observed base year of 2013, with forecasts built for the scheme opening year of 2017 and scheme design year of 2032. Development of the EATM is documented in the Local Model Validation Report and the Traffic Forecasting Report.

3.4.2 Each of the forecast year models has been run for three scenarios:

- Low Growth Scenario, which includes only committed developments and highway schemes which are deemed to be “near certain”;
- Core Scenario, which includes committed developments and highway schemes deemed as “near certain” and “more than likely”; and
- High Growth Scenario, which includes all committed developments and highway schemes

3.4.3 The Core Scenario is considered the most likely overall scenario, and therefore the Transport Business Case has been based on this. The impact of not changing is best evidenced by considering:

- Link flows
- Journey times
- Air quality
- Noise

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

Link flows

3.4.5 Forecast weekday traffic flows are presented in table 3.2 for key links.

Table 3.2: Forecast Average Annual Weekday Total (AAWT)

Link	2017		2032	
	Cars	HGVs	Cars	HGVs
A284 through Lyminster	14,339	614	17,909	653
A27 east of Crossbush	29,091	2,120	34,599	2,335
A27 north of Crossbush	31,130	22,58	36,454	2,451
A259 east of Wick	27,818	674	33,580	722
A259 west of Wick	20,224	923	23,986	1057

3.4.6 There is a considerable volume of traffic using the A284 passing through Lyminster village. In 2017, this is forecast to be nearly 15,000 vehicles per day, 4% of which are HGVs. By 2032, this is forecast to have increased by 24% to over 18,500 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

3.4.7 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. The routes collected and 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%

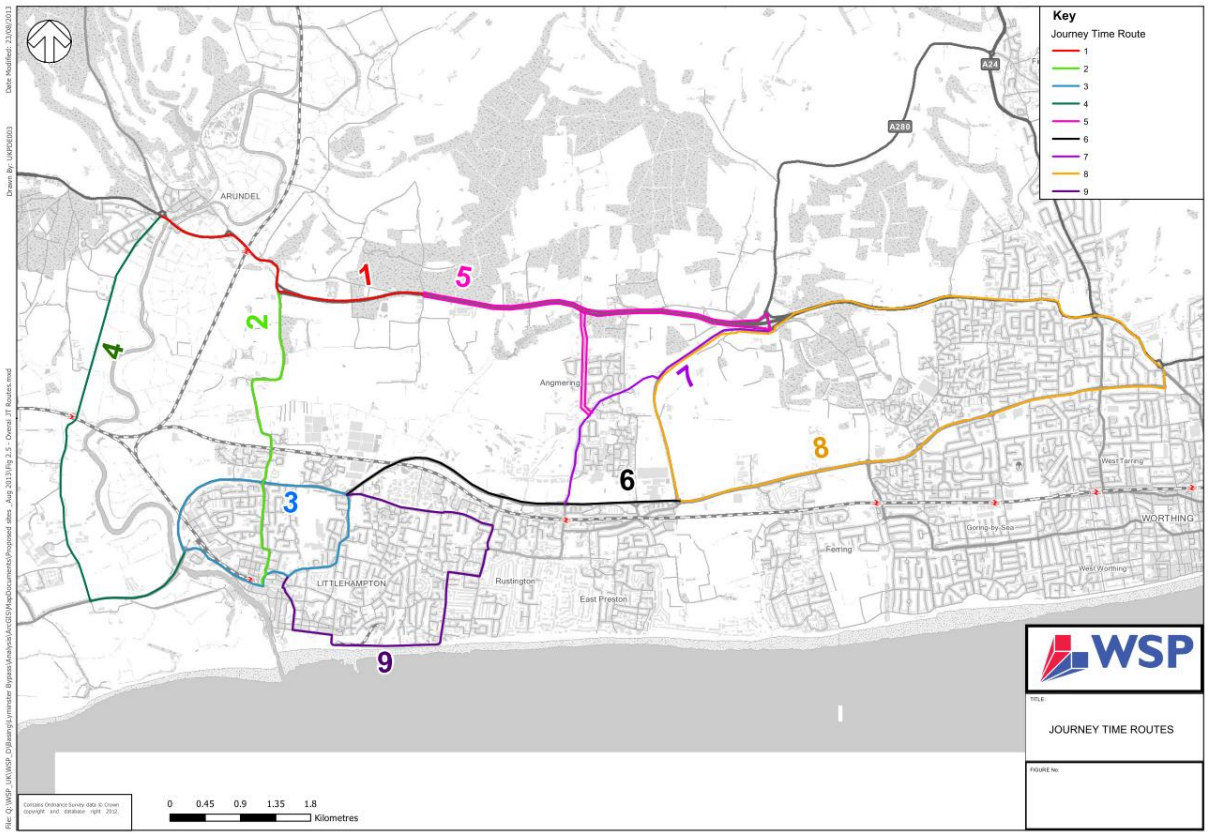

Figure 3.2: Journey time routes

3.4.8 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 which has the potential be closed following completion of the scheme.

3.4.9 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	2013	2017		2032	
		Time (s)	Time (s)	% change	Time (s)	% change
AM	NB	419	433	3%	479	14%
	SB	409	424	4%	437	7%
IP	NB	406	419	3%	428	5%
	SB	397	409	3%	419	6%
PM	NB	375	389	4%	395	5%
	SB	372	390	5%	449	21%

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

3.4.11 The proposed bypass 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 25-33%.

Table 3.5: Modelled journey times on the A284 compared to bypass

Time	Direction	A284 2017 DM	Bypass 2017 DS		A284 2032 DM	Bypass 2032 DS	
		Time (s)	Time (s)	% change	Time (s)	Time (s)	% change
AM	NB	433	310	-28%	479	441	-8%
	SB	424	279	-34%	437	289	-34%
IP	NB	419	306	-27%	428	284	-32%
	SB	409	274	-33%	419	315	-26%
PM	NB	389	307	-21%	395	310	-22%
	SB	390	288	-26%	449	311	-31%

3.5 Internal drivers for change

3.5.1 This is not assessed as part of the Outline Transport Business Case

3.6 External drivers for change

3.6.1 This is not assessed as part of the Outline Transport Business Case

3.7 Objectives

3.7.1 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. The scheme meets a series of objectives that align with the strategic aims of West Sussex County Council and Cost to Capital LEP. These are:

- Provide motorists with a shorter and less congested route with reduced journey times
- 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

3.8 Measures for success

3.8.1 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. Timeframes have been chosen to coincide with either the scheme opening year of 2017 or the design year of 2032, as these are consistent with the years selected for the traffic model.

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 2026.
Improve local environmental quality	Air and noise assessments from non-statutory Environmental Statement (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 Cost Ratio greater than 2

3.9 Scope

3.9.1 The 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 bridges over Black Ditch and the railway line at Toddington.

3.9.2 The 0.7km section crossing the railway line and connecting to the A259 Worthing Road 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.

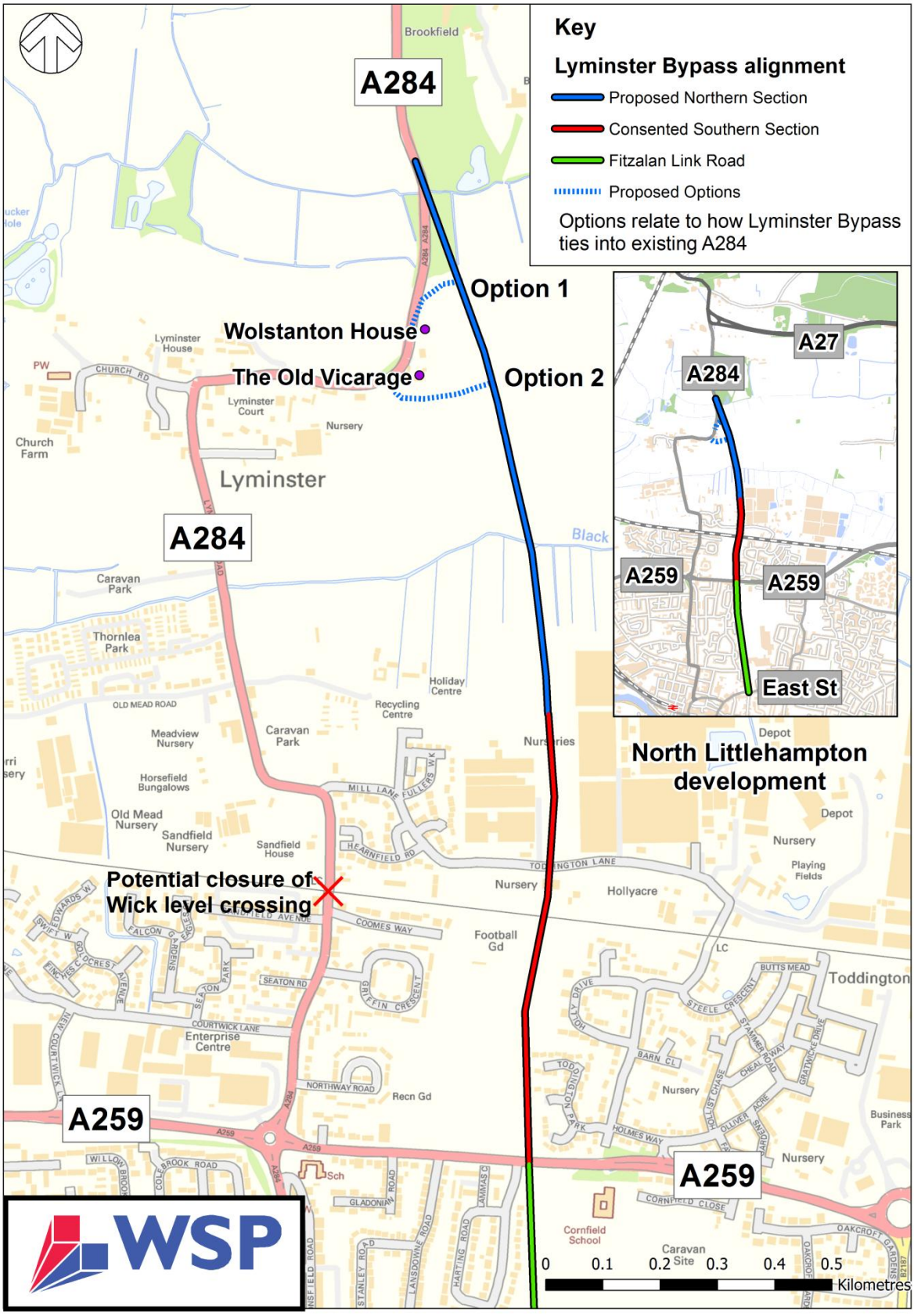

Figure 3.3: Scope of scheme

3.10 Constraints

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

- **Form of contract** – WSCC Standing Orders specify that the Lowest Price of Most Economically Advantageous Tender (MEAT) criteria shall be used when procurement is undertaken by the Council
- **Connection to 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
- **Southern bypass** – The section of the bypass being delivered as part of the North Littlehampton SDL scheme has been granted planning consent, so the northern bypass element for which the TBC has been developed must follow a consistent design

3.11 Interdependencies

3.11.1 There are three principal interdependencies that affect the Lyminster Bypass. These are:

- **A27 – Arundel Bypass and Crossbush** – 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 the Lyminster Bypass. The Department for Transport and the Highways Agency have been undertaking the A27 Corridor Feasibilty Study, which includes consideration of Arundel Bypass, to inform the Roads Investment Strategy in the Government Autumn Statement. An interim scheme for a minor improvement at Crossbush has been previously submitted for Pinch Point funding, but has so far not been granted funding. The Highways Agency are currently proposing to take forward one of two alternative minor schemes at Crossbush for a further funding bid, depending on the outcome of the A27 Corridor Feasibilty Study for Arundel. Highway improvements at Crossbush or Arundel could be expected to significantly enhance the benefits for Lyminster Bypass, with the degree of enhancement dependant on the final design for any A27 improvements.
- **North Littlehampton SDL** – The southern section of the bypass is being delivered as part of the North Littlehampton SDL scheme, so the timing of this is crucial to completing the northern section covered by this TBC. Planning conditions require that the southern bypass is open before the 350th house is occupied. The developers' current programme shows that the southern bypass will be in summer 2017. The southern bypass needs to be completed prior to completion of the northern bypass
- **Wick Level Crossing** – Completion of the proposed Lyminster Bypass has the potential to allow the level crossing at Wick to be closed, improving safety and reducing Network Rail's maintenance commitment. Any decision on the level crossing will be taken following completion of the Lyminster Bypass

3.12 Stakeholders

3.12.1 The following are key stakeholders in the scheme:

- **West Sussex County Council** – Scheme promoter, concerned with strategic movement of people across the highway network and economic regeneration of Littlehampton
- **Highways Agency** – 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 the A84 Lyminster Bypass, so support from the HA is crucial. Early dialogue has been opened and maintained regarding the status of the bypass assessment

- **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. Supporter of the scheme, as bypass will improve quality of life for Lyminster residents, facilitate delivery of the North Littlehampton SDL and reduce journey times into the district
- **Persimmon Homes** - Private developer delivering the housing at North Littlehampton SDL. Consent has been granted for proposals, but full bypass is required to deliver full complement of housing
- **Burton Property** – are looking after the commercial parts of the North Littlehampton SDL for landowner**, Greencore**, pending sale to a commercial property developer.
- **North Littlehampton Members Steering Group** - Members of West Sussex County Council, Arun District Council and Littlehampton Town Council, with other service providers including Highways Agency, Network Rail and Littlehampton Academy, advising on the North Littlehampton SDL. Chaired by the Cabinet Member for Planning and Infrastructure at Arun District Council. 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, with the potential to close it to improve safety and reduce maintenance costs. They have expressed support for the scheme in principle
- **Environment Agency** – Responsible for maintenance of Black Ditch, which is bridged by the Northern Bypass. They have been involved in technical review of the flood modelling undertaken to date
- **Affected landowners (8 no)** – Broadly supportive of the scheme and have been consulted directly
- **Lyminster and Crossbush Parish Council –** Broadly supportive of the scheme, but have some concern about lack of relief to some residential properties on A284 to the north of the bypass tie-in to the existing road and impact on congestion at the A284/A27 Crossbush junction.
- **Littlehampton Town Council –** Supporter of the scheme
- **Joint Downland Area Committee -** covers The Six Villages, Clymping, Findon, Clapham, Patching and the Arundel Area and consists of 4 County Councillors, 6 District Councillors and 20 Town or Parish Council representatives. The committee is regularly provided with updates on the scheme.
- **English Heritage –** Initial consultation has been undertaken as part of the scoping exercise for the EIA to confirm and agree the scope of the archaeological and historic environment assessment. This consultation informed the identification of sensitive receptors (listed buildings and archaeological potential of the site) and assessment of potential effects.
- **Natural England –** Initial consultation has been undertaken as part of the scoping exercise for the EIA to confirm and agree the scope for the landscape and ecological assessments. This consultation has informed the identification of sensitive receptors (protected species and landscape designations) and assessment of potential environmental effects.

3.12.2 The stakeholders are shown in figure 3.4.

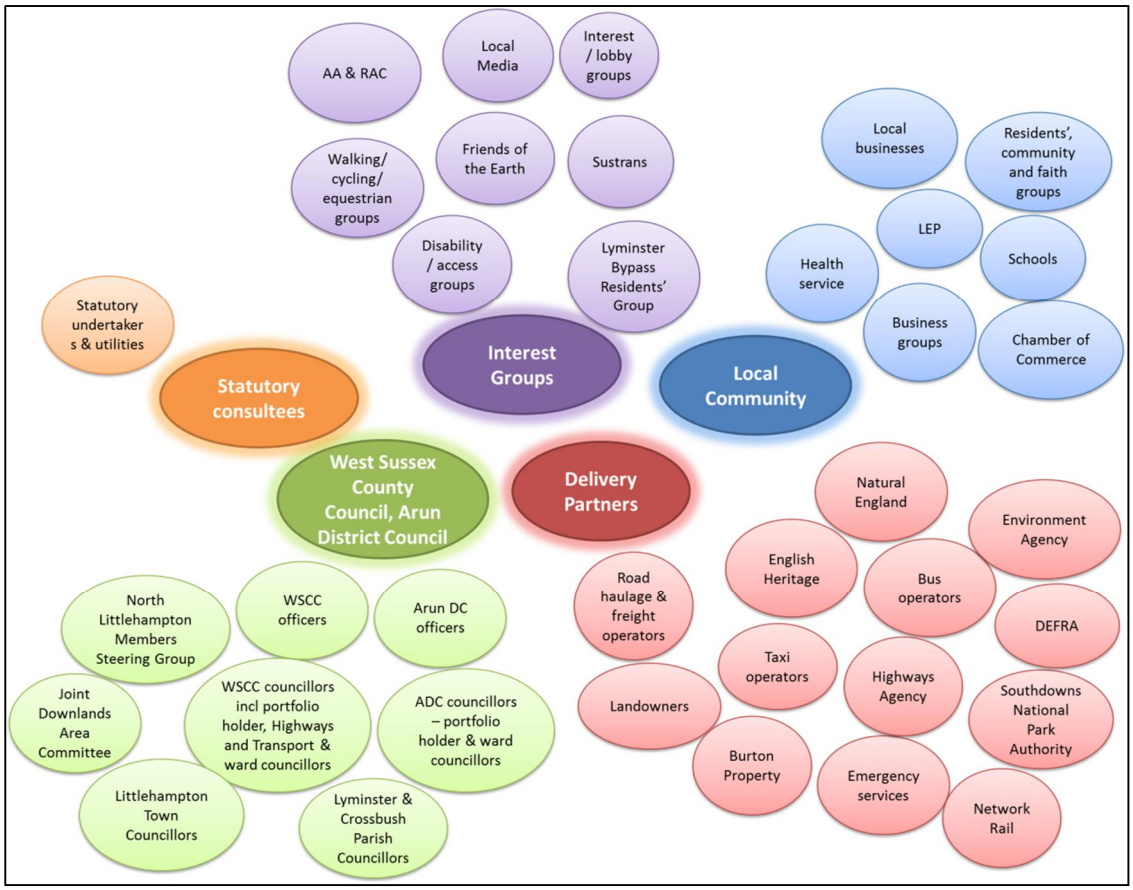

Figure 3.4: Stakeholder map

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

3.13 Options

3.13.1 To determine the range of options available, a Lyminster Bypass Feasibility Study was commissioned by WSCC and concluded in March 2012. A number of factors were considered in developing the proposed bypass but there is just one appropriate route because of the proximity of the tie-in points to the existing A284 at its northern end and the southern bypass at its southern end. However, there are two options for tying the new road into the existing A284 north of Lyminster village.

3.13.2 The operation of the two access arrangements is very similar, and both fulfil the scheme objectives of providing a shorter less congested route between the A27 and Littlehampton. Due to the local preference for the northern access, this is the only option taken forward for more detailed assessment.

3.13.3 The two junction options are shown in figure 3.5 and figure 3.6.

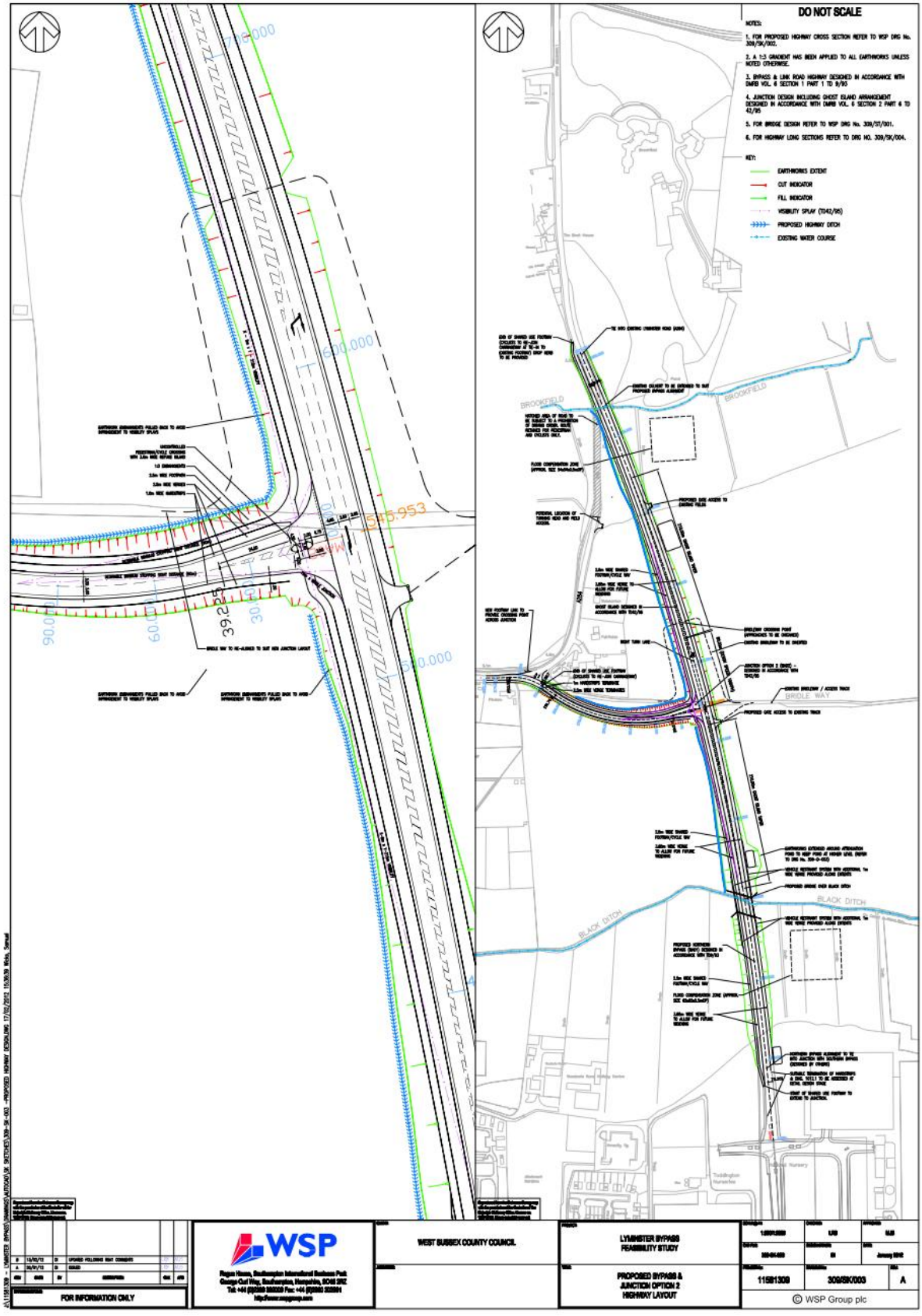

Figure 3.5: Lyminster access – southern junction

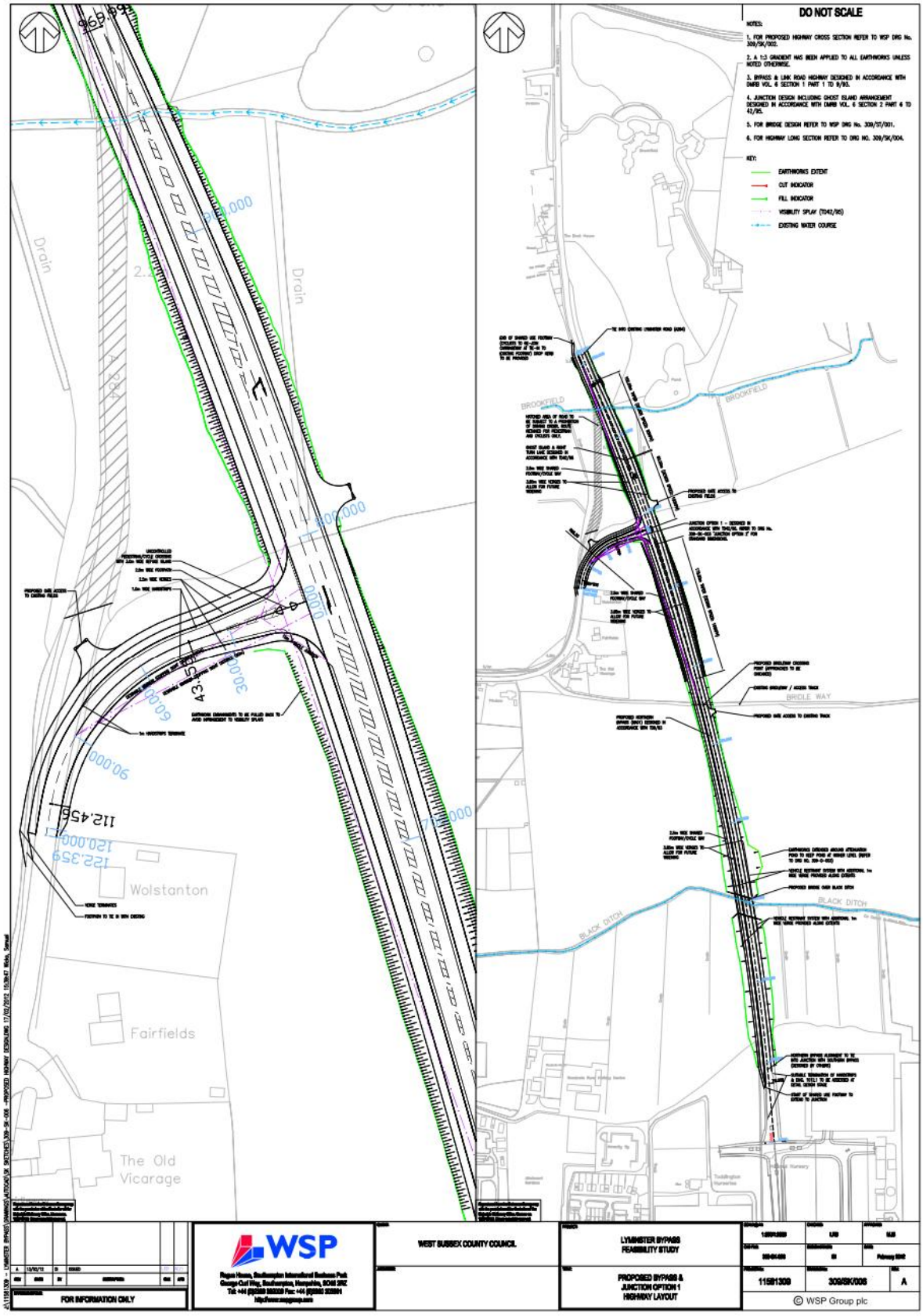

Figure 3.6: Lyminster access- northern junction

3.13.4 Initial testing of the impact of completing the Lyminster bypass identified that the designs for the southern bypass junctions, outside the scope of this Transport Business Case, were inadequate to accommodate forecast traffic flows with the Wick level crossing closed. This information has been passed to the developer along with recommendations for layouts that will accommodate forecast traffic. The revised preliminary designs for these junctions have now been agreed between WSCC and the developer, with amendment to the southern bypass planning consent, detailed design and audits to follow, prior to implementation of the southern bypass. Any costs associated with these southern bypass junctions are outside the scope of this scheme.

3.13.5 The following options have been assessed:

- **Do Minimum:** Committed schemes are progressed, but northern section of Lyminster Bypass is not completed
- **Do Something Option 1:** Completed Lyminster Bypass but assumed developer will improve junctions on southern bypass over and above those consented for the North Littlehampton SDL. Wick level crossing is assumed to be closed to vehicular traffic by Network Rail. This option is taken forward as the basis for the business case.
- **Do Something Option 2:** Completed Lyminster Bypass with junctions on southern bypass consistent with consented designs. Wick level crossing to remain open to vehicular traffic

3.13.6 Primary risks associated with both Do Something options are as follows:

- Funding not available for construction
- Developers are unable to proceed with construction of southern bypass within the LEP funding window
- Objections to the scheme's planning application
- Scheme's planning permission expires due to funding delays
- Adverse changes in Government policy
- Objections to CPO, leading to Public Inquiry
- Programming problems with statutory undertakers
- Archaeology and other ground conditions adversely impacting design
- Protests

3.13.7 This Transport Business Case is based on Do Something Option 1. However, since completion of the assessment, Network Rail has indicated that there are no immediate plans to close Wick level crossing, so summary results for Do Something Option 2 have been included in the Economic Case to demonstrate the robustness of the scheme.

4 Economic case

4.1 Introduction

4.1.1 The economic assessment is undertaken to ensure that all the options are assessed and to fulfil 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 WebTAG and the Design Manual for Roads and Bridges (DMRB). The East Arun Traffic Model (EATM) has been built to an observed base year of 2013, with forecasts built for the scheme opening year of 2017 and scheme design year of 2032. Development of the EATM is documented in the Local Model Validation Report and the Traffic Forecasting Report.

4.1.3 Traffic modelling was completed based on the best available information. Since completion of the traffic modelling work, additional information has arisen which will require the traffic models to be updated prior to completion of the Full Transport Business Case. These elements are not expected to have a significant impact on the reported benefits, but include:

- TRO to reduce the speed limit to 40mph on the section of the A284 between Crossbush and Lyminster village
- North Littlehampton developers have slightly amended junction designs for the southern bypass section of the route
- Potential improvements at Crossbush following the 2014 Autumn Statement
- Confirmation from Network Rail that there are no immediate plans to close the level crossing at Wick

4.1.4 A non-statutory Environmental Statement has also been prepared that assesses the environmental impacts of the scheme in accordance provided in DMRB Volume 11.

4.1.5 Information is presented below on the following:

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

4.2 Options appraised

4.2.1 In developing the economic case, the following two options have been tested against a Do Minimum scenario:

- Do Something Option 1 (improved southern bypass junctions and Wick level crossing closed) - ***preferred option***
- Do Something Option 2 (consented southern bypass junctions and Wick level crossing open)

4.2.2 The business case has been developed on the basis that the Wick level crossing will be closed. Since the completion of this assessment work, Network Rail has indicated that there are no immediate plans to close the crossing. The results presented under Option 2 demonstrate that the scheme is robust irrespective of the status of the level crossing.

4.2.3 Both options assume that the northern option to connect to the village of Lyminster is adopted. These are described in more detail in section 3.13.

4.3 Assumptions

4.3.1 The economic case has been compiled in accordance with the guidance set out in WebTAG. However, there are some assumptions that have been made in relation to some specific areas of the assessment, and these are discussed below. Full results are documented in the Economic Assessment Report (EAR).

User benefits

4.3.2 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 WebTAG Unit A1 (May 2014). The full economic assessment methodology adopted including choice of parameters, definition of inputs, discounting and reporting is compliant with WebTAG Unit A1.

4.3.3 TUBA v1.9.4 was used which is the current version and is consistent with parameters published in WebTAG Unit A1 (May 2014).

4.3.4 Lyminster Bypass, like most road projects, is considered to be 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, from the assumed scheme opening in 2017 to 2076.

4.3.5 Annualisation factors for the three modelled time periods 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 4.1.

Table 4.1: Annualisation factors

Period	Peak hour to peak period factor	Number per year	Annualisation factor
AM (07:00-10:00)	2.329	253	589
IP (10:00-16:00)	6.075	253	1537
PM (16:00-19:00)	2.454	253	621
Off-peak (19:00-07:00 weekdays)	2.70	253	683
Weekend (Sat 07:00-Mon 07:00)	25.60	56	1444

4.3.6 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.

4.3.7 User classes have been defined as shown in table 4.2 so that the definitions used in model development have been applied to the TUBA assessment.

Table 4.2: 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

4.3.8 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 4.3

Table 4.3: 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

4.3.9 The derivation of the PCU factors is set out in section 2.7 of Deliverable D7 - Forecasting Report (August 2014).

4.3.10 Model skims were extracted for 2017 and 2032. The TUBA default assumption on growth has been applied, with no additional growth assumed beyond the final modelled year of 2032. 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.

4.3.11 The model forecasts have been completed in accordance with WebTAG principles, as set out in the Lyminster Bypass Forecasting Report. WebTAG 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 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.

4.3.12 Although sensitivity testing around alternative growth profiles has not been carried out, the analysis undertaken on the high and low growth scenarios provides a sufficiently robust evidence base to assess the scheme benefits under alternative growth scenarios.

Wider impacts

4.3.13 The wider economic impacts of the proposed scheme have been assessed in accordance with guidance set out in WebTAG Unit A2-1. 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

4.3.14 WebTAG 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 other two elements may not be relevant. Critical to this determination is whether the scheme is in close proximity to an economic centre or large employment centre. WebTAG defines such locations as Functional Urban Regions (FUR), and the plan included in Appendix A of the guidance indicates that the Lyminster Bypass does not lie within a FUR. Consequently, only the output change in imperfectly competitive markets and change in tax revenues from changes in the labour supply have been assessed.

Accident assessment

4.3.15 Assessment of the costs and benefits associated with accidents has been undertaken using the DfT's CoBALT (**Co**st – **B**enefit-**A**nalysis **L**ight **T**ouch) software. Input parameters are the latest available, published June 2014.

4.3.16 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 (2017)
- Design year with Scheme (2032)

4.3.17 Accident data for a period of five years from 2009 to 2013 has been obtained from WSCC in order to provide accident rates for existing links in CoBALT. The accidents have been geocoded to correspond to the selected highway network. The observed accidents are shown by year in figure 4.1 and by severity in figure 4.2.

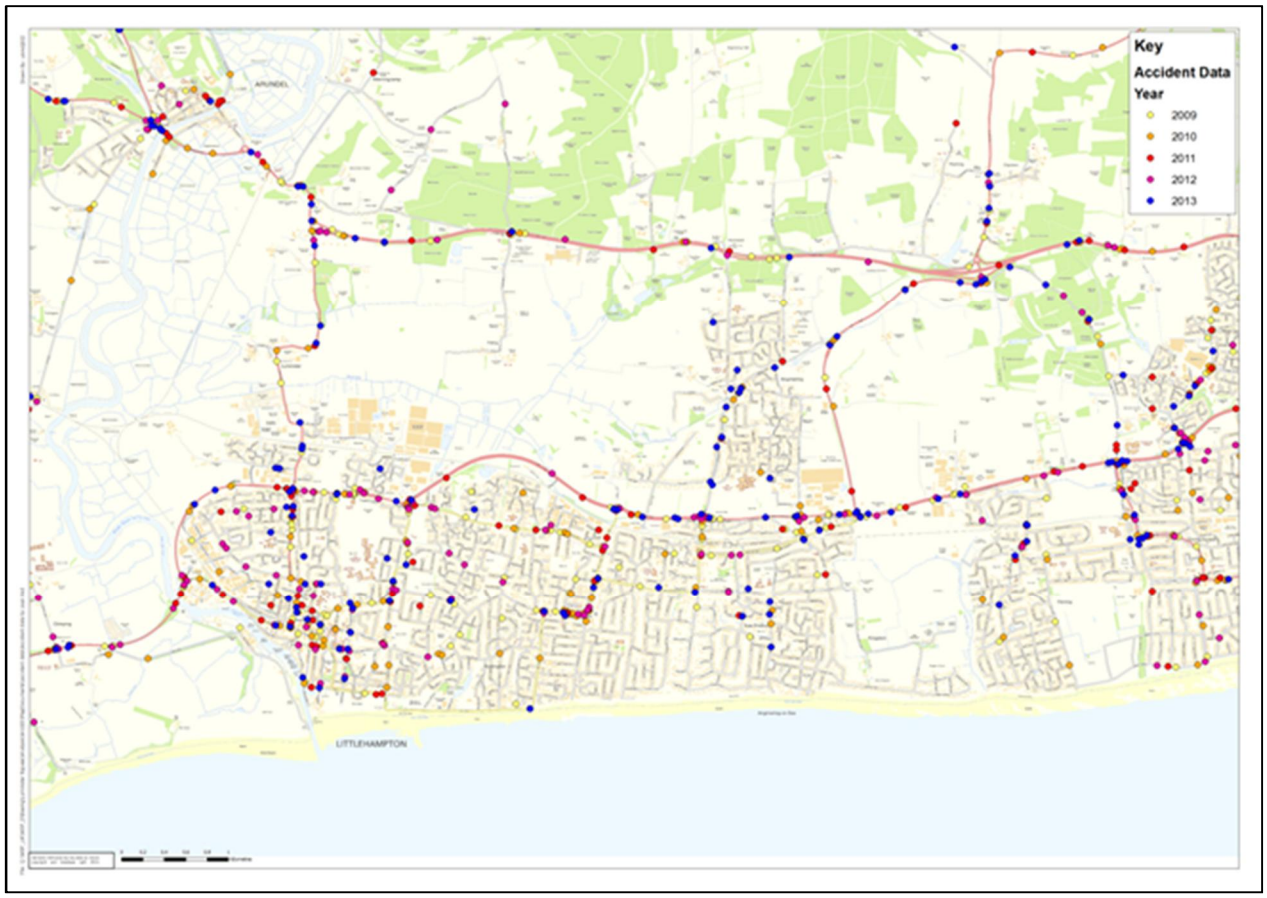

Figure 4.1: Observed accidents 2009-2013

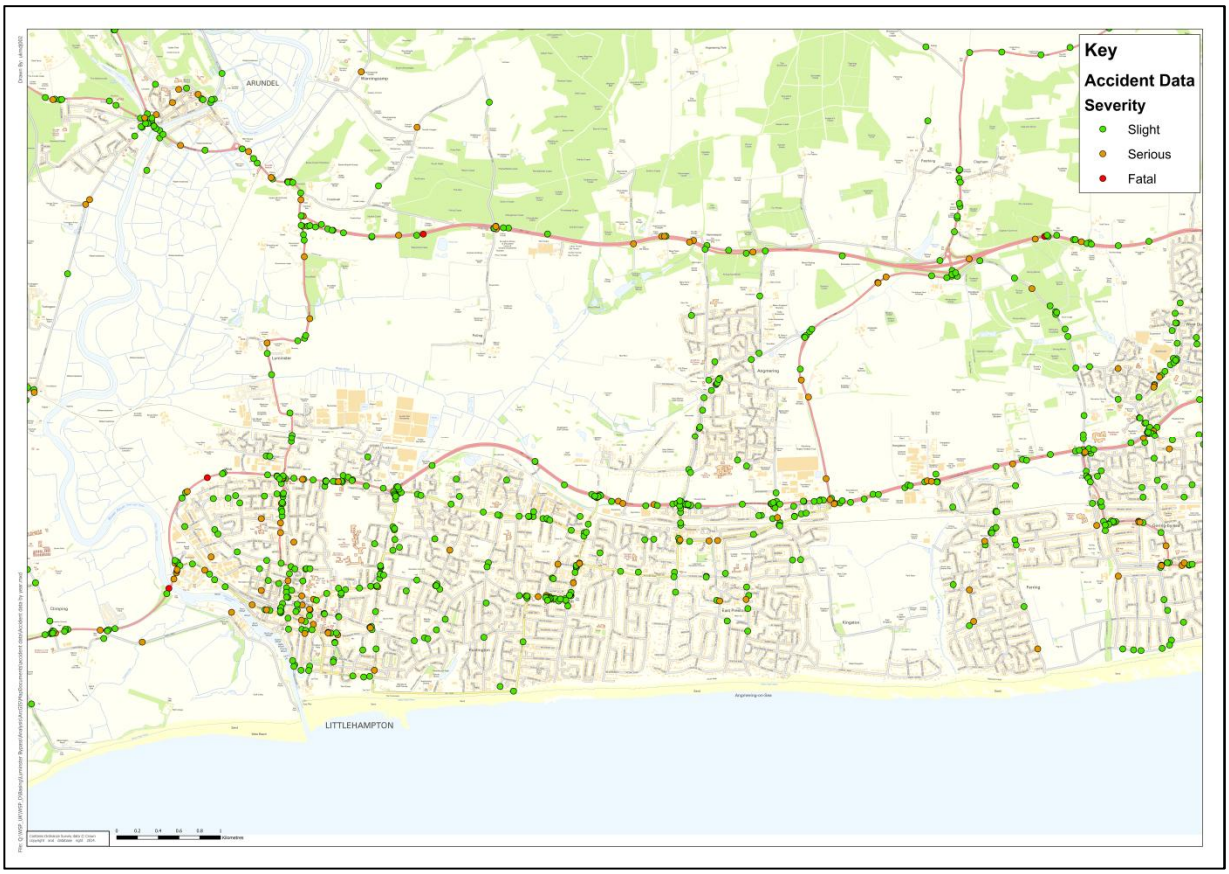

Figure 4.2: Observed accidents by severity

4.3.18 CoBALT provides three options for assessment:

- Link only
- Junction only
- Link and junction combined

4.3.19 The analysis for the Lyminster bypass 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. WebTAG Unit A4-1 2.3.9 indicates that this is acceptable when local data is hard to distinguish between links and junctions.

4.3.20 Full analysis of the accident assessment is provided in the Economic Assessment Report.

Delays during construction

4.3.21 WebTAG Unit A1-3 Section 10 recommends that the impact of delays during construction should be assessed through the use of the traffic model and monetised using TUBA.

4.3.22 The nature of the scheme is such that it will largely be constructed off-line, with minimal impact on existing road users. The proposed bypass will be constructed from the southern tie-in working northwards, so the only impact on existing traffic is at the northern end tie-in with the existing A284. The proposed link to the A284 must be constructed prior to the northern tie-in so that a connection can be provided.

4.3.23 Overnight closures will be required to allow the construction levels between the existing road and the proposed bypass to be tied together. Due to the restrictive width of the existing A284 it may not be possible or practical to provide the surfacing to the required standards during overnight closures, so weekend closures may be required to complete the final surfacing.

4.3.24 The following have therefore been assumed as periods during construction that are likely to have an impact on existing traffic. Both involve closures of the A284 between Crossbush and the new link.

- 15 overnight closures (22:00 – 06:00)
- 2 weekend closures (22:00 Friday – 06:00 Monday)

4.3.25 The 2017 Do Something interpeak model has been modified to include this closure. TUBA has been run for a period of 1 year, from 2016 to 2017 and because they cover different time periods, different factors have been derived for the full assessment. The annualisation parameters are shown in table 4.4.

Table 4.4: Annualisation factors

Period	Peak hour to peak period factor	Number	Annualisation factor
Off-peak	0.80	15	12
Weekend	26.17	2	52

4.3.26 The Do Minimum scenario is unchanged. All other assumptions are the same as the TUBA appraisal, as set out above. The results of the assessment are documented in the Economic Assessment Report and summarised in the remainder of the economic case.

Distributional Impact Appraisal

4.3.27 Distributional impact appraisal considers whether the benefits and disbenefits of a scheme have a disproportionate impact on a particular social group that is different to the impact on the population as a whole.

4.3.28 Following WebTAG guidance, a screening process has been undertaken to identify those elements that are likely to require assessment. Since the project is a highway-only scheme with a short length of new carriageway, the elements for which distributional impact appraisal have been undertaken are:

- Business users
- Commuting and other users

4.3.29 The results of the analysis are summarised in the AST in Appendix A, with supporting worksheets in Appendix B.

Air Quality Assessment

4.3.30 For the air quality assessment, it was considered inappropriate to follow the WebTAG guidance, which is in line with the DMRB Screening Tool. This is because the DMRB screening tool has a number of limiting factors, which are:

- It uses out of date emission factors
- It does not take meteorological data into consideration
- It is not considered to give a good representation of the overall impact

4.3.31 To address these issues, an assessment was undertaken using the Advanced Dispersion Modelling System (ADMS) as documented in the Environmental Statement. Consequently, it is not possible to fully complete the AST in full compliance with WebTAG guidelines.

Noise Assessment

4.3.32 Whilst the structure and content of the DMRB has been used as a guide during the preparation of the noise report, a 'modified' Simple Assessment has been undertaken reflecting the scale of the proposed bypass. The scope of this 'modified' Simple Assessment has been discussed and agreed with Arun District Council to determine the effect of the construction and operation of the Proposed Bypass in terms of noise at existing and future sensitive receptors. Therefore, this presents the outcome of the 'modified' DMRB Simple Assessment and not a detailed WebTag assessment.

4.3.33 The qualitative assessment of the construction activities has highlighted that moderate adverse noise effects may arise during the worst case conditions when construction work occurs in close proximity to existing sensitive receptors. However, it should be possible, through the adoption of the Construction Environmental Maintenance Plan (CEMP) (and the application of the measures outlined therein), to keep noise levels to a minimum, such that during the majority of the work the effects would be negligible, but with some chance of moderate adverse effects at times.

4.4 Results

4.4.1 Full results are provided in the Economic Assessment Report, and summarised below.

User benefits

4.4.2 Results from the TUBA assessment are presented for both Option 1 and Option 2. For each option, results are presented for the Core Scenario, as well as low and high growth scenarios as discussed in the Deliverable D7 - Forecasting Report (August 2014).

4.4.3 The Transport Economic Efficiency (TEE) benefits for Option 1 are shown in table 4.5. All values are in thousands of pounds (£000s), in 2010 prices, discounted to 2010.

Table 4.5: Option 1 Transport Economic Efficiency benefits (£000s, 2010 prices discounted to 2010)

Benefit		Low Growth	Core Scenario	High Growth
Consumer - commuting user benefits	Travel time	£7,902	£12,659	£10,380
	Vehicle operating costs	£1,007	£1,231	£863
	Subtotal	£8,909	£13,890	£11,243
Consumer - other user benefits	Travel time	£42,815	£52,123	£50,917
	Vehicle operating costs	£4,708	£4,095	£4,685
	Subtotal	£47,523	£56,218	£55,601
Business benefits	Travel time	£20,370	£26,608	£28,016
	Vehicle operating costs	£1,750	£1,844	£1,595
	Subtotal	£21,120	£28,452	£29,610
Greenhouse gases		£898	£941	£901
Indirect tax revenues		-£2,409	-£2,522	-£2,467
Present Value of Benefits (PVB)		**£77,042**	**£96,979**	**£94,888**

4.4.4 The Core Scenario generates the highest benefits of £96.98m. As might be expected, the low growth scenario generates lower benefits of £77.04m, but the high growth scenario also generates slightly lower benefits than the Core Scenario of £94.89m. This is because the high growth scenario generates high user costs in both the Do Minimum and Do Something scenarios, but additional delay in the Do Something scenario is such that the difference between the two is lower than it is in the less congested Core Scenario.

4.4.5 User benefits for Option 2 are given in table 4.6.

Table 4.6: Option 2 Transport Economic Efficiency benefits (£000s, 2010 prices discounted to 2010)

Benefit		Low Growth	Core Scenario	High Growth
Consumer - commuting user benefits	Travel time	£10,845	£5,397	£14,458
	Vehicle operating costs	£1,598	£1,114	£1,412
	Subtotal	£12,443	£6,512	£15,870
Consumer - other user benefits	Travel time	£46,723	£30,037	£61,123
	Vehicle operating costs	£5,853	£4,648	£6,249
	Subtotal	£52,576	£34,685	£67,373
Business benefits	Travel time	£30,014	£18,697	£43,509
	Vehicle operating costs	£4,105	£2,996	£4,495
	Subtotal	£34,119	£21,692	£48,004
Greenhouse gases		£1,329	£950	£1,467
Indirect tax revenues		-£3,526	-£2,607	-£3,903
Present Value of Benefits (PVB)		**£96,941**	**£61,232**	**£128,811**

4.4.6 The Core Scenario benefits for Option 2 are substantially lower than those for Option 1 at £61.23m. The proposed junction designs on the southern bypass do not provide as much capacity as the improvements included in Option 1, causing some trips to seek alternative routes rather than experience delay on the southern bypass. This includes the existing A284, which is a viable alternative in Option 2 as Wick level crossing is not closed. Local residents do not, therefore, experience the same level of traffic reduction in the village as they do in Option 1.

4.4.7 The different assumptions underpinning the low and high growth scenarios have a fundamental impact in Option 2. With low growth, the junctions on the southern bypass do not operate at capacity, so substantial benefits ae achieved. In the high growth scenario, improvements at Crossbush and along the A259 corridor encourage a switch in assignment onto the bypass, generating additional benefits.

Wider impacts

4.4.8 The results of the analysis described above are summarised in table 4.7. The appraisal period is 2017-2076. All monetary values are in thousands of pounds, in 2010 prices, discounted to 2010.

Table 4.7: Wider economic impacts results (£000s, 2010 prices discounted to 2010)

Impact	2017	2032	Full Period	Net Present Value
WI2 – Output in Imperfectly Competitive Markets	£39.0	£125.3	£10,370.5	£2,788.9
WI3 – Tax revenue from changes in labour supply	-£16.3	£96.2	£7,587.4	£1,890.2
TOTAL	£22.7	£221.5	£17,957.9	**£4,679.1**

4.4.9 The wider impacts benefits represent 4.82% of the total user benefits calculated by TUBA. This is broadly consistent with advice presented in WebTAG, which estimates total wider impacts benefits to be around 10-30% of TUBA benefits when all four wider impacts measures are assessed.

Accident assessment

4.4.10 Costs per casualty and per accident are given in tables 4.8 and 4.9, and are taken from the WebTAG data book (May 2014). All monetary values are in pounds, in 2010 prices, discounted to 2010.

Table 4.8: Costs per casualty (2010 prices)

Severity	Cost
Fatal	£1,632,892
Serious	£183,491
Slight	£14,145

Table 4.9: Costs per accident (2010 prices)

Severity	Insurance Admin	Damage to property			Police cost		
		Urban	Rural	M'way	Urban	Rural	M'way
Fatal	£300	£7,808	£13,242	£16,845	£16,970	£17,426	£17,629
Serious	£186	£4,185	£6,037	£14,373	£1,874	£2,340	£2,471
Slight	£113	£2,468	£4,002	£7,272	£485	£664	£554
Damage only	£54	£1,765	£2,639	£2,536	£36	£20	£17

4.4.11 The results of the accident analysis are shown in table 4.10. The appraisal period is 2017-2076.

Table 4.10: Accident analysis results (2010 prices, discounted to 2010)

Benefit		Value
Total accidents saved by scheme		85
Casualties saved by scheme	Fatal	1
	Serious	10
	Slight	108
	TOTAL	119
Total value of accident savings		**£4,721,700**

4.4.12 The scheme generates just under £5m worth of safety benefits arising from a reduction in accidents and casualties. Therefore there are significant safety benefits associated with the scheme.

Delays during construction

4.4.13 Results from the TUBA assessment are presented in table 4.11. All values are in thousands of pounds, in 2010 prices, discounted to 2010.

Table 4.11: Costs of delays during construction (£000s, 2010 prices discounted to 2010)

Benefit		Total
Consumer - commuting user benefits	Travel time	-£9
	Vehicle operating costs	-£4
	Subtotal	-£13
Consumer - other user benefits	Travel time	-£116
	Vehicle operating costs	-£38
	Subtotal	-£154
Business benefits	Travel time	-£57
	Vehicle operating costs	-£17
	Subtotal	-£74
Greenhouse gases		-£4
Indirect tax revenues		£17
Present Value of Benefits (PVB)		**-£228**

4.4.14 The overall cost of delays during construction is therefore £228,000.

Distributional Impact Assessment

4.4.15 Detailed results of the distributional impact of user benefits are provided in Appendix B. The results are summarised in table 4.12.

Table 4.12: Distributional impact assessment

	Deprivation	Share of Population	Share of commuting and other user benefits	Share of business user benefits
Most deprived	0 – 20%	7%	6%	5%
↑	20 – 40%	21%	28%	25%
	40 – 60%	28%	38%	37%
↓	60 – 80%	32%	20%	25%
Least deprived	80 – 100%	11%	7%	8%

4.4.16 User benefits are split largely in line with population segmentation, with a slight bias in benefits for those in the second and third most deprived quintiles of the population, at the expense of the least deprived households.

Air quality assessment

4.4.17 The Air Quality Assessment has been undertaken following up to date guidance (IAQM) and methodologies (ADMS Roads) to provide a robust assessment of the potential impacts upon air quality. 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 NO_2 and negligible effects for PM_{10}.

Noise assessment

4.4.18 An assessment has been undertaken to determine the effect of the construction and operation of the Proposed Bypass in terms of noise at existing and future sensitive receptors. The potential effects of changes in road traffic noise at existing dwellings as a result of the operation of the proposed bypass have been considered in line with DMRB (HD 213/11) and the potential effects of noise associated with the construction phase at existing dwellings have been considered with reference to BS 5228.

4.4.19 It has been predicted that a number of sensitive receptors will experience a change in noise level of moderate to major significance. However, the external amenity space for all dwellings that are anticipated to have a significant increase in noise level as a result of the Proposed Bypass, are predicted to fall within or below the upper external noise criterion as defined in the WHO Guidelines.

4.5 Sensitivity and risk profile

4.5.1 The EATM Traffic Forecasting Report sets out the construction of Core Scenario forecasts that inform the core assessment of this business case, and are included on the Appraisal Summary Table. The Traffic Forecasting Report also sets out the derivation of low and high growth scenarios that correspond to optimistic and pessimistic rates of traffic growth, development and infrastructure improvement. These three scenarios allow the benefits of the scheme to be tested under different

forecast conditions. The net Present Value of Benefits for the preferred scheme for each growth scenario is shown in table 4.13. All values are given in 2010 prices, discounted to 2010.

Table 4.13: Present Value of Benefits (PVB) for alternative growth scenarios

Growth Scenario	Option 1 Benefit	Option 2 Benefit
Low	£77,042,000	£96,941,000
Core	£96,979,000	£61,232,000
High	£94,888,000	£128,811,000

4.5.2 Benefits quoted here are as output from TUBA, so do not include adjustments to account for accidents or delays during construction. Values quoted in the Economic Efficiency of the Transport System (TEE) table and Analysis of Monetised Costs and Benefits (AMCB) table below for the Core Scenario include an allowance for accidents and delays during construction.

4.5.3 Scheme costs are presented in section 5.2, and include allowances for risk and optimism bias. Adjustments to these elements have been considered when undertaking sensitivity testing of scheme costs.

4.5.4 Risks that have the potential to affect the scheme cost are included in the project risk register, which also includes potential mitigation measures. All risks have been assessed as being red, amber or green according to their likelihood and potential severity, both with and without mitigation. Risks are classified according to the risk map shown as table 414.

Table 4.14: Risk map

		LIKELIHOOD				
		None	Low	Medium	High	Certain
IMPACT	Very High					
	High					
	Medium					
	Low					
	None					

4.5.5 The project risk register is included in Appendix C.

4.5.6 The sum of mitigated costs for each risk category is presented in table 4.15. Costs are in undiscounted 2014 prices.

Table 4.15: Mitigated costs by risk category

Risk category	2014 prices, undiscounted	2010 prices, discounted to 2010
Red	£137,250	£102,029
Amber	£178,667	£132,817
Green	£190,175	£141,372
TOTAL	**£506,092**	**£376,219**

4.5.7 A further source of cost uncertainty is the degree of optimism bias applied to the scheme. At present, a value of 15% has been assumed, as this stage of the project is approaching Conditional Approval. At Full Approval, an optimism bias value of 3% applies, so this has been assumed for the low cost scenario. For comparison purposes, a higher optimism bias of 4% has been assumed for the high cost scenario, equivalent to the Programme Entry stage.

4.5.8 Low, central and high cost estimates have been calculated taking into account variations in risk and optimism bias. These are shown in table 4.16, for both undiscounted whole scheme costs in the present year price base, and the Present Value of Costs, which are 2010 costs discounted to 2010, with S106 funding contributions taken into account.

Table 4.16: Cost sensitivity range

Category	Risk	Optimism Bias	2014 prices, undiscounted	Present Value of Costs
Low	Red only	3%	£7,391,510	£3,150,273
Core	All	15%	£8,676,825	£4,105,612
High	All	44%	£10,864,893	£5,731,844

4.5.9 The core cost estimate includes all elements of risk, to ensure consistency with the detailed assessment presented in section 5.2.

4.5.10 Taking the alternative benefits and costs into account, it is possible to produce a matrix of Benefit to Cost Ratios (BCR), as shown in table 4.17.

Table 4.17: Sensitivity testing of BCR

		COST		
		Low	**Core**	**High**
Option 1 Benefit	**Low**	24.456	30.784	30.121
	Core	18.765	23.621	23.112
	High	13.441	16.919	16.555
Option 2 Benefit	**Low**	30.772	19.437	40.889
	Core	23.612	14.914	31.374
	High	16.913	10.683	22.473

4.5.11 The BCR for the scheme under Option 1 ranges from 13.441 to 30.784 and from 10.683 to 40.889 under Option 2. This means that the scheme generates substantial benefits in relation to its cost, even in a low growth scenario with high costs.

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 WebTAG:

- Economy

- Environmental
- Social
- Safety
- Public Accounts

4.6.2 The AST for the Lyminster Bypass scheme 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 as follows:

Table 4.18: 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, included in Appendix B and repeated in tables 4.19 to 4.21. In compiling the value for money statement, the impacts of accidents and delays during construction were included. All monetary values are in 2010 prices, discount to 2010.

Table 4.19: Economic Efficiency of the Transport System (TEE)

User	Item	Value
Non-business: Commuting	Travel time	£12,659,000
	Vehicles operating costs	£1,231,000
	Delays during construction	-£13,000
	Net Commuting	*£13,877,000*
Non-business: Other	Travel time	£52,123,000
	Vehicles operating costs	£4,095,000
	Delays during construction	-£154,000
	Net Other	*£56,064,000*
Business	Travel time	£26,608,000
	Vehicles operating costs	£1,844,000
	Delays during construction	-£74,000
	Net Business	*£28,378,000*
TOTAL		**£98,319,000**

Table 4.20: Public Accounts (PA)

User	Item	Value
Local government funding	Investment costs	£6,448,849
	Developer and other contributions	-£2,343,237
	Net impact	£4,105,612
Central government funding: non-transport	Indirect tax revenues	£2,505,000
Broad transport budget		£4,105,612
Wider public finances		£2,505,000

Table 4.21: Analysis of Monetised Costs and Benefits (AMCB)

Item	Value
Greenhouse gasses	£937,000
Accidents	£4,721,700
Economic Efficiency: Consumer Users (Commuting)	£13,877,000
Economic Efficiency: Consumer Users (Other)	£56,064,000
Economic Efficiency: Business Users and Providers	£28,378,000
Wider Public Finances (Indirect Tax Revenues)	-£2,505,000
Present Value of Benefits (PVB)	£101,472,700
Present Value of Costs (PVC)	£4,105,612
OVERALL IMPACTS	
Net Present Value (NPV)	£97,367,088
Initial Benefit to Cost Ratio (BCR)	24.716

4.7.4 This information shows that the Initial BCR of the scheme, based on standard monetised values, is **24.716**. This represents the benefits for the core elements of the scheme, and is considered **Very High** value for money according to DfT guidance.

4.7.5 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 4.22.

Table 4.22: Adjusted BCR Calculation

Impact		Value
Initial PVB		£101,472,700
Economy	Wider impacts	£4,679,056
Adjusted PVB		£106,151,756
Adjusted NPV		£102,046,144
Adjusted BCR		25.855

4.7.6 The Adjusted BCR is increased to **25.855**, representing the wider benefits of the scheme. This is considered to be **Very High** value for money according to DfT guidance.

4.7.7 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 4.23.

Table 4.23: Value for money statement

	Assessment	Detail
Initial BCR	24.716	Calculated using WebTAG guidance
Adjusted BCR	25.855	Includes wider impacts
Qualitative assessment	Largely beneficial	Key improvements in journey quality and community severance
Key risks, sensitivities	Initial BCR range 13.441 to 30.784	Variation in cost and benefit uncertainty assessed according to WebTAG guidance
Value for money category	Very High	Initial and Adjusted BCRs are in Very High category, which is supported by qualitative assessment

4.7.8 The information presented in the economic case indicates that the proposed Lyminster Bypass is considered **Very High** value for money.

5 Financial case

5.1 Introduction

5.1.1 To determine the affordability of the Lyminster Bypass, an initial feasibility study was commissioned, with the final report published in March 2012. This included a cost estimate for the scheme, allowing WSCC to review potential funding sources and commission work packages to complete the outline design and Transport Business Case. The information presented in this section demonstrates that the scheme is affordable.

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 WebTAG Unit A1-2. The cost pro-forma is included in Appendix D and summarised in table 5.1. Costs are provided in 2014 Quarter 3 prices.

Table 5.1: Summary scheme costs (2014 Q3 prices)

Financial year	Design	Supervision	Land	Construction	Total
2015-16	£130,000	£50,000	£450,000	£0	*£630,000*
2016-17	£40,000	£100,000	£140,000	£2,754,528	*£3,034,528*
2017-18	£0	£100,000	£60,000	£2,754,528	*£2,914,528*
TOTAL	*£170,000*	*£250,000*	*£650,000*	*£5,509,056*	**£6,579,056**

5.2.2 These scheme costs are further adjusted to account for inflation, risk and optimism bias. Inflation relates to real inflation, over and above general price inflation in the economy as a whole. Forecasts of UK construction tender price inflation (CTPI) and changes in the retail prices index (RPI) have been obtained from the Gleeds Economic and Regional Inflation Report - Third Quarter 2014. Dividing CTPI figures by RPI figures generates real inflation figures, to be included as part of the scheme costs. These values are shown in table 5.2.

Table 5.2: Forecast inflation

Financial year	CTPI	RPI	Real Inflation	Compound Inflation
2014-15	6.5%	3.1%	3.3%	3.3%
2015-16	5.0%	3.5%	1.4%	4.8%
2016-17	5.0%	3.4%	1.5%	6.4%
2017-18	5.0%	3.4%	1.5%	8.1%

5.2.3 Risk values are taken from the project risk register, discussed in section 4.4. At this stage, risk values have been split across time periods on a pro rata basis, but this will be reviewed and allocated to the correct time period based on the nature of the risk following the risk workshop held prior to the completion of the Full Transport Business Case.

5.2.4 An optimism bias of 15% has been assumed in accordance with WebTAG guidance for a scheme at this stage of development.

5.2.5 Finally, the total cost is converted to a 2010 price base and then discounted to 2010 to ensure a valid comparison with the calculated benefits. The price base is adjusted using the HM Treasury GDP price deflator index, published as part of the WebTAG databook.

$$\frac{GDP_{2010}}{GDP_{2014}} = \frac{100.00}{108.16} = 92.5\%$$

5.2.6 Discounting is applied at 3.5% pa in accordance with HM Treasury Green Book. Taking account both the price deflator and the total discount rate, the final adjustments to the cost inputs are shown in table 5.3.

Table 5.3: Price base deflation and discounting

Financial year	Discount factor (3.5% pa)	Total factor incl. deflator
2015-16	84.2%	77.8%
2016-17	81.4%	75.2%
2017-18	78.6%	72.7%

5.2.7 The final adjusted scheme costs are provided in table 5.4.

Table 5.4: Adjusted cost profile by financial year

Financial year	Investment cost (2014 prices)	Including real cost inflation	Risk adjusted cost	Risk adjusted cost incl. Optimism Bias	Risk adjusted cost incl. OB deflated and discounted to 2010
2015-16	£630,000	£660,207	£708,670	£814,971	£634,415
2016-17	£3,034,528	£3,229,236	£3,462,666	£3,982,066	£2,995,020
2017-18	£2,914,528	£3,149,529	£3,373,728	£3,879,788	£2,819,414
TOTAL	**£6,579,056**	**£7,038,973**	**£7,545,065**	**£8,676,825**	**£6,448,849**

5.2.8 Costs associated with scheme maintenance and monitoring have not been included at this stage, but will be updated for inclusion in the Full Transport Business Case. These are not anticipated to be significant, and will be funded through WSCC's maintenance budget.

5.3 Budget / funding cover

5.3.1 As shown in table 5.4, the estimated scheme cost in current prices including risk and optimism bias is £8.68m. Potential funding sources have been reviewed, and the sources shown in table 5.5 have been identified to fund the scheme. Section 106 contributions amounting to £3.75m have been reserved for this scheme, of which £593,000 has been spent developing the scheme to date. There is therefore £3.16m remaining available from Section 106 contributions.

Table 5.5: Funding sources

Source	Total	Status
S106 Contributions	£3.16m	Funds are secured and allocated to this scheme
Coast to Capital LEP	£5.52m	The subject of this Transport Business Case
TOTAL	£8.68m	

5.3.2 Annual budget requirements have been reviewed against funding streams to ensure that the scheme is affordable in each year of its construction. The annual budget cover is shown in table 5.6.

Table 5.6: Annual budget cover (2014 Q3 prices incl. real inflation, risk and optimism bias)

FY	Cost	S106	LEP
2015-16	£814,971	£164,971	£650,000
2016-17	£3,982,066	£1,593,475	£2,388,591
2017-18	£3,879,788	£1,398,554	£2,481,234
TOTAL	**£8,676,825**	**£3,157,000**	**£5,519,825**

5.3.3 Finally, the contributions have been converted into 2010 prices, discounted to 2010, for input into the Economic Case.

Table 5.7: Annual budget cover (2010 prices, discounted to 2010)

FY	Cost	S106	LEP
2015-16	£634,415	£128,422	£505,993
2016-17	£2,995,020	£1,198,496	£1,796,524
2017-18	£2,819,414	£1,016,319	£1,803,095
TOTAL	**£6,448,849**	**£2,343,237**	**£4,105,612**

5.4 Accounting implications

5.4.1 This is not assessed as part of the Outline Transport Business Case

6 Commercial case

6.1 Introduction

6.1.1 The commercial case 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 case 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
- Contract management

6.2 Output based specification

6.2.1 West Sussex County Council is promoting the delivery of the Lyminster Bypass scheme, 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 bypass of the A284 between Lyminster village and the A259 Worthing Rd to the south, bridging the railway line at Toddington and allowing for the potential closure of the Wick level crossing. The southern section (between A259 and Toddington Nurseries) is being delivered by private developers as part of the North Littlehampton Strategic Development , as shown in figure 2.1 above.

6.2.2 The Proposed Bypass is approximately 1022m in length and is shown on figure 3.6 above and it covers an approximate site area of 6.7ha. At its northern extent, the Proposed Bypass will incorporate a junction to serve the existing A284 Lyminster Road. The junction will branch off the Proposed Bypass, north of the residential properties on the eastern side of the A284.

6.2.3 The Proposed Bypass will be 7.3m in width. It will have 1m hardstrips either side of the carriageway, a 2.5m wide verge on the east side and a 3.5m wide shared use footway / cycleway on the west side. The Proposed Bypass is to be fenced along its route (post and rail) with a speed limit of 40mph. A bridge with a 23m clear span is to be provided over Black Ditch (shown on figure 3.6 above), with abutments 8m from the top of the Ditch banks to provide a wildlife corridor. The route will be lit in accordance with a lighting strategy which will be developed during the detailed design stage; however, lighting may only be provided at junction locations. The existing Brookfield Stream culvert will be replaced with a wider culvert to allow for the Proposed Bypass design.

6.2.4 An Indicative Drainage Strategy for the Proposed Bypass has been prepared to ensure that any new drainage features will avoid adverse effects on Brookfield Stream and culvert in the north of the Site and Black Ditch in the south. It will also ensure that there is no increased risk of flooding in the local

area. It includes a series of sustainable drainage systems (SuDS) features and interconnecting drainage features will be utilised and will include: gullies or grass filter strips and filter trenches to collect water and provide the first line of defence against pollution; shallow detention basins; and further attenuation storage from oversized pipes beneath the highway. The finalised Drainage Strategy will be confirmed during the detailed design stage of the Proposed Bypass.

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 the northern section of the Lyminster bypass 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 £5.51m as compared to the current threshold for works (applying from January 2014) of £4,322,012. Therefore, the EU Regulations apply to the Lyminster Bypass scheme.

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.

Procurement Workshop

6.3.4 A procurement workhsop was held on the 29th April 2014 to address the following questions

- What are the contracting and procurement options available for the scheme?
- How will the contracting/procurement options secure the economic, social and environmental factors outlined in the economic case for the scheme?
- Is the contracting and procurement strategy being proposed robust?
- Is the risk transfer supported by incentives (positive or negative) that prompt the intended outcomes, e.g. will the contractor lose money if there are any cost overruns?
- Is there a developed market for the proposed procurement approach and financing arrangements?
- How confident are we that appropriate contractual/commercial arrangement can be defined to make the structure and risk transfer work in practice?
- Is the proposed risk allocation consistent with the cost estimate?
- How does the mechanism incentivise performance, efficiency and innovation?
- Does the contracting authority have or have access to appropriate resources to manage the preferred procurement and subsequent contract management?

6.3.5 The following details the output from the workshop along with added commentary where appropriate.

Consideration of Procurement Options

6.3.6 In order to make an informed choice of the procurement strategy to be used for the Lyminster Bypass scheme, consideration has been given to current best practice (e.g. Cabinet office “Government

Construction Strategy") and WSCC's resource capacity and capability. Other considerations driving the choice of procurement option are the importance WSCC places on cost certainty and the principles of shared risk, costs and rewards.

6.3.7 The following procurement options were evaluated at the procurement workshop against the project outcomes, budget and risks to determine which will be the most suitable:

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

6.3.8 A brief background to each of the options discussed is summarised as follows:

Traditional

6.3.9 A traditional contract, sometimes referred to as design- bid- build, is a contract between a client and a contractor for the construction of a fully designed project. The design process is separate from the construction process and full documentation (i.e. drawings, work schedules, bills of quantities) must be supplied by the client before contractors can be invited to tender for the works.

6.3.10 The contractor has no responsibility for any design, other than temporary works (although some 'traditional' contracts do provide for the contractor to design specific parts of the works). Also, the client typically retains the design consultants during the construction phase to prepare any additional design information that may be required, to review any designs that might be prepared by the contractor, and to inspect the works. Normally, one consultant will be appointed to administer the contract.

6.3.11 However, the preparatory work for large infrastructure projects often consumes an extraordinary amount of time, money and human resources. Under the traditional option, clients and consultants make design decisions with insufficient information and knowhow as to available technology, equipment and potential innovative solutions and the contractors are not able to help improve the buildability and packaging of proposals as they develop. The contractors may also be challenged because of insufficient knowledge of the physical conditions at the project site. In addition, it can be slower than other forms of contracting and if design information is incomplete at tender, or if significant variations are required after the contractor has been appointed, the cost to the client can be significant.

6.3.12 Consequently, the separation of design and construction under traditional procurement can be inefficient, not particularly cost-effective and often results in adversarial contractual relations.

Early Contractor Involvement (ECI)

6.3.13 ECI contracts involve the appointment of a contractor during the pre-construction phase of a project with selection based on a combination of qualitative and price criteria, the latter including profit, overhead and pre-construction phase fees. This early appointment ensures that the contractor understands its terms of reference during the pre-construction-phase and is paid for its contributions, without the client committing to a construction-phase appointment until a series of agreed pre-conditions had been satisfied.

6.3.14 ECI provides an efficient means of designing and planning infrastructure projects in a cost-effective, more efficient and less adversarial structure.

6.3.15 The approach encourages the contractor to offer design contributions, collaborative risk management and efficient pre-construction-phase programming to achieve a more robust design and price and significant time savings.

6.3.16 ECI contracts are normally used for major highways schemes where there is significant scope for input from the supply chain. Suppliers' engagement is on a partnering basis with their knowledge and

abilities to influence project decisions having maximum impact in terms of project timing, quality and cost.

6.3.17 Using ECI with a properly executed contract that reflects a relationship able to deal with project risks should increase transparency and therefore reduce risks, increase shared responsibilities and limit the reasons for disputes.

6.3.18 However, the use of the ECI involves open book cost management and the Client needs to either have in-house skills to manage this or procure external resources at additional cost.

Design & Build

6.3.19 Design and build (D&B) is a procurement route in which the main contractor is appointed to design and construct the works. It is typically used for schemes where most design decisions are fixed in advance of works procurement.

6.3.20 D&B like ECI involves the appointment of a contractor during the pre-construction-phase of a project with selection based on a combination of qualitative and price criteria, the latter including profit, overhead and pre-construction phase fees. This early appointment ensures that the contractor understands its terms of reference during the pre-construction-phase and is paid for its contributions, without the client committing to a construction-phase appointment until a series of agreed pre-conditions had been satisfied.

6.3.21 The contractor can either be appointed to carry out all of the design work, or if the client wishes to have greater influence over the design, a concept design and outline (or performance) specification can be prepared by a design team employed by the client, and then the contractor is appointed to complete the design and carry out the construction. The contractor is expected to complete the required level of design, which must include introducing any potential savings in time, cost and/or quality gained through their previous know-how.

6.3.22 The contractor may use their own in-house designers to design the scheme, or appoint external designers, or the client's designers can be employed by the contractor to complete the design (either by novation or consultant switch).

6.3.23 D&B projects can follow either a single-stage or two-stage tender processes (e.g. The Cabinet Office’s two stage open book process)

6.3.24 While D&B is a relatively low risk procurement option for the client in terms of cost and time there can be a risk related to design and quality, particularly if the employer's requirements were not properly specified and if the contractor's proposal is not properly examined.

Options Discussion (Merits and Demerits)

6.3.25 The traditional approach was considered to have some merit given that the Lyminster Bypass scheme is not deemed overly complicated. However, the disadvantage is that the project might not benefit from any added value or efficiency that could be gained from the early appointment of a contractor.

6.3.26 The ECI approach was then considered by the workshop and the view was that it lends itself better to more complex projects. In addition WSCC does not have the in-house resources required to fully support for ECI contracts and would need to buy in the required resources at additional cost. This added cost could however be offset by savings arising from the adoption of the ECI process.

6.3.27 Given that the Lyminster Bypass scheme is not complex and that preliminary designs and EIA for the scheme will be completed prior to procurement, the workshop came to the conclusion that the scheme would not benefit fully from the key advantages offered by the ECI process.

6.3.28 The next approach explored was D&B. The workshop considered that the imminent completion of preliminary designs (including ground investigations) and EIA would enable most of the design decisions to be fixed in advance of procurement, a key requisite for the adoption of the D&B approach. The workshop noted that the Lyminster Bypass scheme would potentially benefit from the following advantages that come with the early appointment of a main contractor ahead of the completion of design under the D&B process:

- A quicker start on site.
- A single point of responsibility for delivering the project following procurement
- Securing the involvement of a contractor for pre-contract services on a competitive basis, to obtain input on buildability, sequencing and subcontractor selection.
- Retaining greater client involvement in the pre-selection and appointment of subcontractors.
- Motivating the design and construction team to drive down cost and to drive in value.
- Transferring a greater degree of design and other construction risk to the contractor.
- Option to include a break clause following completion of the design

6.3.29 It was further noted that the D&B option has been successfully used by WSCC in the delivery of the Adur Ferry Bridge scheme and the Littlehampton Academy scheme in recent times.

6.3.30 The workshop therefore concluded that the D&B approach is best suited to the Lyminster Bypass and agreed that the procurement strategy for the scheme should be based on this approach. WSCC will use a combination of internal and external resources to clearly specify its requirements and expected outcomes and to carefully examine the D&B contractors' proposals to ensure that the successful tenderer is best placed to meet WSCC's requirements for the scheme.

6.3.31 The type / form of contract best suited to support the preferred option will be recommended as part of the procurement strategy

6.4 Sourcing options

Procurement Route

6.4.1 Having agreed the procurement option, the workshop looked at the procurement mechanisms (routes) that could be potentially used for the scheme. The routes discussed included existing Frameworks or an EU compliant procurement.

6.4.2 Consideration has also been given to procuring the Lyminster Bypass scheme as a phase or work packages of related highways schemes.

Frameworks

6.4.3 West Sussex County Council is a member of the South East 7 (SE7) Regional Highways Framework. The framework has a limit of £5m per Work Package as detailed in the OJEU notice.

6.4.4 The SE7 Regional Highways Framework was considered and discounted immediately because the value of the Lyminster Bypass scheme exceeds the threshold of £5m.

6.4.5 The possibility of using the Highways Agency (HA) schemes framework was discussed and the project team agreed that this would be explored as part of the OBC and report if it is a viable options as part of the findings within the OBC final report.

6.4.6 In the period since the Procurement Workshop, WSCC has identified a significant number of strategic transport schemes which have already attracted, or are likely to attract external funding through the Local Enterprise Partnership (LEP) for implementation in 2015-21. The total capital cost

of the schemes, which includes the Lyminster Bypass scheme, is likely to exceed £100m and includes major highway realignment schemes (up to £30m) as well as transport packages (up to £40m). To facilitate the implementation of these schemes, as well as other separately funded highway programmes, WSCC intends to procure a Design and Build Contractor Framework to be in place by 30 September 2015. The framework will be awarded in several lots (to be agreed) so that the value of the works is best matched to the size of the contractor.

EU Compliant Procurement Process

6.4.7 The following procedures have been considered for the procurement of the Design and Build Contractor Framework:

- Open
- Restricted Tenders
- Competitive Dialogue.

a. Open

6.4.8 The open procedure is suitable for simple procurements where the requirement is straightforward. It is most commonly used in practice for the purchase of goods where the requirement can be clearly defined and the buyer is seeking the least expensive supplier. As there is no "pre-qualification" of bidders, anyone can submit a tender and it is possible that a large number of suppliers will bid

6.4.9 The main points are:

- Invitation to Tender (ITT) documents must be issued to all suppliers requesting one
- Negotiation on fundamental aspects of contracts, (especially price), which are likely to distort competition, is prohibited. Dialogue with bidders should generally be limited to requests for clarification. Any discussions with candidates should be properly recorded and meetings which discuss proposals/requirements in any detail should be avoided where these discussions might have the potential to distort competition

b. Restricted

6.4.10 The restricted procedure is used where you want to "pre-qualify" suppliers based on their financial standing and technical or professional capability so as to narrow the number permitted to submit bids. Where the restricted procedure is appropriate, you should be able to specify your entire requirement such that, based on your invitation to tender, bidders will be able to deliver a fully priced bid without the need for any negotiations following receipt of the bid.

6.4.11 It is a 2 stage process:

- Selection of suppliers with the capacity, capability and experience to perform the contract
- Invitation to tender for those suppliers selected to submit proposals

Stage 1

- Supplier selection is on the basis of looking at the supplier's capacity and capability, not how the organisation will deliver your requirement. Therefore, this is a backward looking process focussing on the bidder, i.e. you cannot consider matters specific to performance of the contract at this stage
- There must be a minimum of five companies invited to tender, (where there are at least five suitably qualified, experienced companies)

Stage 2

- Issue ITT documents to the selected suppliers

- Negotiation on fundamental aspects of contracts, (especially price), which are likely to distort competition, is prohibited. Dialogue with bidders should generally be limited to requests for clarification
- Any discussions with candidates should be properly recorded and bilateral meetings which discuss proposals/requirements in any detail should be avoided wherever the discussions might have the potential to distort competition

c. Competitive Dialogue

6.4.12 This can only be used in exceptional circumstances for 'particularly complex' supplies, services and works contracts where it would not be possible to award a contract using the open or restricted procedures and where the circumstances do not permit use of negotiated procedures.

6.4.13 That is, a contract where the buyer is not objectively able to:

- define the technical means capable of satisfying its needs or objectives
- specify either the legal or financial make-up of a project, or both

6.4.14 In other words, it is used where the buyer needs the expertise of the market to design a feasible fit-for-purpose solution.

6.4.15 Under this procedure:

- any supplier may make a request to participate
- the buyer will conduct a dialogue with the suppliers admitted to the procedure with the aim of developing one or more suitable alternative solutions capable of meeting the requirements
- on the basis of this dialogue the buyer will select suppliers to invite to tender
- the process always involves competitive tendering and can only use the most economically advantageous award criterion

6.4.16 A record of clear reasons for selecting this approach is required and commercial confidentiality is of key importance in employing this procedure.

Preferred Procurement Route

6.4.17 It is proposed to adopt the restricted procedure as the preferred procurement option for WSCC's Design and Build Contractor Framework. The Lyminster Bypass scheme will be included in the basket of schemes to be priced by tenderers and the successful framework contractor for this scheme offering the most economically advantageous tender will be awarded the contract for the detailed design and construction of the Lyminster Bypass scheme.

Market Engagement

6.4.18 As agreed during the earlier procurement workshop options will be explored to encourage interest from small and medium sized enterprises (SMEs). It was further agreed consideration should be given to holding a Soft Market Testing (SMT) exercise prior to the OJEU notice being published. This would enable WSCC to seek the market's view on the proposed structure and Lots under the framework, projects and what appetite exists in the market for the proposed procurement option and route. Furthermore it would give WSCC an indication on what needs to be put together as a tendering package to make sure it is an attractive proposition for the market and ensure a competitive bidding process. WSCC would also gain a better understanding of the market's capability and capacity.

6.5 Payment mechanisms

6.5.1 Payment mechanisms to the service provider have not yet been determined, and will be developed in more detail prior to procurement.

6.6 Pricing framework and charging mechanisms

6.6.1 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 is a very important consideration for the Lyminster Bypass scheme, it is proposed to use the MEAT criteria in the evaluation of tenders for the Framework. Factors to be evaluated will include 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 will be decided and made available to contractors with tender documents.

6.6.2 The contractor will be selected on a combination of qualitative (70%) and price (30%) criteria, the latter including profit, overhead and pre-construction phase fees.

6.7 Risk allocation and transfer

6.7.1 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 will be considered as part of the preparation of the detailed procurement strategy, and those risks that are best managed by the contractor will be allocated to be priced by the contractor accordingly. Risks best managed by WSCC will be retained, so will be excluded from the contract.

6.8 Contract length

6.8.1 The Framework will be available for four years as determined by EU regulations. The contract strategy for each call off (scheme) will be dependent on the level of integration of design, construction and cost certainty for a given project, and should support the main project objectives in terms of risk allocation, delivery, incentivisation etc.

6.8.2 For the Lyminster Bypass scheme, it is proposed to adopt a two stage contract strategy. In stage 1, the successful D&B Contractor team will be appointed to undertake the detailed design of the scheme on the basis of an NEC Professional Services Contract (PSC) Option A (Fixed Price with Activity Schedule). On completion of detailed and subject to the Contractor meeting WSCC's stated outcomes and cost benchmarks, the Contractor proceeds to the second stage involving the construction of the scheme on an NEC Engineering and Construction Contract (ECC) option C (target contract with activity schedule).

6.8.3 The contract is expected to run from September 2015 to December 2017.

6.9 Human resource issues

6.9.1 This is not assessed as part of the Outline Transport Business Case.

6.10 Contract management

6.10.1 It is proposed to commence the procurement of the WSCC design and build framework contract as soon as possible with a view to having the framework in place by September 2015. The Lyminster Bypass scheme will be included in the basket of schemes to be priced by tenderers for the framework contract and the successful framework contractor offering the most economically advantageous tender for the scheme will be offered the contract for the detailed design and construction of the Lyminster Bypass scheme. This will enable the detailed design of the Lyminster Bypass scheme to start in January 2016.

6.10.2 Contract management will be in line with current best practice and will include but not be limited to:

- Performance management and reporting that will facilitate continuous improvement from project to project
- Open book cost management and financial controls
- Risk and business continuity
- Dispute resolution
- Social value impact assessment
- Benefits realisation

7 Management case

7.1 Introduction

7.1.1 The Management case 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
- Options

7.2 Evidence of similar projects

7.2.1 The Design and Build procurement option has been successfully used by WSCC in the delivery of the Adur Ferry Bridge scheme and the Littlehampton Academy scheme in recent times.

7.3 Programme / project dependencies

7.3.1 Key deliverables from other projects that are relevant for completion of the Lyminster Bypass all relate to the North Littlehampton SDL. Planning conditions require that the southern bypass is open before the 350th house is occupied. The developers' current proposals are for the southern bypass to be open in summer 2017. The southern bypass needs to be completed prior to completion of the northern bypass. The development has planning consent, and is not considered to be dependent on the completion of the northern bypass.

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.

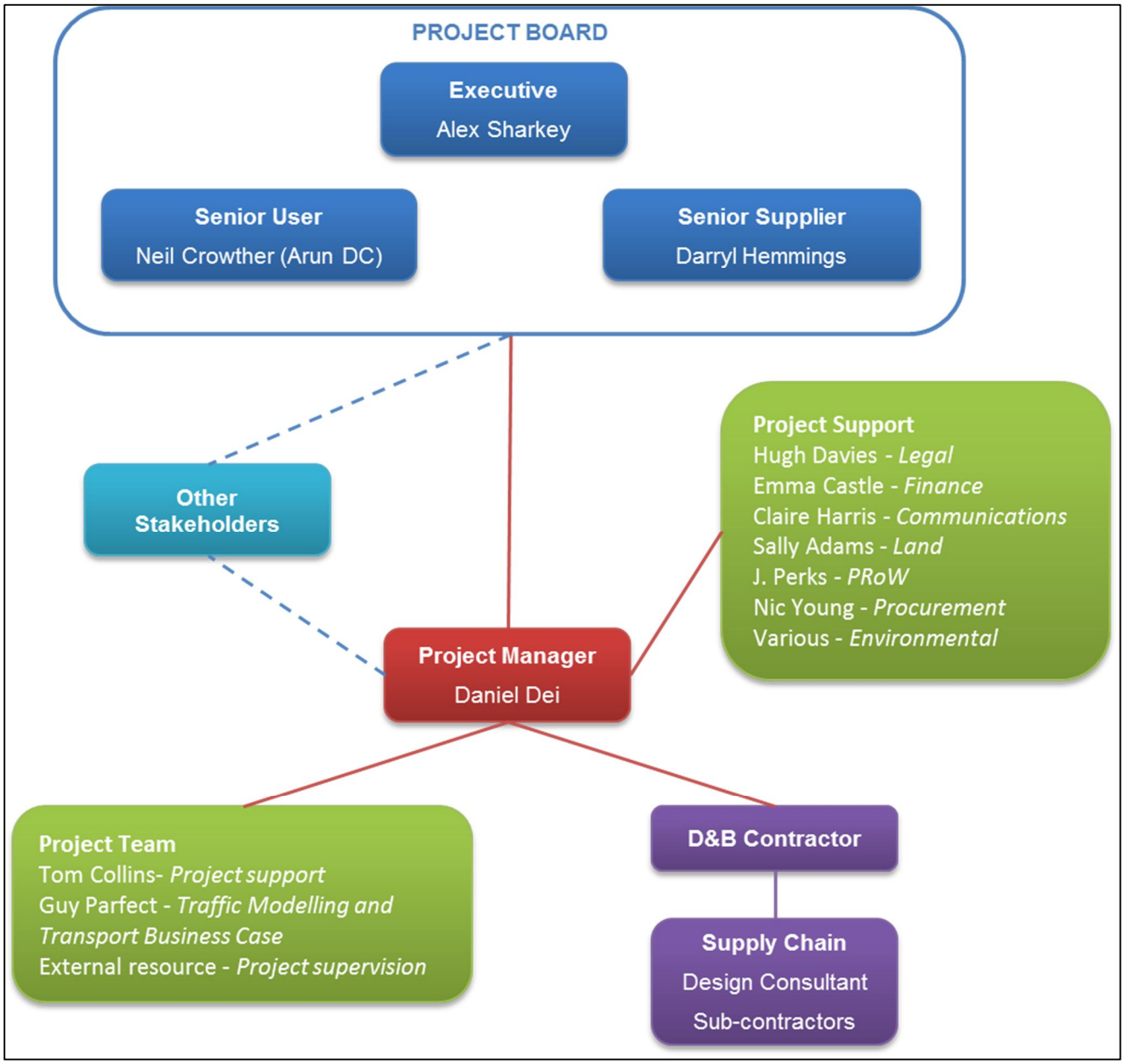

Figure 7.1: Project management structure

7.4.2 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

7.4.3 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.

Project Manager

7.4.4 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 the constraints associated with the proposed southern bypass, a 3 stage approach is proposed for the delivery of the scheme as follows:

Stage One

- Complete preliminary designs and environmental impact assessment
- Complete Transport Business Case and obtain funding approval from the Coast to Capital LEP
- Obtain planning consent for the scheme by June 2015

Stage Two (Subject to progress on the delivery of the southern bypass)

- Undertake land acquisition by negotiation or CPO
- Procure Design and Build contract for the detailed design and construction with a break clause which allows the contract to be ended at the completion of detailed design and target costing
- Undertake detailed design and agree target cost of the scheme
- Obtain full funding approval from LEP by April 2016

Stage Three

- Proceed to construction by October 2016 subject to funding, land acquisition and progress on the delivery of the southern bypass.

7.5.2 A programme is provided 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 advice 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 will also be sought 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 has been 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 will address various elements of the proposed scheme, such as the rationale for the bypass, junction design and carriageway width options, environmental and ecology issues. A copy of the Consultation and Communication Strategy is attached.

7.7.3 Claire Harris, Account Executive in the Policy and Communications Unit 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 are being analysed in autumn 2014 and will be used to inform the detailed scheme design.

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 the proposed bypass. To this end WSCC will be 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 will be responsible for configuration management ensuring that the project's baseline outputs are clearly defined and agreed and no changes are made without authorisation from the Project Board.

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 Implementation of work streams

7.9.1 This is not assessed as part of the Outline Transport Business Case.

7.10 Key issues for implementation

7.10.1 This is not assessed as part of the Outline Transport Business Case.

7.11 Contract management

7.11.1 This is not assessed as part of the Outline Transport Business Case.

7.12 Risk management strategy

7.12.1 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.

7.12.2 The risk register is reviewed at every monthly progress meeting, with historic risks being removed. Mitigation measures identified through this process have been put in place as required, allowing potential risks to pass without incident. This strategy has therefore proven successful, and will continue for the lifetime of the project. It is not considered necessary for a third party risk specialist to be involved.

7.13 Benefits realisation plan

7.13.1 Since the scheme is not expected to generate revenue, the benefits associated with the scheme will be social benefits, to be tracked as part of WSCC's ongoing monitoring programme. This is discussed below.

7.14 Monitoring and evaluation

7.14.1 This section sets out 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 core economic objectives, changes in traffic flows, reductions in journey times and in variability of travel times, changes in noise and air quality levels at key locations, and highway safety.

Core Economic Objectives

7.14.2 A set of core economic objectives have been selected as metrics for assessing the impact of an intervention. These relate to 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

7.14.3 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.

7.14.4 Annual monitoring reports are produced by Arun District Council 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.

Traffic

7.14.5 An extensive programme of data collection was undertaken in September and October 2013 to establish the baseline traffic conditions. This included roadside interview surveys, automatic traffic counts, manual turning counts and journey time surveys. In addition WSCC has permanent

automatic traffic counters at key locations on main A class roads, including on the A284 between Lyminster and Crossbush and also on Ford Road. The Highways Agency has TRADS sites on A27.

7.14.6 For establishment of post bypass traffic flows and journey times, the survey of a selection of the key traffic data can be repeated in 2019. This would take place at least 12 months after the completion of the bypass 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 roads layout. The timing of post-bypass surveys will also be subject to not being affected by planned major upgrade works on the A259 between Littlehampton and Ferring, which would also distort traffic patterns whilst that work is underway.

7.14.7 It will not be necessary to repeat all the survey locations which were required to build the East Arun model, but data will be collected on roads, where the model forecasting indicates that there may be significant changes to traffic flows, as well as on roads close to the new A284 road, to pick up any unforeseen changes. This is likely to include:

- The existing A284 corridor from the A27 to Littlehampton town centre.
- The new road alignments including the bypass itself and the developer delivered roads at the Southern Bypass and Fitzalan Road extension
- Junctions along the A259 Worthing Road
- Highdown Drive in Littlehampton
- Data from A27 TRADS sites east and west of Crossbush
- Data from permanent WSCC sites on A259 between Climping and Angmering, on A280 Water Lane near Angmering and on Ford Road

7.14.8 The WSCC permanent traffic count site on the A284 will be a key location for data collection before and after the bypass construction. However, it is currently vulnerable due to its location and condition. The site is located a few metres to the north of where the bypass northern tie-in construction is shown to terminate, so could be prone to damage from construction activity. It is also volumetric only and could become unreliable due to its age. It is therefore proposed to replace this site with a new counter which would include classified vehicle data and speed data, which would be located on the straight section of A284 Lyminster Road at Brookfield approximately mid-way between the northern bypass tie-in works and the A27 Crossbush junction.

7.14.9 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 the Lyminster northern bypass alone. This also applies to all other indicators to be monitored.

Noise

7.14.10 Noise measurements have been undertaken at specified locations where properties could be affected, to inform the scheme Environmental Statement. However, these measurements to calibrate the noise model were insufficient in number and duration to establish the noise climate at multiple receptors close to the scheme. In order to capture robust data reflecting daily and seasonal variations and a range of weather conditions a longer term noise survey would be required to highlight any instance of noise results crossing a specified threshold for intervention. In common with other measurements it will not be possible to fully isolate changes in noise resulting from the Lyminster Northern Bypass from those originating from the Southern bypass and the Toddington development, as these will be constructed and opened over a parallel timescale. WSCC will be considering over the next few months the appropriate scale of noise monitoring to be undertaken and

the criteria to be applied for this and other proposed highways and transport infrastructure schemes. The resulting proposed surveys will be recorded at Full Business Case stage.

7.14.11 Noise mapping is also undertaken by DEFRA on a five-yearly basis, but this may be of limited value in monitoring this scheme. This is because the geographical coverage is not comprehensive, with data only being available south of the Black Ditch in Lyminster Village and also because the noise mapping programme is currently confirmed only up to 2017, when the bypass will be under construction. If a further round of DEFRA mapping is commissioned on the same cycle, then this would be in 2022 and would be published at around the end of 2023.

Air Quality

7.14.12 Arun District Council have been carrying out diffusion tube monitoring – a Screening assessment for 2012 reports annual NOx results for tubes on A259 Worthing Road at Cornfield Close and in Thatchway Close, just off A284 Wick Street in Littlehampton. The bypass scheme is forecast to reduce traffic levels in Wick Street but may slightly increase traffic on A259 Worthing Road.

7.14.13 West Sussex County Council has the use of a mobile Air Quality Lab, shared with other Local Authorities in Sussex who are members of the Sussex Air Quality Partnership. The lab is owned by Lewes District Council and its use will be booked at least six months ahead of time. This lab will be used to undertake suitable air quality measurements along the A284 corridor after implementation of the scheme, to ensure that short term air quality objectives are not being exceeded. The lab can measure NOx/NO2 and particulate matter. However, to ensure long-term objectives are not being exceeded, an annual mean would need to be measured. Annual means objectives are considered when assessing the impact of a scheme, and are used to determine impacts and appropriate mitigation measures. This would be by installation of diffusion tubes at the same locations to assess the long term nitrogen dioxide concentrations. Air quality assessment will be carried out according to Local Air Quality Management – Technical Guidance (2009) and Sussex Emissions Guidance (2013). A program for how this would be done is to be determined over the next few months for inclusion in the Full Business Case.

Journey Times

7.14.14 Journey time surveys will be undertaken equivalent to journey time route 2 from the September 2013 model data collection between Crossbush and Littlehampton Town Centre via the new road alignment. These will be compared to the 2013 journey time route 2 data between these points. The original data showed a lot of variability due to the effect of the railway level crossing on Lyminster Road at Wick, so it may be necessary to compare the data for the new road with not only average data from the route but with the average of the runs where the crossing was open and of the slower runs where the crossing gates were initially closed.

Road Traffic Collisions

7.14.15 WSCC has access to Road Traffic Collisions data supplied by Sussex Police. Data from this will be extracted annually to compare accident rates on major roads within a study area similar to that used for traffic flows, using three years pre-construction data from 2013 to 2015 as a base, then initially collecting a rate for 2018 post bypass completion on existing and new roads for comparison. This comparison will be revisited once sufficient time has passed to obtain a three year post-bypass rate from 2018 to 2020. 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

7.15 Contingency plan

7.15.1 This is not assessed as part of the Outline Transport Business Case.

7.16 Options

7.16.1 Full details of the management of the project have not been established at this stage. However, WSCC have a project board in place with sufficient processes to monitor and approve project development at key stages. This will continue following procurement of a contractor to design and build the project.

8 Summary

8.1 Background

8.1.1 This Outline Transport Business Case presents the evidence base in favour of the proposed Lyminster Bypass north of Littlehampton in West Sussex. The document has been prepared in accordance with the Department for Transport guidance on the five business case model. Guidance was published in April 2013, and requires the following five cases to be considered:

- Strategic Case
- Economic Case
- Financial Case
- Commercial Case
- Management Case

8.2 Transport Business Cases

8.2.1 The Strategic case outlines the need for the bypass. 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 the southern bypass delivered as part of the North Littlehampton development.

8.2.2 The Economic case sets out the assessment of benefits that the scheme is forecast to deliver to society as a whole. Over 60 years, the scheme is expected to generate benefits worth £106m, including £4.7m of safety benefits. The scheme generates a Benefit-Cost ratio of 25.855, so is considered a very high value for money scheme.

8.2.3 The Financial case provides a detailed cost estimate and a breakdown of how the scheme will be funded. The total scheme cost is expected to be £8.68m, of which £3.16m is secured. The remaining £5.52m is sought from Coast to Capital LEP to complete the scheme.

8.2.4 The Commercial case considers procurement of the scheme. A Design and Build procurement strategy through the restricted procedure is considered the preferred option, with the preferred supplier determined through a 70% quality / 30% price split.

8.2.5 The Management case 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 The proposed Lyminster Bypass will generate substantial net benefits to the local economy, helping fulfil Coast to Capital's remit.

Appendices

Appendix A – Appraisal Summary Table

Appraisal Summary Table

Date produced:	18-Nov-14

Contact:	
Name	Daniel Dei
Organisation	WSCC
Role	Promoter/Official

Name of scheme:	Lyminster Bypass
Description of scheme:	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

Impacts		Summary of key impacts	Assessment				
			Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp
Economy	Business users & transport providers	Scheme primarily reduces journey times by less than 5 minutes within EATM study area. Benefits are felt by all income groups. Benefits favour those in the middle income group (quintile 3 - 40-60%) based on indices of multiple deprivation considerably more than expected given their relative proportion of the population. Mid to high income groups (quintile 4 - 60-80%) experience a smaller than expected proportion of benefits.	Value of journey time changes(£): £26.5m Net journey time changes (£) 0 to 2min: £15.54m; 2 to 5min: £9.01m; > 5min: £1.99m			N/A	£28.378m	Moderately beneficial
	Reliability impact on Business users	Volume on routes is not close to capacity, as defined by Congestion Reference Flows, so no impact within WebTAG parameters	N/A			Neutral	N/A	
	Regeneration	The scheme does not affect a regeneration area, so this is not assessed.	N/A			Neutral	N/A	
	Wider Impacts	Scheme is not within a Functional Urban Region (FUR), so only benefits from imperfectly competitive markets and the tax wedge from changes to the labour supply have been assessed.	N/A			N/A	£4.679m	
Environmental	Noise	The external amenity space for all dwellings that are anticipated to have a moderate/major increase in noise level are predicted to fall at or below the upper external noise criterion as defined in the WHO Guidelines. Accordingly, no mitigation measures are proposed for the operational impact of the Proposed Bypass. A number of properties will also benefit from the scheme particularly those fronting the A284 in Lyminster village itself. In terms of vibration, since the noise levels at all receptors predicted to experience a moderate/major increase in noise level fall below 58 dB LA10,18h, then, based on the guidance in DMRB, it is assumed that the residents will not be bothered significantly by vibration.	N/A			Operational Phase - Major Adverse to Moderate Beneficial; Construction Phase - Major Adverse to Neutral	N/A	N/A
	Air Quality	The Proposed Bypass is anticipated to cause a redistribution of traffic on the local road network with subsequent impacts on local air quality, in particular localised changes in concentration of NO2 and PM10.The Proposed Bypass will reduce the amount of traffic using the A284 Lyminster road, with subsequent improvements in air quality for many properties situated along this road. However, some properties in close proximity to the alignment may experience a deterioration in air quality. The Proposed Bypass will not affect air quality within an AQMA. slight adverse to neutral impacts are anticipated on sensitive receptors.	N/A			Operational Phase - Slight Adverse to Slight Beneficial; Construction Phase - Negligible	N/A	N/A
	Greenhouse gases	Shorter distance leads to reduced fuel consumption and reduced emissions of CO2	Change in non-traded carbon over 60y (CO2e): -19,765 Change in traded carbon over 60y (CO2e): -26			N/A	£0.937m	
	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 indivual 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			Moderate adverse to slight beneficial	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.	N/A			Neutral	N/A	
	Heritage of Historic resources	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 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			Slight to moderate adverse	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 adverse to neutral	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.	N/A			Slight Adverse to Neutral	N/A	
	Journey Ambiance	Potential effects during construction may include an increase in fear and intimidation on pedestrians, loss of amenity and community disturbance from distruption which may have some negative effect on the health and well-being for nearby existing residents, during the construction period. The proposed bypass when open will also impact negatively on the ambience for users of bridleway 2163 which crosses the proposed alignment. The sensible routing of rights of way and crossings should mitigate impacts. However, the transfer of through traffic from the existing road to the proposed bypass will result in a positive impact for local users of the exisitng road including a reduction in fear and intimidation for pedestrians and gains in amenity and reduced community disturbance from traffic and accidents which may have a positive effect on well-being for nearby existing residents.	N/A			Moderate adverse (during construction) to neutral	N/A	
Social	Commuting and Other users	Scheme primarily reduces journey times by less than 5 minutes within EATM study area. Benefits are felt by all income groups. Benefits favour those in the middle income groups (quintile 2 - 20-40%; quintile 3 - 40-60%) based on indices of multiple deprivation considerably more than expected given their relative proportion of the population. Mid to high income groups (quintile 4 - 60-80%) experience a smaller than expected proportion of benefits.	Value of journey time changes(£): £64.7m Net journey time changes (£) 0 to 2min: £29.44m; 2 to 5min: £29.01m; > 5min: £6.21m			N/A	£69.941m	Moderately beneficial
	Reliability impact on Commuting and Other users	Volume on routes is not close to capacity, as defined by Congestion Reference Flows, so no impact within WebTAG parameters	N/A			Neutral	N/A	
	Physical activity	There is scope for increased walking and cycling due to reduced volumes of traffic on the old route and a high quality shared use facility on the new route. The improvements facilitate potential future improvements to the walking and cycling network, acting as part of a project to connect the north end of the village of Arundel and rural lanes to the South Downs	N/A			Moderate beneficial	N/A	
	Journey quality	Benefit to drivers from reduced frustration and perceived accident risk.	N/A			Moderate beneficial	N/A	
	Access to services	No significant effect	N/A			Neutral	N/A	N/A
	Affordability	No significant effect	N/A			Neutral	N/A	N/A
	Severance	Removal of through-traffic from existing route through the village means that this is no longer a major barrier to pedestrian movement	N/A			Moderate beneficial	N/A	N/A
	Option values	Provision of transport services in the area is not substantially changed.	N/A			Neutral	N/A	
Safety	Accidents	The proposed bypass has been designed in accordance with current DMRB standards and in line with the speed limit that is proposed for the route. The proposal provides a single carriageway road for vehicles, which is 7.3m wide and further provides a shared use footway cycleway route (3.0m wide) along the western side of the bypass route. The footway / cycleway is separated from the carriageway by a distance of 1.5m which is achieved through the provision of a 1.0m hardstrip on the carriageway and a 0.5m segregation strip on the footway / cycleway. The existing route does not meet modern standards and includes a number of sharp bends with limited forward visibility, as well as being of variable width. Within the design standards on the proposed bypass there is provision for forward visibility in accordance with the speed limit to ensure that drivers are able to see ahead and able to drive / react to traffic and instances ahead. Furthermore, the bypass removes the interactions between traffic and private entrances / junctions thus improving the safety for drivers and residents. The introduction of the bypass will also reduce the traffic volumes along the existing road therefore improving the safety along this route.	Casualties saved: Fatal = 0.8, Serious = 9.8, Slight = 108.0			N/A	£4.722m	N/A
	Security	No significant effect	N/A			Neutral	N/A	N/A
Public Accounts	Cost to Broad Transport Budget	Construction cost = £6.58m. Real inflation = £0.46m. Risk = £0.51m. Optimism Bias (15%) = £1.13m. Total scheme cost = £8.68m (2014 Q3 prices). £3.16m funding secured for S106 contributions	N/A			N/A	£4.106m	
	Indirect Tax Revenues	Reduced distance leads to reduced fuel consumption, so reduced government revenue through fuel duty and VAT.	N/A			N/A	-£2.505m	

Appendix B – AST supporting worksheets

TAG Stress-based reliability impact worksheet

	Old Route (i)	New Route (ii)
Without scheme stress (a)	51.2	
With scheme stress (b)	11.0	57.2
Difference in stress (c=a-b, restricting a and b to the range 75% - 125%)	0	0
With scheme AADT flow (d)	2281	16241
Overall impacts (e=c*d)	0	0
Overall assessment (e(i) + e(ii))	0	

Reference Source

East Arun Traffic Model

Summary Assessment Score

No impact, as links are uncongested

Qualitative Comments

Neutral

APPRAISAL- Greenhouse Gases

Proposal Name: _____

Present Value Base Year	2010
Current Year	2014
Proposal Opening year:	2017
Project (Road/Rail or Road and Rail):	Road

Overall Assessment Score:

Net Present Value of Carbon dioxide Emissions of Proposal (£):	£937,000
(60 Year Period)	*positive value reflects a **net benefit** (i.e. CO2E emissions reduction)

Quantitative Assessment:

Change in Carbon dioxide Emissions over 60 year appraisal period (tonnes): (between 'with scheme' and 'without scheme' scenarios)	-19,791
Of which Traded	-26
Change in Carbon dioxide Emissions in Opening year (tonnes): (between 'with scheme' and 'without scheme' scenarios)	-249

Qualitative Comments:

Sensitivity Analysis:

Description:

Upper Estimate Net Present Value of Carbon dioxide Emissions of Proposal (£):	-£1,456,000
Lower Estimate Net Present Value of Carbon dioxide Emissions of Proposal (£):	-£448,000

Data Sources: Scheme TUBA Analysis

TAG Journey Quality Impacts Worksheet

Factor	Sub-factor	Better	Neutral	Worse
Traveller Care	Cleanliness		✓	
	Facilities		✓	
	Information		✓	
	Environment		✓	
Travellers' Views	-		✓	
Traveller Stress	Frustration	✓		
	Fear of potential accidents	✓		
	Route uncertainty		✓	

Reference Source

Qualitative review

Summary Assessment Score

Moderate beneficial

Qualitative Comments

Benefit to drivers from reduced frustration and perceived accident risk.

Distributional Impacts: User Benefits (Commuting & Other)

	IMD Income Domains £m					
	Most deprived areas ←		→ Least deprived areas			
	0%<20%	20%<40%	40%<60%	60%<80%	80%<100%	Total
Arun 001A			45.0			45.0
Arun 001B					51.8	51.8
Arun 001C				41.4		41.4
Arun 001D				5.1		5.1
Arun 002A			56.8			56.8
Arun 002B			58.8			58.8
Arun 004A	58.2					58.2
Arun 004B	61.9					61.9
Arun 004C		61.1				61.1
Arun 004D		468.0				468.0
Arun 004E			659.1			659.1
Arun 005A				102.3		102.3
Arun 005B					83.3	83.3
Arun 005C			25.2			25.2
Arun 005D		25.6				25.6
Arun 005E		63.1				63.1
Arun 007A				55.4		55.4
Arun 007B				82.6		82.6
Arun 007C			44.6			44.6
Arun 007D			51.8			51.8
Arun 007E				57.3		57.3
Arun 007F			55.9			55.9
Arun 008A					23.2	23.2
Arun 009A				52.5		52.5
Arun 009B				58.8		58.8
Arun 009C		59.7				59.7
Arun 009D		60.6				60.6
Arun 009E				62.1		62.1
Arun 009F			71.6			71.6
Arun 010A				23.0		23.0
Arun 010B				22.3		22.3
Arun 010C			55.9			55.9
Arun 010D					62.9	62.9
Arun 010E				59.9		59.9
Arun 011A		69.3				69.3
Arun 011B			66.1			66.1
Arun 011C		73.6				73.6
Arun 011D	76.0					76.0
Total benefits (∑LSOAs)	196.1	880.9	1190.8	622.6	221.2	3111.7
Total disbenefits (∑LSOAs)	-	-	-	-	-	0
Share of user benefits	6%	28%	38%	20%	7%	100%
Share of user disbenefits	-	-	-	-	-	0
Share of population in the impact area	7%	21%	28%	32%	11%	100%
Assessment	✓✓	✓✓✓	✓✓✓	✓	✓✓	

Distributional Impacts: User Benefits (Employers Business)

	IMD Income Domains £m					
	Most deprived areas ←		→ Least deprived areas			
	0%<20%	20%<40%	40%<60%	60%<80%	80%<100%	Total
Arun 001A			21.9			21.9
Arun 001B					25.2	25.2
Arun 001C				20.1		20.1
Arun 001D				2.5		2.5
Arun 002A			44.6			44.6
Arun 002B			46.2			46.2
Arun 004A	31.8					31.8
Arun 004B	33.9					33.9
Arun 004C		33.4				33.4
Arun 004D		238.3				238.3
Arun 004E			335.6			335.6
Arun 005A				80.3		80.3
Arun 005B					65.4	65.4
Arun 005C			27.0			27.0
Arun 005D		27.5				27.5
Arun 005E		52.8				52.8
Arun 007A				46.4		46.4
Arun 007B				45.2		45.2
Arun 007C			37.4			37.4
Arun 007D			43.4			43.4
Arun 007E				47.9		47.9
Arun 007F			46.8			46.8
Arun 008A					24.9	24.9
Arun 009A				44.0		44.0
Arun 009B				49.2		49.2
Arun 009C		32.6				32.6
Arun 009D		33.2				33.2
Arun 009E				52.0		52.0
Arun 009F			39.2			39.2
Arun 010A				24.7		24.7
Arun 010B				23.9		23.9
Arun 010C			46.8			46.8
Arun 010D					52.7	52.7
Arun 010E				50.2		50.2
Arun 011A		37.9				37.9
Arun 011B			36.2			36.2
Arun 011C		40.2				40.2
Arun 011D	41.6					41.6
Total benefits (∑LSOAs)	107.3	495.9	724.9	486.3	168.2	1982.6
Total disbenefits (∑LSOAs)	-	-	-	-	-	0
Share of user benefits	5%	25%	37%	25%	8%	100%
Share of user disbenefits	-	-	-	-	-	0
Share of population in the impact area	7%	21%	28%	32%	11%	100%
Assessment	✓✓	✓✓	✓✓✓	✓	✓✓	

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	12659000		12659000			
Vehicle operating costs	1231000		1231000			
User charges						
During Construction & Maintenance	-13000		-13000			
COMMUTING	13877000	*(1a)*	13877000			

Non-business: Other	**ALL MODES**		**ROAD**	**BUS and COACH**	**RAIL**	**OTHER**
User benefits	**TOTAL**		**Private Cars and LGVs**	**Passengers**	**Passengers**	
Travel time	52123000		52123000			
Vehicle operating costs	4095000		4095000			
User charges						
During Construction & Maintenance	-154000		-154000			
NET NON-BUSINESS BENEFITS: OTHER	56064000	*(1b)*	56064000			

Business							
User benefits			**Goods Vehicles**	**Business Cars & LGVs**	**Passengers**	**Freight**	**Passengers**
Travel time	26608000		16355000	10253000			
Vehicle operating costs	1844000		483500	1360500			
User charges	0						
During Construction & Maintenance	-74000		-39000	-35000			
Subtotal	28378000	*(2)*	16799500	11578500			
Private sector provider impacts						**Freight**	**Passengers**
Revenue							
Operating costs							
Investment costs							
Grant/subsidy							
Subtotal		*(3)*					
Other business impacts							
Developer contributions		*(4)*					
NET BUSINESS IMPACT	28378000	*(5) = (2) + (3) + (4)*					

TOTAL		
Present Value of Transport Economic Efficiency Benefits (TEE)	98319000	*(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 Funding	**TOTAL**		**INFRASTRUCTURE**			
Revenue	0					
Operating Costs	0					
Investment Costs	6448849		6448849			
Developer and Other Contributions	-2343237		-2343237			
Grant/Subsidy Payments	0					
NET IMPACT	4105612	*(7)*				
Central Government Funding: Transport						
Revenue	0					
Operating costs	0					
Investment Costs	0					
Developer and Other Contributions	0					
Grant/Subsidy Payments	0					
NET IMPACT	0	*(8)*				
Central Government Funding: Non-Transport						
Indirect Tax Revenues	2505000	*(9)*	2505000			
TOTALS						
Broad Transport Budget	4105612	*(10) = (7) + (8)*				
Wider Public Finances	2505000	*(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.

Analysis of Monetised Costs and Benefits

Noise	N/A	*(12)*
Local Air Quality	N/A	*(13)*
Greenhouse Gases	937000	*(14)*
Journey Quality	0	*(15)*
Physical Activity	0	*(16)*
Accidents	4721700	*(17)*
Economic Efficiency: Consumer Users (Commuting)	13877000	*(1a)*
Economic Efficiency: Consumer Users (Other)	56064000	*(1b)*
Economic Efficiency: Business Users and Providers	28378000	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-2505000	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	101472700	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	4105612	*(10)*
Present Value of Costs (see notes) (PVC)	4105612	*(PVC) = (10)*
OVERALL IMPACTS		
Net Present Value (NPV)	97367088	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	24.716	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

Lyminster Bypass

Project Delivery Risk Assessment

No	Category	Risk The risk is that……	Effect / Consequence	Risk Assessment Before Mitigation								RAG	Mitigation Measure	Risk Assessment After Mitigation								RAG	Current Action & Status	Risk Owner	Action By Date	Mitigation in place?	Comments
				Impact		Likeli-hood	Risk Impact Evaluation			Likeli hood	Risk allowance (statistical x likelihood)			Severity		Likeli-hood	Risk Impact Evaluation			Likeli hood	Risk allowance (statistical x likelihood)						
				Time	Cost		Min	Likely	Max					Time	Cost		Min	Likely	Max								
1	Scheme Preparation	… there is no agreement of accommodation works to satisfy people affected by the scheme.	Uncertainty results in disruption to programme	3	3	3	£10,000	£50,000	£200,000	50%	£43,333		Undertake exercise to establish the scope of the accommodation works, likely timescales for delivery and how it will impact the overall project programme. Where costs are determined to be certain then include within project budget and assess additional risks accordingly.	2	3	2	£10,000	£50,000	£100,000	25%	£13,333		Undertake scope definition exercise.	WSCC		Yes	Defining the scope will lessen the uncertainty surrounding the risk. Accommodation works to be finalised and included in scheme costs.
2	Scheme Preparation	… delivering the scheme will result in poor public relations	Delay to scheme with additional consultant and WSCC officer input required	5	4	5	£50,000	£100,000	£150,000	90%	£90,000		Prepare communication plan, sell benefits, hold open days for public feedback; allow for a PR Management and publicity materials, and proactively seek and maintain a positive relationship with the Parish and District Councillors.	4	3	3	£5,000	£30,000	£50,000	50%	£14,167		Communications plan prepared as part of major scheme business case.	WSCC		Yes	Communications plan and actions to be monitored as part of monthly progress meetings
3	Scheme Preparation	… there will be late changes in design	- Additional scheme costs - Potential delay to the award of the project - Additional costs to WSCC	4	4	3	£150,000	£200,000	£300,000	50%	£108,333		- Contracting strategy - as part of quality submission tenderers to be asked to demonstrate how they can mitigate costs arising from late design changes - e.g. by redeploying resources. Failure to follow their methodology to result in disallowed costs. - Undertake scheme scope review and reality check process to ensure that design scope is fixed. Design split to allow consultation feedback to be included in the final design to minimise abortive design costs.	3	3	2	£5,000	£15,000	£20,000	25%	£3,333		D&B / ECI procurement strategy will help to mitigate. Post mitigation recognises that pressure groups - e.g. Ramblers Assoc may influence project and add cost.	WSCC		Yes	
4	Scheme Preparation	… design standards will change late in the design phase or have a significant impact earlier in design.	Disruption to design programme, increased design or redesign required and late changes affecting construction.	3	3	1	£2,000	£80,000	£150,000	10%	£7,733		Carry out outline and detailed design to current standards; liaise with WSCC to understand if design standards are likely to change; react proactively to interim and new DMRB requirements as they become known; obtain approval for departures from standards where change is not feasible.	2	3	1	£2,000	£80,000	£150,000	5%	£3,867		Risk sum added following review of A3 Hindhead project that required similar.	WSCC		Yes	
5	Procurement / Commercial	… Inflation and land cost increase.	Additional costs	3	4	5	£0	£450,000	£900,000	100%	£450,000		- Use Government figures of projected inflation to inform the future works and land costs - Allow for a risk sum to cover any additional inflation above the projected inflation figure	1	4	3	£0	£100,000	£200,000	50%	£50,000		WSCC to determine the best way in which to price inflation into their project budget	WSCC		Yes	Inflation risk in addition to the 2.5% already priced into the budget.
6	Statutory Process	… objections to Orders or objections are unresolved leading to a Public Inquiry	- Significant additional cost and time	5	0	2	(£250,000)	(£125,000)	£0	25%	£0		- Strategies required for this opportunity to be maximised - Consider impact of local protest group. - WSCC has built good rapport with local land owners - only statutory objectors can force a PI	5	0	3	(£250,000)	(£80,000)	£0	50%	£0		Issues realised by potential statutory objectors and local residents regarding accommodation works have been addressed where feasible.	WSCC		Yes	Post mitigation probability based on the assumption that the strategies chosen by WSCC will increase the potential of there not being a requirement for a public inquiry.
		… Judicial Review		5	4	2	£20,000	£100,000	£250,000	25%	£30,833			3	3	2	£10,000	£50,000	£100,000	25%	£13,333						
7	Statutory Process	… a public Inquiry will be required, potential risks to the scheme	- Impact on overall programme - additional spend on Public Inquiry (Consultants, Solicitors, Land Agents fees etc.).	5	4	3	£10,000	£150,000	£200,000	50%	£60,000		- Build contingency into programme for Public Inquiry - Consult with Statutory and non-statutory consultees and local residents during scheme development. - Address the concerns of affected local residents and potential statutory objectors and determine the likelihood of objections being raised to Orders - programme allows for Public Enquiry and therefore if not required will reduce programme	5	3	2	£10,000	£25,000	£100,000	30%	£13,500		Establish requirements for a PI at an early stage and develop mitigating strategies for statutory objectors.	WSCC		Yes	Post mitigation provides for mitigating measures that reduce the impact of the overall requirements for a PI. Note that one a PI is triggered then there is a fixed time table.
8	Statutory Process	… orders are not confirmed following Public Inquiry	Additional time and design work required to satisfy the Secretary of State.	5	3	1	£20,000	£40,000	£100,000	15%	£8,000		- Build flexibility into the overall programme such that should Orders not be confirmed then there is minimal time impact.	3	3	1	£20,000	£40,000	£100,000	15%	£8,000		Risk allowed for in overall scheme programme.	WSCC		Yes	TBA
9	Statutory Process	… there is a change to the scope of works due to Secretary of State's decision	- Requirement to expand scope of project results in additional time and design requirements which leads to additional costs and delays to the projects.	4	3	1	£0	£0	£300,000	15%	£15,000		The Secretary of State should only intervene if the planning permission or statutory requirements are called in. This generally results from a failure to manage the projects stakeholders. Therefore, the mitigation is to undertake adequate consultation at the appropriate times	4	3	1	£0	£0	£300,000	5%	£5,000		Requirement to redefine this risk such that it is fully understood.	WSCC		Yes	Assessment assumes that the SoS decision requires a change of scope but that this can be either a reduced scope or an increased scope (evaluated on a flat profile).

Lyminster Bypass

Project Delivery Risk Assessment

No	Category	Risk The risk is that……	Effect / Consequence	Risk Assessment Before Mitigation						Likeli hood	Risk allowance (statistical x likelihood)	RAG	Mitigation Measure	Risk Assessment After Mitigation						Likeli hood	Risk allowance (statistical x likelihood)	RAG	Current Action & Status	Risk Owner	Action By Date	Mitigation in place?	Comments
				Impact		Likeli-hood	Risk Impact Evaluation							Severity		Likeli-hood	Risk Impact Evaluation										
				Time	Cost		Min	Likely	Max					Time	Cost		Min	Likely	Max								
10	Statutory Process	… there is a requirement for additional land outside orders.	Additional costs and delays to the programme.	3	3	1	£50,000	£160,000	£300,000	20%	£34,000		- Undertake survey checks for the design and of the highway boundary and ensure that any considered working arrangements can be undertaken within the highway boundary or allocated private land. - Identify areas where there is a possibility of requiring additional land and approach landowners and open discussions/negotiations early such that if additional land is required there are no surprises plus there are options such that WSCC cannot be held to ransom. - Consider redesign (if possible) if significant additional land is required. - Proactively consider the use of CPO powers at an early stage to reduce the likelihood of a ransom situation.	3	3	0	£25,000	£80,000	£150,000	0%	£0		#####	WSCC ensuring that scheme design is fit-for-purpose and will not be subject to any significant changes.	WSCC		Yes	Post mitigation assumes that there might be some requirement - e.g. such as contractor's compound and that this will be priced into the tender - note if this is the case then there will need to be a transfer of monies from risk to project once the tender has been let.
11	Construction	… the scheme will result in damage to SU equipment	Delays and disruption leading to additional costs	3	3	2	£10,000	£50,000	£250,000	40%	£41,333		DESIGN PROCESS TO INCLUDE FOR REVIEW OF EXISTING APPARATUS WITH DIVERSIONS / PROTECTIONS ALLOWED FOR. Follow NRSWA processes, use "dial before you dig" services for each service provider, carry out trial holes, consider the use of ground penetrating radar. Ensure that the contractor owns and manages the risk of SU strikes.	2	3	2	£10,000	£20,000	£50,000	30%	£8,000		Works Information to clearly state the requirement for the Dial before you Dig service and ensure that in the conditions of contract this risk is fully transferred.	CTR		Yes	
12	Construction	… latent defects in the works showing up after defects liability period	Additional costs, rectification of defects causing disruption to the public and reputational impact to WSCC	1	3	1	£80,000	£80,000	£80,000	10%	£8,000		- Ensure that D&B contractor has good track record in the successful delivery of schemes of similar nature - Ensure adequate supervision of the works (Any latent defects arising to be covered by maintenance budget)	1	3	1	£80,000	£80,000	£80,000	10%	£8,000		None	WSCC		Yes	
13	Construction	… extreme weather will occur	Delays and disruption leading to additional costs	2	4	2	£50,000	£100,000	£200,000	25%	£29,167		Make allowance in the budget or transfer weather risk to the contractor and allow for this in tender assessment	2	4	1	£50,000	£160,000	£200,000	10%	£13,667		Reassess impact and note comments.	WSCC		Yes	Assumed at maximum 2 weeks delay if an extreme weather event materialises.
14	Construction	… there will be supply chain problems	Delays, disruption and additional costs	3	3	2	£25,000	£80,000	£100,000	25%	£17,083		- Transfer risk to the contractor. Contractor to clearly identify their supply chain management process, prompt payment certificates, consider project bank accounts, use partnering style arrangements whereby the client has interface with the supply chain such that any potential risk can be understood. - Use of target cost contract to ensure this risk is shared.	2	3	1	£12,500	£40,000	£50,000	15%	£5,125		WSCC to ensure that the Principal Contractor has sole responsibility for delivery of the works.	WSCC		Yes	
15	Construction	… there will be a Health and Safety incident	Potential delays to the project but unlikely to be of significant impact.	2	3	1	£30,000	£50,000	£50,000	10%	£4,333		Transfer risk to the contractor. - WSCC to ensure CDM procedures are provided as part of tender submission	2	3	1	£30,000	£50,000	£50,000	10%	£4,333		Ensure that the contract make any costs associated with a H&S incident 'disallowed'	WSCC		Yes	Most contractor's AFR's are in the region of 0.5% or lower. In addition this would be the contractor's cost and not anything associated with WSCC.
17	Construction	… the works will cause noise dust and vibration	Additional costs	2	3	2	£25,000	£50,000	£75,000	40%	£20,000		The contractor to plan the works to ensure that noisy, dusty or operation that cause vibration are eliminated from the works where possible and that the correct legislative requirements are met for works that cannot be replaced. - Contractor to produce CEMP as part of pre	1	2	1	£0	£5,000	£10,000	10%	£500		Proposed construction methods are likely to avoid this risk.	WSCC		Yes	Cannot see where this risk will come from, consider that the greatest risk arises from the contractor's productivity.
18	Construction	… there will be environmental protests	Delays and disruption leading to additional costs	2	3	2	£1	£400,000	£750,000	30%	£115,000		Ensure that appropriate stakeholder consultation / information is carried out. Undertake assessment into potential for environmental protests. Liaise with the Police as appropriate. Ensure reports and publicity highlight environmental benefits	1	3	1	£1	£400,000	£750,000	20%	£76,667		Ensure that project team have a wider understanding of local issues and assess whether there are any indications that environmental protests may be an issue.	WSCC		Yes	No significant negative noises from environmental pressure groups to date. Concerns about junction options at northern end.

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19	Construction	… their will be programming problems with Statutory Undertakers	Delays and disruption leading to additional costs	4	4	2	£50,000	£250,000	£500,000	40%	£106,667		- Contractor to programme to undertake SU works (diversions etc.) at begining of the main works start, such that if delays are incurred then the impact of the delays is much less then it would be if the contract for the main works had started. - Programme to alos consider traffic requirements and TM arrangements - Contractor to be responsible for organising stats.	1	4	1	£20,000	£100,000	£250,000	20%	£24,667		Risk to be reassessed after consideration of services within the site boundaries.	WSCC		Yes	
20	Construction	… plant movement will result in restrictions to work.	Disruptions to site operations	2	3	1	£15,000	£20,000	£50,000	20%	£5,667		Prior to letting the contract seek to understand the requirement for plant movements and carry out consultation with the appropriate stakeholders to ensure that the proposals are deliverable. - Compound areas are shown withn land requirements including haulage routes.	1	2	1	£0	£5,000	£15,000	10%	£667		To be captured in works information	WSCC		Yes	Included in pricing by contractors therefore priced at zero.
21	Construction	… the works will cause disruption to the public	Additional costs	2	2	2	£5,000	£10,000	£15,000	40%	£4,000		- Transfer risk to the contractor. - Contractor to detail in their tender submission how they will manage disruption to the public.	1	2	2	£0	£5,000	£15,000	40%	£2,667		WSCC to focus on traffic management proposals and tender and other times.	CTR		Yes	
22	Construction	… the works will cause insurance claims	Additional costs	1	3	3	£10,000	£20,000	£50,000	50%	£13,333		Ensure the Contract transfers the risk to the contractor.	1	3	0	£0	£5,000	£10,000	0%	£0	#####	WSCC to ensure that the appropriate indemnities are included in the contract.	CTR		Yes	
23	Scheme Preparation	…flood plain levels are increased meaning that the structure over the Black Ditch needs to be increased	the profile of the proposed bypass will increase and have impacts on the views, construction costs and land requirements.	4	4	2	£50,000	£150,000	£300,000	30%	£50,000		The proposals at feasibility stage were based on the higher flood levels provided by the EA. As part of the preliminary design stage hydraulic modelling of the Black Ditch was undertaken and teh resultant flood levels have been agreed with the EA.	4	3	0	£25,000	£75,000	£150,000	0%	£0	#####	The final level of the structure above the watercourse bed will need to consider the maintenance issues (Risk Item Technical 6) The current indication is that the maintenance requirement produces the highest bridge level.	WSP		Yes	
24	Post Works	… maintenance requirements of the structure over the Black Ditch due to its limited height above the watercourse bed	the space above the watercourse bed and the underside of the proposed structure is relatively limited (circa 1.50m) and therefore inspections and maintenance requirements may require special consideration	1	3	2	£10,000	£20,000	£40,000	30%	£7,000		The structure level is not dictated by the flood plain level, but is controlled by the maintenance access requirement with a minimum 1.50m clearance required. This level has been included in the hydraulic modelling, which is agreed with the EA, and the structure AiP, which is agreed with WSCC.	1	3	0	£10,000	£20,000	£40,000	0%	£0	#####	If the final design results in a clearance between watercourse bed and soffit of structure of 1.50m then the maintenance requirements will need to be considered in the Construction / As-Built Health and Safety files	WSP		Yes	
25	Scheme Preparation	…archaeological requirements increase as a consequence of site investigation works	if the site investigation identifies matters of archaeological significances then additional costs and time delays will be incurred	3	3	3	£25,000	£50,000	£100,000	50%	£29,167		As part of the preliminary design phase a desktop study has been undertakeln that indicates the potential for archaeological findings. Prior to or as part of the detailed design stage an archaeoligical site investigation will need to be undertaken in accordance with an agreed scope of works.	1	2	1	£1,000	£100,000	£250,000	5%	£5,850		The desk reviews undertaken as part of the feasibility study do not indicate significant archaeological risks, however until the site investigations have been undertaken this cannot be certain	WSP		Yes	
26	Scheme Preparation	… ecological constraints and / or requirements increase as a consequence of site investigation works	if the site investigation identifies matters of ecological significances then additional costs and time delays will be incurred	1	3	2	£25,000	£50,000	£100,000	40%	£23,333		As part of the preliminary design stage ecological investigations have been undertaken and the outcomes have informed the design. Some further studies (bats & water voles) will need to be completed prior to or as part of the detailed design stage and will need to inform the design.	1	3	1	£5,000	£15,000	£25,000	20%	£3,000		The outstanding studies in relation to Bats and Water voles need to be undertaken prior to or as part of the detailed design package.	WSP		Yes	
27	Scheme Preparation	… extent of treatment required on existing A284 Lyminster Road is increased.	although no design works have been completed at this stage a estimate for works on the existing A284 has been included in the costings. The costs could increase when the design is undertaken	1	4	3	£100,000	£250,000	£400,000	50%	£125,000		At the detailed design stage of the design for the bypass the options for the existing A284 should also be progressed to a stage that public consultation and comments are considered. The implementation of these works will need to coincide with the opening of the bypass.	1	4	0	£50,000	£100,000	£200,000	0%	£0	#####	A cost allowance has been Included in cost estimate	WSCC		Yes	

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28	Scheme Preparation	…flood modelling outputs increase alignment and mitigation requirements	flood modelling will be required as part of the drainage strategy / FRA and the outputs could impact on the design in terms of vertical alignment and / or flood compensation requirements.	1	4	3	£50,000	£150,000	£300,000	50%	£83,333		The proposals at feasibility stage were based on the higher flood levels provided by the EA. As part of the preliminary design stage hydraulic modelling of the Black Ditch abd Brookfield stream was undertaken and the resultant flood levels have been agreed with the EA.	1	3	0	£5,000	£20,000	£50,000	0%	£0	#####		WSP		Yes	
29	Scheme Preparation	…utility protection / diversion costs are greater than the allowance in the costings.	the detailed utility protection / diversion estimates could be greater than the allowance meaning that insufficient funding is available	1	3	2	£25,000	£75,000	£150,000	40%	£33,333		as part of the preliminary design phase detailed consultation and estimates are required from the utility companies	1	2	2	£0	£10,000	£20,000	25%	£2,500			WSP		Yes	
30	Scheme Preparation	…in situ materials on Site are geotechnically unsuitable for re-use in creating proposed road levels.	materials will require treatment before placement during earthworks and or additional foundation structures required beneath road carriageway.	3	4	3	£100,000	£250,000	£500,000	50%	£141,667		material testing during ground investigation and completion of a material re-use assessment	1	4	1	£100,000	£250,000	£500,000	20%	£56,667		Costs could be significant depending on volume of soil treatment solution provided. UODATE RISK TO MAKE THE VALUE EQUAL THE ADDIOTNAL COST OF IMPORTED MATERIAL	WSP		Yes	
31	Scheme Preparation	…groundwater, potentially contaminated from off Site sources, may impact on excavation works during development works.	Limits on excavation work, cost for water treatment and disposal from excavation works.	3	4	3	£150,000	£300,000	£500,000	50%	£158,333		groundwater analysis during ground investigation - adjust design of excavations to limit works below water table if groundwater found to be contaminated.	1	4	1	£100,000	£200,000	£400,000	5%	£11,667			WSP		Yes	
33	Scheme Preparation	…ground conditions require scheme redesign	delays to programme, costs of scheme redesign	4	3	2	£20,000	£40,000	£200,000	40%	£34,667		undertake ground investigation early in design programme to identify geotechnical constraints to design.	1	3	1	£20,000	£40,000	£200,000	5%	£4,333			WSP		Yes	
34	Scheme Preparation	…spring lines, sinkholes, solution features encountered	delays to programme, costs of scheme redesign, significant earthworks required	4	4	1	£300,000	£500,000	£750,000	20%	£103,333		undertake ground investigation early in design programme to identify geotechnical constraints to design.	4	4	1	£20,000	£40,000	£200,000	5%	£4,333			WSP		Yes	
36	Construction	…unforeseen contamination encountered during construction	delays to programme, scheme redesign, costly material import / export required	3	4	2	£300,000	£500,000	£750,000	30%	£155,000		Ground investigation restricted to accessible areas of Site. Further investigation may be necessary if abnormal variations in ground conditions encountered at fringe of areas with restricted access. Ensure that contractor makes allowance in programme for the discovery of contaminated land during site clearance and excavation such that impact if discovered is minimal on programme.	2	3	1	£20,000	£40,000	£200,000	20%	£17,333			WSP		Yes	
41	Scheme Preparation	…extent of model network and level of definition insufficient for detailed traffic appraisal or future business case development.	Delay in agreement of impacts. Lack of use for supporting future funding approaches.	3	3	1	£30,000	£100,000	£150,000	10%	£9,333		Identification at bid stage of coverage of the model, confirmation through inception meeting and project workshop. Technical note and agreement with key stakeholders prior to major network coding work	1	3	0	£25,000	£50,000	£75,000	0%	£0	#####	Agreed with WSCC through D2 Appraisal Specification Report	WSP		Yes	
43	Scheme Preparation	…technical approval of the traffic model delayed.	Impact on usability of traffic model, impact on forecast testing scenarios, non-conformity with WebTAG/DMRB for business case.	4	3	2	£10,000	£30,000	£50,000	25%	£7,500		Agreement of inputs and approaches during model build. Regular meeting to discuss progress and accuracy	3	2	0	£10,000	£30,000	£50,000	0%	£0	#####		WSP		Yes	
44	Scheme Preparation	…potential number of future forecasts and model runs driven from outside the project. E.g. Questions from the HA.	Impact on programme and delivery, increase in junction assessment requirements and additional costs.	1	3	2	£15,000	£25,000	£40,000	25%	£6,667		Discussion and agreement on future forecast testing scenarios in early stages of project, implication of multiple testing explained at inception and workshop	1	3	1	£5,000	£15,000	£25,000	20%	£3,000		Programme risk and not a cost risk	WSP		Yes	
50	Scheme Preparation	…requests to run the flooding model to test additional design scenarios than proposed	additional cost, programme delay	1	3	2	£10,000	£15,000	£20,000	25%	£3,750		Communicate with structures team to ensure that the two bridge design iterations allowed for in the fee are serious considerations. 220914 Alternative alignments will result in aditional model runs	1	2	0	£5,000	£7,500	£10,000	0%	£0	#####		WSP / Structures / Flooding		Yes	
52	Scheme Preparation	…ecological impacts - bat and water vole surveys and extended period required	the survey period for bats extends beyond the current period and could impact on the design.	3	2	4	£5,000	£10,000	£20,000	75%	£8,750		The initial surveys provide an indication of the potential for bats and therefore an assessment has been made on the impacts on the design. The studies will need to be completed prior to or as part of the detailed design. The water voles studies have not been progressed and therefore also need to be completed prior to or as part of the detaield design.	3	2	1	£5,000	£25,000	£50,000	20%	£5,333		Bat survey recommendations need to be programmed. Water vole surveys need to be completed to inform the design.	WSP / WSCC		Yes	

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				Time	Cost		Min	Likely	Max					Time	Cost		Min	Likely	Max								
59	Scheme Preparation	… WSCC / NR will decide to leave the Wick level crossing open when the bypass is complete.	Network Rail have committed to contribute £1M to the project if the level crossing is closed. This funding will be lost if the crossing is not closed. This could potentially result in a significant funding gap.	2	4	3	£1,000,000	£1,000,000	£1,000,000	50%	£500,000		Assume funding not forth coming and exclude from TBC.	0	0	0	£0	£0	£0	1%	£0			WSCC / WSP		Ongoing	WSCC need to confirm the position so that WSP can take the appropriate action.
60	Scheme Preparation	… NR will decide to leave the Wick level crossing open when the bypass is complete.	This could potentially result in unknown economic benefits / disbenefits for the scheme includign safety, noise, severance	2	2	3	£10,000	£25,000	£30,000	50%	£10,833		Undertake further modelling to understand the benefits / disbenedits of the proposal. 220914 Initial modelling indicates that impacts are small.	2	2	0	£10,000	£25,000	£30,000	0%	£0			WSCC / WSP		Ongoing	WSCC need to confirm the position so that WSP can take the appropriate action.
61	Scheme Preparation	… WSCC will decide to leave the Wick level crossing open when the bypass is complete in an attempt to reduce the pressure on the southern bypass junctions.	Leaving the crossing open could potentially result in reduced, but significant, flow on existing route may require traffic calming, which would in turn divert more people on to the new bypass. (costs are for traffic calming)	2	2	3	£10,000	£20,000	£25,000	50%	£9,167		Dialogue is ongoing with the WSCC. Additionally undertake modelling to balance the needs of congestion reduction on the bypass with continued congestion the local roads.	2	2	0	£10,000	£20,000	£25,000	0%	£0		DEALT WITH IN DESIGN	WSCC / WSP		Ongoing	WSCC need to confirm the position so that WSP can take the appropriate action.
62	Post Works	Opportunity for lessons learnt and public acceptance	Improve reputation for future schemes & benefit future projects	2	2	2	£0	£0	£0	50%	£0		Stakeholder engagement/Good PR plan and communication along with best practice guide based on lesson learnt	2	2	2	£0	£0	£0	50%	£0			WSCC		Ongoing	
63	Scheme Preparation	Market changes (capacity & inflation)	Cost increases and scheme delay	4	4	3	£0	£200,000	£1,000,000	20%	£80,000		ECI style engagement and robust cost forecasting	3	3	2	£0	£200,000	£1,000,000	10%	£40,000			WSCC		Ongoing	
65	Scheme Preparation	Economic Upturn pressure on time	Development required sooner	3	3	1	£0	£0	£0	10%	£0		Programme early activities and enabling asap	2	2	1	£0	£0	£0	0%	£0			WSCC		Ongoing	
66	Scheme Preparation	Growth forecast wrong/underestimated	Design insufficient or over designed	4	4	3	£0	£500,000	£2,000,000	50%	£416,667		Capacity and sensitivity testing to be robust	2	2	1	£0	£250,000	£500,000	3%	£6,250			WSCC		Ongoing	
67	Scheme Preparation	Cost benefit not viable	Scheme stopped or scope reduced	5	5	3	£0	£250,000	£500,000	50%	£125,000		early discussion and agreement with LEP	2	2	1	£0	£250,000	£500,000	2%	£5,000			WSCC		Yes	
68	Post Works	Wider economic benefits not realised	Negative economic impact	4	4	3	£0	£0	£0	50%	£0		Developmet strategy discussion with WSCC, LEP & ADC	3	3	1	£0	£0	£0	0%	£0			WSCC		Yes	
69	Construction	Resource availability	Delivery delay (time & cost)	4	4	3	£10,000	£75,000	£200,000	50%	£47,500		Budget and time contingency (market testing for capacity)	3	3	2	£10,000	£75,000	£200,000	20%	£19,000			WSCC		Yes	
70	Construction	Market Capability	Outcomes not achieved	4	4	3	£10,000	£75,000	£200,000	50%	£47,500		Clearly designed roles & responsibilities & contingency plans to be developed	3	3	2	£10,000	£75,000	£200,000	20%	£19,000			WSCC		Yes	
71	Construction	Project Governance	Poor performance with outcomes not achieved	4	4	3	£0	£50,000	£100,000	50%	£25,000		Project Board to be in place and proactive with a robust performance management regime aligned to project outcomes	3	3	2	£0	£25,000	£50,000	0%	£0		Project Board costs covered internally - zero risk	WSCC		Yes	
74	Scheme Preparation	Incorrect form of contract	Cost and time increases	3	2	3	£5,000	£15,000	£25,000	40%	£6,000		Independent and in-house Legal & commerical scrutiny sign off	2	2	1	£5,000	£15,000	£25,000	10%	£1,500			WSCC		Yes	
75	Scheme Preparation	Specification errors	Inferior project and scope/cost creep	3	3	3	£0	£250,000	£500,000	40%	£100,000		Appropriate Quality checks and third party validation	2	2	1	£0	£50,000	£100,000	10%	£5,000			WSCC		Yes	
76	Scheme Preparation	Contractor selection	Works delay and quality issues	3	3	3	£0	£1,000,000	£3,000,000	50%	£666,667		Robust rep qualification and selection process taking about of capability & competencies	2	2	1	£0	£250,000	£500,000	2%	£5,000		Procurement process will remove this risk	WSCC		Yes	
77	Scheme Preparation	Evaluation Criteria (Q/P ratio)	Wrong contractor selected	3	3	3	£0	£1,000,000	£3,000,000	50%	£666,667		Market tesing and third party validation of criteria	2	2	1	£0	£250,000	£500,000	2%	£5,000			WSCC		Yes	
78	Construction	Risk tranfer inappropriate	WSCC retain risks better managed by contrator	3	3	3	£25,000	£500,000	£1,000,000	50%	£254,167		Appropriate treatment of risk and contract drafting	2	2	2	£0	£250,000	£500,000	5%	£12,500			WSCC		Yes	
79	Construction	Procurement timetable and 3rd party dependency	Southern by pass and NR cause delay with cost increases	4	3	3	£0	£25,000	£50,000	50%	£12,500		Realistic forward plan with contingency cover and well developed communications with NR and stakeholders	3	3	1	£0	£10,000	£20,000	0%	£0			WSCC		Yes	
80	Scheme Preparation	Target Price incorrect or strategic pricing	Price over-runs	4	4	3	£0	£500,000	£1,000,000	50%	£250,000		Third party commercial advice and support for tender pricing model development	3	2	1	£0	£100,000	£200,000	5%	£5,000			WSCC		Yes	
83	Scheme Preparation	Opportunity to link schemes (southern bypass)	Economies of scale and delivery certainty	3	4	2	£0	£0	£0	10%	£0		Co-ordinate cost benefits and one project management team	3	2	1	£0	£0	£0	0%	£0			WSCC		No	
84	Post Works	Benefits not realised	Lack of future funding	3	4	3	£0	£0	£0	10%	£0		FBC to sense check all outcome benefits and ensure they are robsut and deliverable	3	2	1	£0	£0	£0	10%	£0			WSCC		No	
37	Scheme Preparation	…failure to reach timely agreement from stakeholders for RSI locations or traffic management designs.	Surveys do not take place on specified dates leading to delay in overall programme.	1	3	0	£0	£0	£0	0%	£0	#####	WSP-PB to put in place and manage communication strategy with actions prioritised based on complexity, importance and timescales required (for instance, early submittal of TTRO applications from relevant Authorities).	1	3	0	£0	£0	£40,000	0%	£0	#####	Now complete, so no risk	WSP		Yes	
38	Scheme Preparation	…surveys carried out on dates where school holidays, major events or planned roadworks take place.	The data collected will not be representative of standard weekday traffic flows in term time.	3	3	0	£0	£0	£0	0%	£0	#####	Detailed investigation of planned events both nearby and downstream of survey sites to be carried out with changes to programme made following agreement from the client.	1	3	0	£0	£0	£0	0%	£0	#####	Now complete, so no risk	WSP		Yes	

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No	Category	Risk The risk is that……	Effect / Consequence	Risk Assessment Before Mitigation								RAG	Mitigation Measure	Risk Assessment After Mitigation								RAG	Current Action & Status	Risk Owner	Action By Date	Mitigation in place?	Comments
				Impact		Likeli-hood	Risk Impact Evaluation			Likeli hood	Risk allowance (statistical x likelihood)			Severity		Likeli-hood	Risk Impact Evaluation			Likeli hood	Risk allowance (statistical x likelihood)						
				Time	Cost		Min	Likely	Max					Time	Cost		Min	Likely	Max								
39	Scheme Preparation	…surveys contribute towards a serious road traffic collision or major congestion on the road network.	Members of the public are subject to significant delays and WSP-PB and West Sussex County Council subjected to reputational damage through subsequent negative press.	1	4	0	£0	£0	£0	0%	£0	#####	Traffic management plans to be produced in accordance with TA11/09 and Chapter 8 and reviewed by qualified Road Safety Auditors, the Police and the traffic management provider. Traffic flow data to be carefully studied in order to understand the impact of the potential removal of road space.	1	2	0	£0	£0	£0	0%	£0	#####	Now complete, so no risk	WSP		Yes	
40	Scheme Preparation	…delay in the delivery of the survey programme for reasons beyond our control (such as surveys being postponed due to unplanned events).	Knock-on affect on West Sussex County Council schemes.	1	2	0	£0	£0	£0	0%	£0	#####	Contingency dates have been reserved at end of survey programme which will be used as an opportunity to 'mop up' any postponed surveys from earlier in the programme.	1	2	0	£0	£0	£0	0%	£0	#####	Now complete, so no risk	WSP		Yes	
42	Scheme Preparation	…slow traffic model delivery.	…slow traffic model delivery.	2	2	2	£4,000	£6,000	£9,000	25%	£1,583		Early technical approval to key stages (network coverage, model approach) sufficient level of resources with right experience mix and supervision. Close programme monitoring and reporting.	0	0	0	£2,000	£3,000	£4,500	0%	£0	#####		WSP		Yes	
45	Scheme Preparation	…delay with channel survey due to inclement conditions	Delay to programme.	1	2	0	£0	£0	£0	0%	£0	#####	commit additional resources when conditions acceptable	1	1	0	£0	£0	£0	0%	£0	#####	Now complete, so no risk	WSP		Yes	
46	Scheme Preparation	…delay in provision of required flood/drainage data from the EA	Delay to programme.	1	2	0	£0	£0	£0	0%	£0	#####	Early consultation with Environment Agency. Follow-up consultation to identify potential delay.	1	2	0	£0	£0	£0	0%	£0	#####	Now complete, so no risk	EA / WSP		Yes	
45	Scheme Preparation	…delay with channel survey due to inclement conditions	Delay to programme.	1	2	0	£0	£0	£0	0%	£0	#####	commit additional resources when conditions acceptable	1	1	0	£0	£0	£0	0%	£0	#####	Now complete, so no risk	WSP		Yes	
46	Scheme Preparation	…delay in provision of required flood/drainage data from the EA	Delay to programme.	1	2	0	£0	£0	£0	0%	£0	#####	Early consultation with Environment Agency. Follow-up consultation to identify potential delay.	1	2	0	£0	£0	£0	0%	£0	#####	Now complete, so no risk	EA / WSP		Yes	
47	Scheme Preparation	...Environment Agency confirm that A284 Brookfield culvert must be modelled	Delay to programme and additional costs	1	2	3	£5,000	£10,000	£15,000	50%	£5,000		Early consultation with Environment Agency to reduce further risk to programme later on.	1	2	0	£5,000	£10,000	£15,000	0%	£0	#####	The Brookfield stream has been modelling	WSP		Yes	
48	Scheme Preparation	…delay with Environment Agency model and FRA review	Delay to programme	1	2	3	£2,000	£5,000	£10,000	50%	£2,833		consult with Environment Agency prior to submission of work to advise them of likely delivery date. 061213 Timetable to be agreed with Environment Agency	1	1	0	£2,000	£5,000	£10,000	0%	£0	#####	Now complete, so no risk	EA / WSP		Yes	
49	Scheme Preparation	…hydraulic model performance issues	Delay to programme, quality issues, additional cost	2	2	1	£5,000	£10,000	£15,000	20%	£2,000		Ensure adequate supervision and internal reviews prior to submission to Environment Agency. Obtain sign off by Environment Agency prior to output being used to inform structure design.	0	0	0	£5,000	£10,000	£15,000	0%	£0	#####		WSP		Yes	
51	Scheme Preparation	...Environment Agency does not approve the hydraulic model	usefulness of model, delay to programme, quality issues, additional cost.	4	3	1	£10,000	£15,000	£20,000	20%	£3,000		Clear & transparent consultation with Environment Agency to present previously agreed methodology and highlight any likely changes as modelling progresses. 061213 Agreeing timetable with Environment Agency prior to submission	0	0	0	£7,000	£11,000	£20,000	0%	£0	#####		EA / WSP		Yes	
55	Scheme Preparation	… comments arising from the Environment Agency's review of the Black Ditch Hydraulic Modelling may result in delays to the programme and abortive costs.	The comments may result in changes needing to be made to the baseline and post-development Black Ditch models. This could potentially result in abortive/additional bridge design work.	4	2	2	£0	£4,000	£10,000	30%	£1,400		Dialogue is ongoing with the Environment Agency. Additional freeboard to be incorporated into the design.	0	0	0	£0	£4,000	£10,000	0%	£0	#####		WSP		Yes	
56	Scheme Preparation	… comments arising from WSCC's review of the Brookfield Stream Hydraulic Modelling report may result in changes needing to be made to the baseline and post-development Brookfield Stream models.	This could potentially result in abortive/additional culvert design work.	4	2	2	£0	£2,000	£5,000	30%	£700		Dialogue is ongoing with the WSCC. Additional freeboard to be incorporated into the design.	0	0	0	£0	£2,000	£5,000	0%	£0	#####		WSP		Yes	
57	Scheme Preparation	... inclement weather leading to flooding of the Brookfield stream could delay the Brookfield stream survey and the overall programme.	The completion of the design will be delayed.	4	2	0	£0	£0	£0	0%	£0	#####	None Possible	4	2	0	£0	£0	£0	0%	£0	#####		WSP		Yes	
58	Scheme Preparation	… delays in instructing the surveyor may lead to a postponed start date and programme delays.	The completion of the design will be delayed.	4	2	0	£0	£0	£0	0%	£0	#####	None Possible	4	2	0	£0	£0	£0	0%	£0	#####		WSP		Yes	
Initial Total Commercial Risk to Consider											£5,409,650							£870,000			£506,092						

Appendix D – Scheme cost proforma

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CONTENTS

1.0 - QUALITY ASSURANCE APPROVALS

1.1 - PREPARATION & AUTHORISATION

Issue/revision	Issue 1	Revision 1	Revision 2	Revision 3	Revision 4	Revision 5
Date	01/09/2014	18/09/2014	23/09/2014	30/10/2014	05/11/2014	06/11/2014
Prepared by	J. Jenkinson	J. Jenkinson	J. Jenkinson	J. Jenkinson	J. Jenkinson	J. Jenkinson
Signature	*J. Jenkinson*	*J. Jenkinson*	*J. Jenkinson*	*J. Jenkinson*	*J. Jenkinson*	*J. Jenkinson*
Checked by	M. Cotton	M. Cotton	M. Cotton	M. Cotton	M. Cotton	M. Cotton
Signature	*M. Cotton*	*M. Cotton*	*M. Cotton*	*M. Cotton*	*M. Cotton*	*M. Cotton*
Authorised by	M. Cotton	J. Jenkinson	J. Jenkinson	J. Jenkinson	J. Jenkinson	J. Jenkinson
Signature	*M. Cotton*	*J. Jenkinson*	*J. Jenkinson*	*J. Jenkinson*	*J. Jenkinson*	*J. Jenkinson*

1.2 - DRAWINGS

Project:		Date of Receipt					
LYMINSTER BYPASS PRELIMINARY DESIGN	Day	15	29	09			
	Month	08	08	09			
	Year	14	14	14			
Title:	Number	Revisions (ini = initial issue)					
GENERAL ARRANGEMENT PLAN SHEET 1 OF 2	1045/GA/001	A					
GENERAL ARRANGEMENT PLAN SHEET 2 OF 2	1045/GA/002	A					
PAVEMENT AND KERBING SHEET 1 OF 2	1045/GA/003	A					
PAVEMENT AND KERBING SHEET 2 OF 2	1045/GA/004	A					
PROPOSED ROAD CONTOUR PLAN SHEET 1 OF 2	1045/GA/005	A					
PROPOSED ROAD CONTOUR PLAN SHEET 2 OF 2	1045/GA/006	A					
DRAINAGE LAYOUT SHEET 1 OF 2	1045/D/001	A					
DRAINAGE LAYOUT SHEET 2 OF 2	1045/D/002	A					
ROAD MARKINGS SHEET 1 OF 2	1045/TS/001	A					
ROAD MARKINGS SHEET 2 OF 2	1045/TS/002	A					
BLACK DITCH BRIDGE	045/ST/001		B				
TYPICAL CROSS SECTIONS	1045/SD/101	A					
PROPOSED ROAD LONG SECTION (SHEET 1 OF 4)	1045/RP/001	A					
PROPOSED ROAD LONG SECTION (SHEET 2 OF 4)	1045/RP/002	A					
PROPOSED ROAD LONG SECTION (SHEET 3 OF 4)	1045/RP/003	A					
PROPOSED ROAD LONG SECTION (SHEET 4 OF 4)	1045/RP/004	A					
TOPOGRAPHICAL SURVEY (SHEET 1 OF 10)	1045-XS-001-010	A					
TOPOGRAPHICAL SURVEY (SHEET 2 OF 10)	1045-XS-002	A					
TOPOGRAPHICAL SURVEY (SHEET 3 OF 10)	1045-XS-003	A					
TOPOGRAPHICAL SURVEY (SHEET 4 OF 10)	1045-XS-004	A					
TOPOGRAPHICAL SURVEY (SHEET 5 OF 10)	1045-XS-005	A					
TOPOGRAPHICAL SURVEY (SHEET 6 OF 10)	1045-XS-006	A					
TOPOGRAPHICAL SURVEY (SHEET 7 OF 10)	1045-XS-007	A					
TOPOGRAPHICAL SURVEY (SHEET 8 OF 10)	1045-XS-008	A					
TOPOGRAPHICAL SURVEY (SHEET 9 OF 10)	1045-XS-009	A					
TOPOGRAPHICAL SURVEY (SHEET 10 OF 10)	1045-XS-010	A					
FIGURE 8.5 STRATEGIC LANDSCAPE MITIGATION P	62003478-022/001			1.0			
FIGURE 8.5 STRATEGIC LANDSCAPE MITIGATION P	62003478-022/002			1.0			
FIGURE 8.5 STRATEGIC LANDSCAPE MITIGATION P	62003478-022/003			1.0			
FIGURE 10.1 LAND TAKE ASSOCIATED WITH THE D	39851			A			

2.0 - METHODOLOGY

2.1 - INTRODUCTION

The project comprises the proposed highway construction works for the Lyminster Bypass, West Sussex.

Based on the level of design information provided, this estimate should be seen as a quantified budget estimate.
This estimate is based on approximate quantities measured from drawings and provided by design team.
All work items are costed using the estimating cost data.
Level of confidence of +/- 25% limited to quantities and costs for all work items only.

2.2 - BASIS OF COSTS

This cost plan is priced at 3rd Quarter 2014.
Cost data has been based on a combination of historical cost data and Spon's Civil Engineering and Highways Price Book 2012
Estimating methods include:
- Take-off quantities for drawings provided
- Calculation of quantities from take-off
- Pricing by reports, databases, price books and experience adjusted for specific project conditions
- Rates have been adjusted to current prices/costs using RCTPI
- Provisional estimates or allowances developed for immeasurable items

There are certain aspects associated with the construction costs that can not be determined using the initial concepts and preliminary layouts.
Utility costs could be significant, be it diversion/protection works, as there is no indication of what apparatus is present.
It is strongly recommended that utility searches are carried out ("C2 Notices") and inquiries are made to statutory undertakers for budget cost estimates for utility diversion/protection works ("C3 Notices").
In the absence of these C3 responses, cost estimates are provided based on historical data from schemes similar in both scope and location.
These cost estimates are provided as indicative information only to establish an order of magnitude estimate.
The author assumes no responsibility for the accuracy, completeness or quality of the utility cost information provided.

Costs associated with Land Acquisition, Compulsory Purchase Orders and/or Part 1 Compensation claims could be significant.
It is strongly recommended that inquiries are made to the District Valuer (DV) for budget cost estimates regarding land acquisition and compensation values.
In the absence of responses to any inquiries, cost estimates are provided based on historical data from schemes similar in both scope and location.
These cost estimates are provided as indicative information only to establish an order of magnitude estimate.
The author assumes no responsibility for the accuracy, completeness or quality of the estimates for cost associated with land.

2.3 - EXCLUSIONS

The following are excluded, but should be included within the overall Project Budget, where appropriate:
Phasing of the construction
Testing & Commissioning
QRA
Optimism Bias
Allowance for future inflation
Value added tax
Risks including but not limited to:
- Further survey works, site investigation or the like
- Costs in connection with archaeological investigations and finds
- Costs in connection with soil contamination or remediation
- Costs in connection with abnormal ground conditions arising from any future site investigations
- Lowering or diversion of any existing sewers, drainage or services
- Further earthworks, landscaping works or the like

2.4 - ASSUMPTIONS

The following assumptions have been made

Series 100: Preliminaries
- An allowance of the construction costs has been made for prelims
- It has been assumed that this 20% allowance will cover Site set-up, maintenance and removal
- It has been assumed that this 2.5% allowance will cover traffic management where required

Series 200: Site Clearance
- An allowance has been made for General Site Clearance

Series 300: Fencing
- An allowance has been made for fencing
- All specification of materials have been assumed

Series 400: Road Restraint Systems (Vehicle and Pedestrian)
- An allowance has been made for safety fencing to carriageway
- Specific requirements for vehicle and pedestrian barriers on structures are included within each structure
- All specification of materials have been assumed

Series 500: Drainage & Service Ducts
- An allowance has been made for drainage items including:
- Drainage items as specified and quantified on drawings
- Pipework for highway drainage network
- Chambers and gullies to suit drainage network and kerb line
- All specification of materials and depths have been assumed

Series 600: Earthworks
- An allowance has been made for earthwork items including:
- Cut and fill items as specified and quantified on drawings
- Excavation of topsoil
- Excavation of material to allow for capping layer
- Deposition of excavated material to make up embankments
- Imported fill to embankments
- Imported fill as capping
- Topsoiling to embankments/verges

Series 700: Pavements
- An allowance has been made for pavement items including:
- Carriageway items as specified and quantified in BoQ
- Tack-coat to areas of tie-ins to existing carriageway
- Planing of existing carriageway for tie-ins

Series 1100: Kerbs, Footways and Paved Areas
- An allowance has been made for kerb and footway items including:
- Kerb and footway items as specified and quantified in BoQ

Series 1200: Traffic Signs & Road Markings
- An allowance has been made for traffic signs
- Road markings have been measured from drawings
- All specification of materials have been assumed

Series 1300: Road Lighting Columns and Brackets, CCTV Masts and Cantilever Masts
- An allowance has been made for lighting columns
- All specification of materials have been assumed

Series 1400: Electrical Work for Road Lighting and Traffic Signs
- An allowance has been made for electrical works
- All specification of materials have been assumed

Series 2700: Accommodation works, works for statutory undertakers, provisional sums and prime cost items
- An allowance has been made for items relating to costs for the provision of accommodation works.
- An allowance has been made for items relating to costs for the diversion of existing services or stats equipment or the provision of new services or stats equipment.

Series 3000: Landscape and Ecology
- An allowance has been made for landscaping
- All specification of materials have been assumed

STRUCTURES
- An estimate has been made for the costs of bridge structure
- Item coverage, quantities and costs have been calculated using historical data from schemes of a similar size, scope and nature

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3.0 - COST SUMMARY

SERIES	GROUP ELEMENT/ELEMENT	TOTAL COST OF ELEMENT
		4.30
	PRELIMINARIES	
100	Preliminaries	£741,826.11
	ROADWORKS	
200	Site Clearance	£7,986.07
300	Fencing	£5,510.28
400	Road Restraint Systems (Vehicle and Pedestrian)	£40,312.61
500	Drainage and Service Ducts	£416,475.41
600	Earthworks	£1,133,652.63
700	Pavements	£444,075.62
1100	Kerbs, Footways and Paved Areas	£143,006.87
1200	Traffic Signs and Road Markings	£99,670.10
1300	Road Lighting Columns and Brackets, CCTV Masts and Cantilever Masts	£8,280.00
1400	Electrical Work for Road Lighting and Traffic Signs	£50,000.00
1500	Motorway Communications	
2500	Special Structures	£420,226.25
2700	Accommodation Works, Works for Statutory Undertakers, Provisional Sums and Prime Cost	£395,000.00
3000	Landscape and Ecology	£132,809.10
	STRUCTURES	
	--- SPECIAL PRELIMINARIES ---	
100	Preliminaries	£116,053.25
	--- PILING ---	
1600	Piling and Embedded Retaining Walls	£533,802.51
	--- SUBSTRUCTURE - END SUPPORTS ---	
500	Drainage and Service Ducts	£34,344.84
600	Earthworks	£75,463.18
1700	Structural Concrete	£344,166.62
	--- SUPERSTRUCTURE - MAIN SPAN ---	
500	Drainage and Service Ducts	£8,136.67
1700	Structural Concrete	£248,086.58
2100	Bridge Bearings	£39,000.00
2300	Bridge Expansion Joints and Sealing of Gaps	£30,697.43
	--- FINISHES ---	
400	Road Restraint Systems (Vehicle and Pedestrian)	£13,048.15
2000	Waterproofing for Structures	£27,425.79
	TOTAL: CONSTRUCTION WORKS ESTIMATE (A)	£5,509,056.07
	PROJECT / DESIGN TEAM FEES AND OTHER DEVELOPMENT / PROJECT	
	Preliminary design fees & Expenses - Highways & Structures	£235,970.00
	Environmental	£91,030.00
	Buseiness Case Development	£218,000.00
	Ecological	£48,000.00
	Detailed design fees - Highways & Structures	£170,000.00
	Project Management	£250,000.00
	Other development/project costs - Land	£650,000.00
	TOTAL: PROJECT/DESIGN TEAM FEES AND OTHER DEVELOPMENT/PROJECT COSTS ESTIMATE (B)	£1,663,000.00
	BASE COST ESTIMATE (C) [C = A + B]	£7,172,056.07
	RISK/CONTINGENCY	
	Risk/Contingency	
	TOTAL: RISK ALLOWANCE ESTIMATE (D)	£506,092.00
	COST LIMIT (excluding inflation) (E) [E = C + D]	£7,678,148.07
	INFLATION	
	Tender inflation	
	Construction inflation	
	TOTAL: INFLATION ALLOWANCE (F)	£459,917.00
		£8,138,065.07
	OB	£1,131,759.73
		£9,269,824.80
	COST LIMIT (excluding VAT assessment) (G) [G = E + F]	£9,269,824.80
	VAT ASSESSMENT	excluded

LEVEL	ITEM REF.	BILL DESCRIPTION	LL QUANTI	UNIT	RATE	AMOUNT
1		LYMINSTER BYPASS				
2		BILL 1: PRELIMINARIES				
3		PRELIMINARIES				
4	100	Series_100: Preliminaries				
5	100_01	Series_100_01: Temporary Accommodation				
	100_01_01	Allow of 20% of the roadworks construction cost for Preliminaries	1	sum	£ 659,400.98	£ 659,400.98
5	100_02	Series_100_02: Traffic Safety and Management				
	100_02_01	Allow of 2.5% of the roadworks construction cost for Traffic Management	1	sum	£ 82,425.12	£ 82,425.12
		Total to carry forward to General Summary				£ 741,826.11

2		BILL 2: ROADWORKS						
3		ROADWORKS						
4	200	Series_200: Site Clearance						
5	200_01	Series_200_01: Site Clearance						
	200_01_01	General Site Clearance	4.264	ha	£	1,399.65	£	5,968.12
5	200_02	Series_200_02: Take Up or Down and Set Aside for Re-use or Remove to Store or Tip Off Site						
	200_02_01	Take up or down and remove to tip off site PCC kerbs	50	m	£	12.00	£	600.00
	200_02_02	Take up or down and remove to tip off site timber post and 4 rail fence	100	m	£	12.18	£	1,217.85
	200_02_03	Take up or down and remove to tip off site traffic sign including posts, sign face not exceeding 1 square metre in area	2	no	£	46.00	£	92.00
	200_02_04	Take up or down and remove to tip off site traffic sign including posts, sign face exceeding 1 square metre but not exceeding 5 square metres in area	2	no	£	54.05	£	108.10
		Total to carry forward to General Summary					£	7,986.07

4	300	Series_300: Fencing						
5	300_01	Series_300_01: Fencing, Gates and Stiles						
	300_01_01	Three rail fencing 1.2m high with timber posts as HCD H15	250	m	£	16.80	£	4,200.00
	300_01_02	Steel tubular frame single field gate 1.175m high 4.5m wide as HCD 17	3	no	£	256.68	£	770.04
5	300_03	Series_300_03: Excavation in hard material						
	300_03_01	Extra over excavation for excavation in Hard Material in fencing works	10	m^3	£	54.02	£	540.24
		Total to carry forward to General Summary					£	5,510.28

4	400	Series_400: Road Restraint Systems						
5	400_01	Series_400_01: Safety Barriers						
	400_01_01	Safety barrier N2, W4, designed to be impacted one side only straight or curved exceeding 120 metres radius.	240	m	£	37.34	£	8,962.56
5	400_02	Series_400_02: Terminals						
	400_02_01	Terminal P4, D.1.1, designed to be impacted on one side only	8	no	£	3,918.76	£	31,350.05
		Total to carry forward to General Summary					£	40,312.61

4	500	Series_500: Drainage and Service Ducts						
5	500_01	Series_500_01: Drains and Service Ducts (excluding Filter Drains, Narrow Filter Drains and Fin Drains)						
	500_01_01	150mm internal diameter drain in trench on bed Type S depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	750	m	£	79.27	£	59,452.13
	500_01_02	225mm internal diameter drain in trench on bed Type S depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	260	m	£	111.23	£	28,919.28
	500_01_03	300mm internal diameter drain in trench on bed Type S depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	370	m	£	132.47	£	49,013.35
	500_01_04	450mm internal diameter drain in trench on bed Type A depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	340	m	£	124.89	£	42,462.60
	500_01_05	900mm internal diameter drain in trench on bed Type A depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	200	m	£	249.56	£	49,912.30
5	500_02	Series_500_02: Filter Drains						
	500_02_01	150mm internal diameter filter drain in trench on bed Type A with Type A filter material depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	475	m	£	73.57	£	34,943.61
5	500_05	Series_500_05: Chambers and Gullies						
	500_05_01	Precast concrete 1200 mm diameter chamber Type 3a as HCD F5 with D400 cover and frame depth to invert exceeding 1 metre but not exceeding 2 metres	25	no	£	1,748.47	£	43,711.79
	500_05_02	Precast concrete 1500 mm diameter chamber Type 3a as HCD F5 with D400 cover and frame depth to invert exceeding 1 metre but not exceeding 2 metres	1	no	£	2,323.47	£	2,323.47
	500_05_03	Precast concrete 450 mm diameter flow control chamber Type 9 as HCD F25 with D400 cover and frame depth to invert exceeding 1 metre but not exceeding 2 metres	3	no	£	1,272.76	£	3,818.29
	500_05_04	HDPE trapped gully as HCD F13 with D400 cover and frame	148	no	£	314.08	£	46,484.28
5	500_06	Series_500_06: Headwalls and Outfall works						
	500_06_01	Headwall in mass concrete to pipe exceeding 300mm but not exceeding 600mm internal diameter	13	no	£	4,002.02	£	52,026.31
5	500_07	Series_500_07: Soft Spots and Other Voids						
	500_07_01	Excavation of soft spots and other voids in the bottom of trenches, chambers and gullies	50	m^3	£	13.04	£	652.20
	500_07_01	Filling of soft spots and other voids in the bottom of trenches, chambers and gullies with acceptable excavated material	50	m^3	£	37.09	£	1,854.60
5	500_14	Series_500_12: Excavation in Hard Material						
	500_14_01	Extra over excavation for excavation in Hard Material in drainage	50	m^3	£	18.02	£	901.20
		Total to carry forward to General Summary					£	416,475.41

4	600	Series_600: Earthworks						
5	600_01	Series_600_01: Excavation						
	600_01_01	Excavation of acceptable material Class 5A	6396	m³	£	3.00	£	19,188.00
	600_01_02	Excavation of acceptable material excluding Class 5A in cutting and other excavation	1725	m³	£	2.48	£	4,284.90
	600_01_03	Excavation of acceptable material excluding Class 5A in ditches	1650	m³	£	5.13	£	8,462.85
	600_01_04	Excavation of acceptable material excluding Class 5A in ponds	1773	m³	£	5.13	£	9,093.72
5	600_02	Series_600_02: Excavation in Hard Material						
	600_02_01	Extra over excavation for excavation in hard material in cutting and other excavation	600	m³	£	12.00	£	7,200.00
5	600_04	Series_600_04: Deposition of Fill						
	600_04_01	Deposition of acceptable material in embankments and other areas of fill	2574	m³	£	1.44	£	3,706.56
5	600_05	Series_600_05: Disposal of Material						
	600_05_01	Disposal of acceptable material excluding Class 5A	2574	m³	£	45.53	£	117,190.36
	600_05_02	Disposal of acceptable material Class 5A		m³	£	45.53	£	-
5	600_06	Series_600_06: Imported Fill						
	600_06_01	Imported acceptable material 2C in embankments and other areas of fill	18785	m³	£	38.40	£	721,344.00
	600_06_04	Imported acceptable material Class 6F in fill on sub-base material, base and capping	3566	m³	£	37.67	£	134,345.48
5	600_07	Series_600_07: Compaction of Fill						
	600_07_01	Compaction of acceptable material in embankments and other areas of fill	18785	m³	£	0.72	£	13,525.20
	600_07_03	Compaction of acceptable material in fill on sub-base material, base and capping	3566	m³	£	1.80	£	6,418.80
5	600_13	Series_600_13: Topsoiling and Storage of Topsoil						
	600_13_01	Topsoiling 150mm thick to surfaces sloping at 10° or less to the horizontal	7905	m²	£	2.24	£	17,726.96
	600_13_02	Topsoiling 150mm thick to surfaces sloping at more than 10° to the horizontal	10000	m²	£	2.90	£	28,980.00
	600_13_03	Permanent storage of topsoil	3710	m²	£	7.79	£	28,884.21
5	600_14	Series_600_14: Completion of Formation and Sub-formation						
	600_14_01	Completion of sub-formation on material other than Class 1C, 6B or rock in cuttings	11887	m²	£	0.92	£	10,936.04
	600_14_02	Completion of formation on material other than Class 1C, 6B or rock in cuttings	3025	m²	£	0.78	£	2,365.55
		Total to carry forward to General Summary					£	1,133,652.63

4	700	Series_700: Pavements						
5	700_01	Series_700_01: Sub-base						
	700_01_01	Type 1 unbound mixture sub-base in carriageway, hardshoulder and hardstrip	2313	m³	£	38.40	£	88,819.20
5	700_02	Series_700_02: Pavement						
	700_02_01	Dense Base Asphalt Concrete (AC 32 HDM base 40/60) 100mm thick in carriageway hardshoulder and hardstrip	11247	m²	£	15.94	£	179,265.93
	700_02_02	Dense Binder Asphalt Concrete (AC 20 HDM bin 40/60) 60mm thick in carriageway hardshoulder and hardstrip	11247	m²	£	7.32	£	82,346.79
	700_02_03	Dense Bitumen Macadam (DBM) surface course to Clause 909 40mm thick in carriageway hardshoulder and hardstrip	11247	m²	£	8.30	£	93,383.84
5	700_03	Series_700_03: Regulating Course						
	700_03_01	Dense Binder Course Asphalt Concrete (AC 20 dense bin 40/60) regulating course.	1.765	t	£	80.00	£	141.18
5	700_04	Series_700_04: Surface Treatment						
	700_04_01	Resin based surface treatment Type HFS1 buff in colour		m²	£	22.14	£	-
5	700_05	Series_700_05: Tack Coat						
	700_05_01	Tack coat Type A	15	m²	£	0.72	£	10.87
5	700_06	Series_700_06: Cold Milling (Planing)						
	700_06_01	Milling pavement 40mm deep	10	m²	£	5.75	£	57.50
	700_06_02	Milling pavement 100mm deep	5	m²	£	10.06	£	50.31
		Total to carry forward to General Summary					£	444,075.62

4	1100	Series_1100: Kerbs, Footways and Paved Areas						
5	1100_01	Series_1100_01: Kerbs, Channels, Edgings, Combined Drainage and Kerb Blocks and Linear Drainage Channel Systems						
	1100_01_01	Precast concrete kerb Type HB2, laid straight or curved exceeding 12 metres radius	1000	m	£	16.58	£	16,583.00
	1100_01_02	Precast concrete kerb Type HB2, laid to curves not exceeding 12 metres radius	520	m	£	14.98	£	7,791.94
	1100_01_03	Precast concrete kerb Type BN1, laid straight or curved exceeding 12 metres radius	60	m	£	13.02	£	781.08
	1100_01_04	Precast concrete kerb Type BN2, laid straight or curved exceeding 12 metres radius	20	m	£	13.02	£	260.36
	1100_01_05	Precast concrete kerb Type DL2, laid straight or curved exceeding 12 metres radius	12	m	£	14.64	£	175.67
	1100_01_06	Precast concrete kerb Type DR2, laid straight or curved exceeding 12 metres radius	12	m	£	14.64	£	175.67
	1100_01_07	Precast concrete edging Type EF, laid straight or curved exceeding 12 metres radius	2100	m	£	9.40	£	19,730.55
	1100_01_08	Precast concrete edging Type EF, laid to curves not exceeding 12 metres radius	150	m	£	10.75	£	1,612.88
5	1100_04	Series_1100_04: Footways and Paved Areas						
	1100_04_01	Footway comprising Type 1 unbound mixture sub-base 150mm thick dense asphalt concrete (AC 6 HDM bin 40/60) binder course 60mm thick dense asphalt concrete (AC 6 HDM bin 40/60) surface course 20mm thick surfaces sloping at 10° or less to the horizontal	3025	m²	£	30.81	£	93,195.71
	1100_04_02	Grass/concrete "Grasscrete" paving in paved area on granular material Type 1 sub-base 150mm thick and mortar bedding 20mm thick surfaces sloping at more than 10° to the horizontal	54	m²	£	50.00	£	2,700.00
		Total to carry forward to General Summary					£	143,006.87

4	1200	Series_1200: Traffic Signs and Road Markings						
5	1200_01	Series_1200_01: Traffic Signs						
	1200_01_01	Allow the sum of £20,000 for Traffic Signs	1	sum	£	20,000.00	£	20,000.00
5	1200_03	Series_1200_03: Road Markings						
	1200_03_01	Continuous line to TSGRD 1012.1 in white thermoplastic screed with applied solid glass beads 150mm wide	1820	m	£	1.20	£	2,184.00
	1200_03_02	Continuous line to TSGRD 1013.1 in white thermoplastic screed with applied solid glass beads 100mm wide	1055	m	£	1.20	£	1,266.00
	1200_03_03	Intermittent line to TSRGD 1003 in white thermoplastic screed with applied solid glass beads 200mm wide with 600mm line and 300mm	34	m	£	0.90	£	30.60
	1200_03_04	Intermittent line to TSRGD 1004 in white thermoplastic screed with applied solid glass beads 100mm wide with 4000mm line and	945	m	£	0.90	£	850.50
	1200_03_05	Intermittent line to TSRGD 1004.1 in white thermoplastic screed with applied solid glass beads 100mm wide with 4000mm line and	30	m	£	0.90	£	27.00
	1200_03_06	Intermittent line to TSRGD 1009 in white thermoplastic screed with applied solid glass beads 150mm wide with 600mm line and 300mm	20	m	£	0.90	£	18.00
	1200_03_07	Ancillary line to TSRGD 1040 in white thermoplastic screed with applied solid glass beads 150mm wide diagonal hatch	260	m	£	0.90	£	234.00
	1200_03_08	Arrow in white thermoplastic screed with applied solid glass beads 4000mm long turning to TSRGD 1038	1	no	£	24.00	£	24.00
	1200_03_09	Arrow in white thermoplastic screed with applied solid glass beads 8000mm long double headed to TSRGD 1039	1	no	£	36.00	£	36.00
5	1200_07	Series_1200_07: Controlled and Uncontrolled Crossings						
	1200_07_01	Permanent controlled 'Pegasus' crossing at junction of bridlepath and bypass	1	item	£	75,000.00	£	75,000.00
		Total to carry forward to General Summary					£	99,670.10

4	1300	Series_1300: Road Lighting Columns and Brackets, CCTV Masts and Cantilever Masts						
5	1300_01	Series_1300_01: Road Lighting Columns and Brackets, Wall Mountings, CCTV Masts and Cantilever Masts						
	1300_01_01	Steel road lighting column of 12 metre nominal height with planted base and single bracket arm having a projection of 1.5m with a cut off luminaire incorporating a 250w SON-T+ lamp and lamp control gear	6	no	£	1,380.00	£	8,280.00
		Total to carry forward to General Summary					£	8,280.00

4	1400	Series_1400: Electrical Work for Road Lighting and Traffic Signs					
5	1400_01	Series_1400_01: Electrical Work					
	1400_01_01	Allow the sum of £50,000 for electrical works to traffic signs and road lighting columns	1	sum	£ 50,000.00	£	50,000.00
		Total to carry forward to General Summary				£	50,000.00

4	2500	Series_2500: Special Structures Designed by the Contractor						
5	2500_01	Series_2500_01: Special Structures Designed by the Contractor						
	2500_01_01	1.00 x 0.80 m precast concrete box culvert in trench depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	175	m	£	178.25	£	31,193.75
	2500_01_02	1.00 x 1.00 m precast concrete box culvert in trench depth to invert not exceeding 2 metres, average depth to invert 2.0 metres	630	m	£	212.75	£	134,032.50
	2500_01_03	3.0 x 3.0 m precast concrete junction box flow control chamber depth to invert exceeding 2 metres but not exceeding 3 metres	2	no	£	7,500.00	£	15,000.00
	2500_01_04	4.5 x 4.5 m precast concrete junction box flow control chamber depth to invert exceeding 2 metres but not exceeding 3 metres	4	no	£	10,000.00	£	40,000.00
	2500_01_05	Culvert and headwalls for 3.30 x 1.80 x 25 m precast concrete box culvert at CH940	1	item	£	200,000.00	£	200,000.00
		Total to carry forward to General Summary					£	420,226.25

4	2700	Series_2700: Accommodation Works, Works for Statutory Undertakers, Provisional Sums and Prime Cost Items					
5	2700_01	Series_2700_01: Accommodation Works, Works for Statutory Undertakers, Provisional Sums and Prime Cost Items					
	2700_01_01	Allow the Provisional Sum of £35,000.00 for the provision of access to adjacent land parcels (Allowance for simple "Farm" access: say 7 no @ £5k/no = £35k)	1	sum	£	35,000.00	£ 35,000.00
	2700_01_02	Allow the Provisional Sum of £30,000.00 for the provision of acoustic fencing (Allowance for Single-sided timber reflective barrier 3m high with concrete posts at 3m c/c: say 100 m @ £300/m = £30k)	1	sum	£	30,000.00	£ 30,000.00
	2700_01_03	Allow the Provisional Sum of £10,000.00 for the diversion of services - Electricity (11kV at Northern end: say 50 m @ £200/m = £10k)	1	sum	£	10,000.00	£ 10,000.00
	2700_01_04	Allow the Provisional Sum of £20,000.00 for the diversion of services - BT (Underground BT cable along Bridleway: say £20k)	1	sum	£	20,000.00	£ 20,000.00
	2700_01_05	Allow the Provisional Sum of £250,000.00 for the provision of traffic calming works along the retained section of A284	1	sum	£	250,000.00	£ 250,000.00
	2700_01_05	Allow the Provisional Sum of £50,000.00 for provision of boundary fencing and internal fencing to segregated land following CPO for	1	sum	£	50,000.00	£ 50,000.00
		Total to carry forward to General Summary					£ 395,000.00

4	3000	Series_3000: Landscape and Ecology						
5	3000_01	Series_3000_01: Ground Preparation and Cultivation						
	3000_01_01	Vegetation clearance to surfaces sloping at 10° or less to the horizontal	9850	m²	£	0.10	£	985.00
	3000_01_02	Final preparation of soils to surfaces sloping at 10° or less to the horizontal	9850	m²	£	0.25	£	2,462.50
	3000_01_03	Final cultivations to surfaces sloping at 10° or less to the horizontal	9850	m²	£	0.25	£	2,462.50
5	3000_02	Series_3000_02: Seeding and Turfing						
	3000_02_01	Amenity / Low Maintenance verge grass seed (assume to surfaces sloping less than 10° to the horizontal)	2600	m²	£	0.76	£	1,973.40
	3000_02_02	Wildflower Seeding (assume to surfaces sloping more than 10° to the horizontal)	7250	m²	£	0.76	£	5,502.75
5	3000_03	Series_3000_03: Planting						
	3000_03_01	Woodland Planting (assume to surfaces sloping more than 10° to the horizontal)	7850	m²	£	2.62	£	20,567.00
	3000_03_02	Native Scrub Planting (assume to surfaces sloping more than 10° to the horizontal)	7285	m²	£	2.67	£	19,450.95
	3000_03_03	Allowance for tree planting along bypass route (say 50 no at £500/no)	50	no	£	500.00	£	25,000.00
	3000_03_04	Maintenance of the above planting for 5 years	1	item	£	50,000.00	£	50,000.00
5	3000_05	Series_3000_05: Weed Control						
	3000_05_01	Selective weed control to verge grass areas with herbicide to surfaces sloping more than 10° to the horizontal	2600	m²	£	0.30	£	780.00
	3000_05_02	Weed control by spot application in wildflower areas with translocated herbicide - to surfaces sloping more than 10° to the	7250	m²	£	0.50	£	3,625.00
		Total to carry forward to General Summary					£	132,809.10

2		BILL 3: STRUCTURES						
3		STRUCTURES: CH280 to 310 - BLACK DITCH BRIDGE						
		--- SPECIAL PRELIMINARIES ---						
4	100	Series_100: Preliminaries						
5	100_03	Series_100_03: Temporary Works						
	100_03_01	Parapet Support	69	m	£	429.35	£	29,410.61
	100_03_02	Hardstandings for piling and craneage	360	m²	£	45.58	£	16,410.24
	100_03_03	Craneage and compressor	25	wk	£	2,809.30	£	70,232.40
		Total to carry forward to General Summary					£	116,053.25

		--- PILING ---						
4	1600	Series_1600: Piling and Embedded Retaining Walls						
5	1600_01	Series_1600_01: Piling Plant						
	1600_01_01	Establishment of piling plant for 600mm diameter driven cast-in -place piling	2	item	£	6,313.82	£	12,627.63
	1600_01_02	Moving piling plant for 600mm diameter driven cast-in -place piling	68	no	£	250.00	£	17,000.00
5	1600_03	Series_1600_03: Cast-in-place Piles						
	1600_03_01	Vertical 600mm diameter cast-in-place pile, exceeding 15 metres but not exceeding 20 metres in length in main piling	360	m	£	300.00	£	108,000.00
	1600_03_02	Vertical 600mm diameter cast-in-place pile, exceeding 20 metres but not exceeding 25 metres in length in main piling	880	m	£	300.00	£	264,000.00
	1600_03_03	Vertical 600mm diameter cast-in-place pile, empty bore in main piling	68	m	£	40.00	£	2,720.00
5	1600_04	Series_1600_04: Reinforcement for Cast-in-place Piles						
	1600_04_01	Reinforcement for cast-in-place piles, steel bar reinforcement	101.142	t	£	1,147.50	£	116,060.36
	1600_04_02	Reinforcement for cast-in-place piles, steel helical reinforcement	11.673	t	£	1,147.50	£	13,394.52
		Total to carry forward to General Summary					£	533,802.51

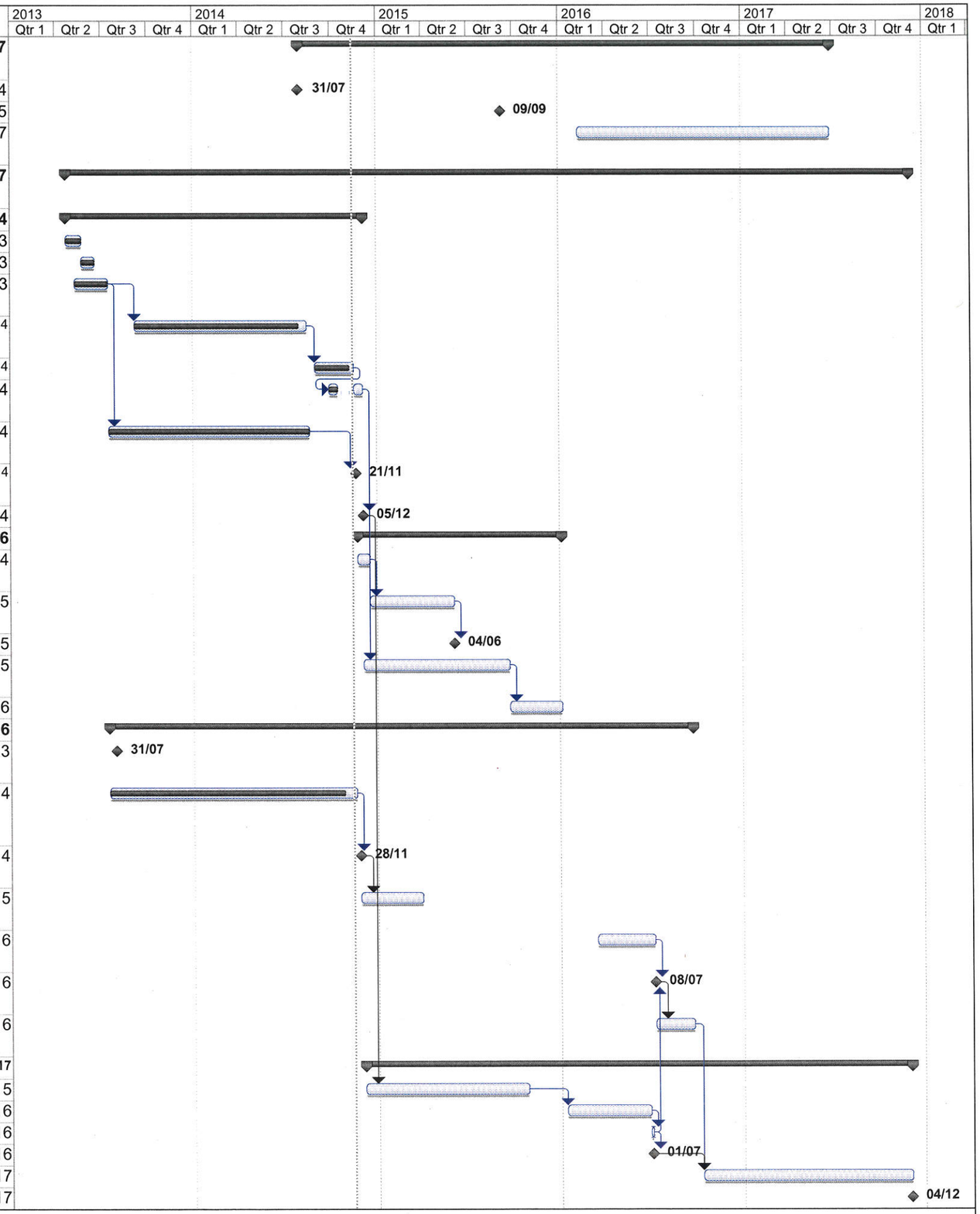
		--- SUBSTRUCTURE - END SUPPORTS ---						
4	500	Series_500: Drainage and Service Ducts						
5	500_09	Series_500_09: Drainage and Service Ducts in Structures (Including Reinforced Earth Structures and Anchored Earth Structures)						
	500_09_01	Drainage of sub-structure - end supports	1	item	£	34,344.84	£	34,344.84
		Total to carry forward to General Summary					£	34,344.84
4	600	Series_600: Earthworks						
5	600_01	Series_600_01: Excavation						
	600_01_05	Excavation of acceptable material excluding Class 5A in structural foundations 0 - 3m in depth	123	m³	£	102.37	£	12,611.74
5	600_02	Series_600_02: Excavation in Hard Material						
	600_02_02	Extra over excavation for excavation in hard material in structural foundations	12	m³	£	77.24	£	951.57
5	600_04	Series_600_04: Disposal of Material						
	600_04_01	Disposal of excavated material excluding class 5A	123	m³	£	6.05	£	745.11
5	600_06	Series_600_06: Imported Fill						
	600_06_02	Imported acceptable material Class 6N in fill to structures	1109	m³	£	53.35	£	59,158.92
	600_06_03	Imported acceptable material in fill below structural concrete foundations	0	m³	£	11.17	£	-
5	600_07	Series_600_07: Compaction of Fill						
	600_07_02	Compaction of acceptable material in fill to structures	1109	m³	£	1.80	£	1,995.84
		Total to carry forward to General Summary					£	75,463.18
4	1700	Series_1700: Structural Concrete						
5	1700_01	Series_1700_01: In Situ Concrete						
	1700_01_01	In situ concrete mix reference ST1 as blinding layer 75mm thick	17	m³	£	229.99	£	3,896.06
	1700_01_02	In situ concrete mix reference 40/20 abutments and wing walls	505	m³	£	163.53	£	82,604.29
5	1700_03	Series_1700_03: Surface Finish of Concrete – Formwork						
	1700_03_01	Formwork Class F1 vertical more than 300mm wide	505	m²	£	106.86	£	53,978.13
	1700_03_02	Formwork Class F1 sloping more than 300mm wide	0	m²	£	184.35	£	-
	1700_03_05	Formwork Class F3 horizontal more than 300mm wide	36	m²	£	93.13	£	3,352.61
	1700_03_06	Formwork Class F3 vertical more than 300mm wide	70	m²	£	139.15	£	9,740.22
	1700_03_07	Formwork Class F4 vertical more than 300mm wide	185	m²	£	117.45	£	21,704.02
	1700_03_08	Formwork Class F6 vertical more than 300mm wide	92	m²	£	110.05	£	10,168.99
	1700_03_09	Formwork any inclination less than 300mm wide - Class not defined	28	m²	£	101.14	£	2,831.81
5	1700_05	Series_1700_05: Steel Reinforcement for Structures						
	1700_05_01	High yield steel deformed Type 2 bar reinforcement nominal size 16mm and under and not exceeding 12m in length	78.540	t	£	1,651.10	£	129,677.47
	1700_05_02	High yield steel deformed Type 2 bar reinforcement nominal size 20mm and over and not exceeding 12m in length	19.250	t	£	1,361.72	£	26,213.01
		Total to carry forward to General Summary					£	344,166.62

		--- SUPERSTRUCTURE - MAIN SPAN ---						
4	500	Series_500: Drainage and Service Ducts						
5	500_09	Series_500_09: Drainage and Service Ducts in Structures (Including Reinforced Earth Structures and Anchored Earth Structures)						
	500_09_02	Drainage of superstructure	1	item	£	4,298.56	£	4,298.56
	500_09_03	Service ducts in superstructure	1	item	£	3,838.11	£	3,838.11
		Total to carry forward to General Summary					£	8,136.67
4	1700	Series_1700: Structural Concrete						
5	1700_01	Series_1700_01: In Situ Concrete						
	1700_01_03	In situ concrete mix reference 40/20 to deck	80.85	m³	£	157.14	£	12,704.45
	1700_01_04	In situ concrete mix reference 50/20 to parapet	12	m	£	169.13	£	2,029.61
	1700_01_05	In situ concrete mix reference ST4 to verge and centre reserve infill - 200mm thick	28	m³	£	150.75	£	4,221.06
5	1700_02	Series_1700_02: Precast Concrete						
	R	Precast pre-stressed concrete beams Type Y8 - 30.25m long	13	no	£	11,271.00	£	146,522.97
5	1700_03	Series_1700_03: Surface Finish of Concrete – Formwork						
	1700_03_01	Formwork Class F1 vertical more than 300mm wide	0	m²	£	74.98	£	-
	1700_03_03	Formwork Class F2 horizontal more than 300mm wide	0	m²	£	62.13	£	-
	1700_03_04	Formwork Class F2 vertical more than 300mm wide	56	m²	£	109.16	£	6,112.85
	1700_03_05	Formwork Class F3 horizontal more than 300mm wide	28	m²	£	93.52	£	2,618.56
	1700_03_06	Formwork Class F3 vertical more than 300mm wide	36	m²	£	125.75	£	4,526.93
	1700_03_09	Formwork any inclination less than 300mm wide - Class not defined	22	m²	£	101.14	£	2,224.99
	1700_03_10	Formwork Class horizontal more than 300mm wide - Special Formwork	226	m²	£	98.74	£	22,353.21
5	1700_05	Series_1700_05: Steel Reinforcement for Structures						
	1700_05_01	High yield steel deformed Type 2 bar reinforcement nominal size 16mm and under and not exceeding 12m in length	6.160	t	£	1,651.10	£	10,170.78
	1700_05_02	High yield steel deformed Type 2 bar reinforcement nominal size 20mm and over and not exceeding 12m in length	25.410	t	£	1,361.72	£	34,601.18
		Total to carry forward to General Summary					£	248,086.58
4	2100	Series_2100: Bridge Bearings						
5	2100_01	Series_2100_01: Bearings						
	2100_01_01	Bearings supply and install	26	no	£	1,500.00	£	39,000.00
		Total to carry forward to General Summary					£	39,000.00
4	2300	Series_2300: Bridge Expansion Joints and Sealing of Gaps						
5	2300_01	Bridge Deck Expansion Joints						
	2300_01_01	Expansion joint DN/M1 with 50mm gap and 21m in length	1	no	£	15,348.72	£	15,348.72
	2300_01_02	Fixed joint DN/M2 with 50mm gap and 21m in length	1	no	£	15,348.72	£	15,348.72
		Total to carry forward to General Summary					£	30,697.43

		--- FINISHES ---						
4	400	Series_400: Road Restraint Systems						
5	400_05	Series_400_05: Vehicle Parapets						
	400_05_01	Metal aluminium parapet Type N2 with mesh infill 1000mm high straight or curved exceeding 50m radius	68.5	m	£	190.48	£	13,048.15
		Total to carry forward to General Summary					£	13,048.15
4	2000	Series_2000: Waterproofing for Structures						
5	2000_01	Series_2000_01: Waterproofing						
	2000_01_01	Waterproofing with approved system more than 300mm wide horizontal or at any inclination up to and including 30° to the	445	m²	£	19.95	£	8,877.75
	2000_01_02	Waterproofing with approved system more than 300mm wide at any inclination more than 30° up to and including 90° to the	8	m²	£	21.00	£	168.00
	2000_01_03	Waterproofing with approved system less than 300mm wide at any inclination	25	m²	£	24.19	£	604.80
	2000_01_04	Waterproofing with 2 coat bitumen sprayed on waterproofing system more than 300mm wide at any inclination	575	m²	£	7.03	£	4,041.10
	2000_01_05	Waterproofing with red sand asphalt more than 300mm wide horizontal or any inclination to 30°	445	m²	£	11.90	£	5,295.50
5	2000_02	Series_2000_02: Surface Impregnation of Concrete						
	2000_02_01	Surface impregnation with Silane Treatment	520	m²	£	8.72	£	4,535.44
5	2000_04	Series_2000_04: Protective Layers						
	2000_04_01	Anti Graffiti treatment	425	m²	£	9.18	£	3,903.20
		Total to carry forward to General Summary					£	27,425.79

Appendix E - Programme

ID	Task Name	Duration	Start	Finish
1	**Lyminster Bypass South -Academy to Toddington Nurseries (Developer Scheme)**	**809.33 days**	**Thu 31/07/14**	**Tue 27/06/17**
2	Land agreements signed with developers	0 wks	Thu 31/07/14	Thu 31/07/14
3	Detailed design of road works completed	0 wks	Wed 09/09/15	Wed 09/09/15
4	Construction of southern bypass (The nurseries to the Academy)	78 wks	Tue 09/02/16	Tue 27/06/17
5	**A284 Lyminster Bypass North (WSCC/ADC Scheme)**	**1284.93 days**	**Tue 23/04/13**	**Mon 04/12/17**
6	**Preliminary Design**	**451.6 days**	**Tue 23/04/13**	**Fri 05/12/14**
7	Undertake RSA 1 for Option 1	5 wks	Tue 23/04/13	Fri 24/05/13
8	Obtain Screening Opinion for EIA	4 wks	Fri 24/05/13	Wed 19/06/13
9	Procure consultancy services for preliminary design including EIA	10 wks	Fri 10/05/13	Mon 15/07/13
10	Complete draft preliminary designs (including RSA) and other studies	53 wks	Fri 06/09/13	Fri 15/08/14
11	Undertake Public Consultation & Report	12 wks	Mon 01/09/14	Mon 17/11/14
12	Finalise preliminary designs	6 wks	Mon 29/09/14	Fri 05/12/14
13	Complete EIA including Ecological and Archaeological surveys and issue ES	62 wks	Wed 17/07/13	Thu 21/08/14
14	Complete remaining surveys and issue final NS ES	0 wks	Fri 21/11/14	Fri 21/11/14
15	Gateway Review 2	0 wks	Fri 05/12/14	Fri 05/12/14
16	**Statutory Processes**	**310.93 days**	**Mon 24/11/14**	**Tue 05/01/16**
17	Prepare and submit Planning Application	4 wks	Mon 24/11/14	Thu 18/12/14
18	Planning application process (including stakeholeder consultation)	26 wks	Thu 18/12/14	Thu 04/06/15
19	Planning Permision granted	0 wks	Thu 04/06/15	Thu 04/06/15
20	Land Acquisition (incl. CPO/SRO Processes if required)	45 wks	Fri 05/12/14	Wed 23/09/15
21	Secretary of State's Decision (If required)	16 wks	Wed 23/09/15	Tue 05/01/16
22	**Funding**	**888 days**	**Wed 17/07/13**	**Fri 23/09/16**
23	LTB announces provisional list of schemes	0 wks	Wed 31/07/13	Wed 31/07/13
24	Develop Outline Business Case to DfT requirements (including modelling and appraisal)	76 wks	Wed 17/07/13	Thu 20/11/14
25	Submit Outline Business Case(OBC) to LTB	0 wks	Fri 28/11/14	Fri 28/11/14
26	LTB considers and approves OBC	19 wks	Fri 28/11/14	Tue 31/03/15
27	Develop Full Business Case to DfT requirements	18 wks	Mon 14/03/16	Thu 07/07/16
28	Submit Full Business Case to LTB for Full Approval	0 wks	Fri 08/07/16	Fri 08/07/16
29	LTB considers and approves Full Business Case	12 wks	Fri 08/07/16	Fri 23/09/16
30	**Detailed Design and Construction**	**833.33 days**	**Fri 05/12/14**	**Mon 04/12/17**
31	OJEU Procurement-Framework Contract	50 wks	Fri 05/12/14	Mon 26/10/15
32	Detailed Design	26 wks	Mon 11/01/16	Mon 27/06/16
33	Confirmation of Target Cost	1 wk	Mon 27/06/16	Fri 01/07/16
34	Gateway Review 3	0 days	Fri 01/07/16	Fri 01/07/16
35	Scheme construction	65 wks	Mon 10/10/16	Mon 04/12/17
36	Scheme opened to traffic	0 wks	Mon 04/12/17	Mon 04/12/17



Project: Lyminster Bypass North & So
Date: Thu 13/11/14

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | Deadline

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