

New Eastern Villages – West of A419
supporting infrastructure

Full Business Case
Swindon Borough Council

November 2020

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
ASR	Appraisal Summary Report
AST	Appraisal Summary Table
ATC	Automatic Traffic Count
BCR	Benefit to Cost Ratio
CDF	Collaborative Delivery Framework
CMAG	Cabinet Member Advisory Group
DfT	Department for Transport
ECC	Engineering and Construction Contract
EIA	Environmental Impact Assessment
FBC	Full Business Case
GCJ	Gablecross Junction
HAM	Highway Assignment Model
HE	Highways England
IDP	Infrastructure Delivery Plan
IP	Interpeak
LEP	Local Enterprise Partnership
LGF	Local Growth Fund
LNR	Local Nature Reserve
NEV	New Eastern Villages
NPV	Net Present Value
OAR	Option Assessment Report
OBC	Outline Business Case
PCR	Practical Reserve Capacity
PCU	Passenger car unit
PID	Project Initiation Document
PVB	Present Value of Benefits
PVC	Present Value of Costs
QCRA	Quantitative Cost Risk Assessment
ROAMEF	Rationale, Objectives, Appraisal, Monitoring, Evaluation and Feedback
SBC	Swindon Borough Council
SCI	Statement of Community Involvement
SCR	Southern Connector Road
SEP	Strategic Economic Plan

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SOBC	Strategic Outline Business Case
SPD	Supplementary Planning Documents
SSSI	Sites of Special Scientific Interest
SWLEP	Swindon and Wiltshire Local Enterprise Partnership
TAG	Transport Appraisal Guidance
TEE	Transport Economic Efficiency
TUBA	Transport User Benefits Analysis
VOR	Value of Reliability
VDM	Variable Demand Model
WebTAG	Web-based Transport Analysis Guidance
WHJ	White Hart Junction

1. Introduction

1.1 Background

The New Eastern Villages (NEV) is the single largest development allocation in the Swindon Borough Council (SBC) area. The total site area of 724 hectares will comprise about 8,000 homes (although subject to more recent planning submissions, this has grown to approximately 8,650), a new district centre, 40 hectares of employment land and associated health, retail, education and leisure facilities. Consequently, the NEV development will have a major impact on travel demand in the area.

The Swindon Local Plan, adopted in March 2015, identifies transport schemes that are required to support the delivery of the NEV. This includes a mixture of new roads, major junction improvements, public transport routes and services, and sustainable transport infrastructure. To facilitate the development, funding has been sought and secured, in principle, from a variety of sources, the largest being the Local Growth Fund (LGF) administered by the Swindon and Wiltshire Local Enterprise Partnership (SWLEP). The LGF allocation is intended to facilitate the delivery of the following schemes:

- Southern Connector Road (SCR), linking the NEV to the A419 at Commonhead
- A419 / A420 White Hart Junction improvement (WHJ)
- A4312 / B4006 Greenbridge Roundabout improvement
- A420 Gablecross junction (GCJ) improvements
- Local highway and junction improvements to the west of the A419, including Oxford Road / Nythe Road Junction and Piccadilly Roundabout

The West of A419 package initially comprised of schemes at Greenbridge roundabout, Coate Water roundabout, Oxford Road/Nythe Road Junction and Piccadilly Roundabout. Greenbridge Roundabout scheme was progressed sooner and has now been completed. The Coate Water scheme is being progressed by the developers of the Badbury Park developments. Hence the West of A419 package now comprises of schemes at Oxford Road/Nythe Road Junction and Piccadilly Roundabout.

The local highway and junction improvements to the west of the A419 transport package has been shortlisted for LGF funding and is being progressed through the SWLEP Assurance Framework. This document represents Stage 4 – Full Business Case (FBC), building on initial work already undertaken to consider scheme assessment, sifting and prioritisation (Stage 1), assessment of the need for intervention (Stage 2), and the Outline Business Case (OBC) including a full economic and financial appraisal, and the development of the commercial and management cases (Stage 3). This Stage 4 assessment includes a full economic and financial appraisal and development of the commercial and management cases, focussing on schemes for the Oxford Road/Nythe Road Junction and Piccadilly Roundabout.

This version of the FBC addresses comments raised by the Independent Transport Adviser about the draft business case.

1.2 Scheme context

Oxford Road/Nythe Road Junction is located on one of the main links into central Swindon from the NEV development. The Greenbridge Roundabout improvement scheme was recently completed. The scheme to improve capacity and movements at the White Hart Roundabout, including revisions to the on/off slip for the A419, are at an advanced stage. The Oxford Road/Nythe Road Junction acts as a bottleneck, constraining traffic flow through its signalised junction. The junction provides access to a residential area, including shops and a primary school, which must be maintained.

Piccadilly Roundabout is located at the junction of Covingham Drive and Dorcan Way. Dorcan Way acts as a distributor road for East Swindon, linking Greenbridge Roundabout with areas to the south, including Coate Water Roundabout. Covingham Drive carries traffic from and through the residential area of Covingham, and links to Merlin Way in the East. The junction currently operates within capacity throughout the day, but the use of the junction will be impacted by the NEV development.

Section 1: Introduction

1.3 Future developments

The NEV development is large-scale and will significantly increase traffic volumes in the area; it is expected there will be over 4,800 additional external trips during the morning peak and an additional 5,400 in the evening peak¹ by 2026. Issues associated with the NEV developments will not be fully mitigated by the wider NEV transport strategy schemes outlined in section 1.1. Therefore, it is necessary to investigate schemes at a more local level. The West of A419 schemes aim to address some of the more local issues that are expected to arise as a result of the NEV developments.

A high proportion of the traffic travelling between the NEV development and Swindon will use Oxford Road/Nythe Road Junction, which will put further pressure on the existing bottleneck with the potential to constrain the whole of Oxford Road in the future. With increased travel demand across the area generated by the NEV development, pressures are likely to increase at Piccadilly Roundabout throughout the day, particularly at both the Covingham Drive and Dorcan Way arms of this junction which are anticipated to exceed capacity.

1.4 Purpose and structure of this report

This FBC sets out the case for the NEV West of A419 schemes and is being prepared for the Swindon and Wiltshire LEP.

The Appraisal Framework being used is based on DfT's Transport Business Case Guidance and uses the best practice five case model approach. The remainder of this FBC is structured on this approach:

- Section 2: Strategic case – this sets out the rationale of the proposal, making the case for change at the strategic level. It assesses the degree to which the locally developed objectives and other relevant local, regional and national objectives are expected to be achieved.
- Section 3: Economic case – this sets out the value for money that each option delivers. Evidence on economic, environmental and social impacts are identified.
- Section 4: Financial case – this presents the financial profile of the different options and the impact to budgets and accounts.
- Section 5: Management case – this assesses whether the proposal is deliverable by testing the project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance.
- Section 6: Commercial case –this sets out the proposed procurement strategy.

¹ New Eastern Villages DfT Retained Schemes; Options Assessment Report (12th July 2017)

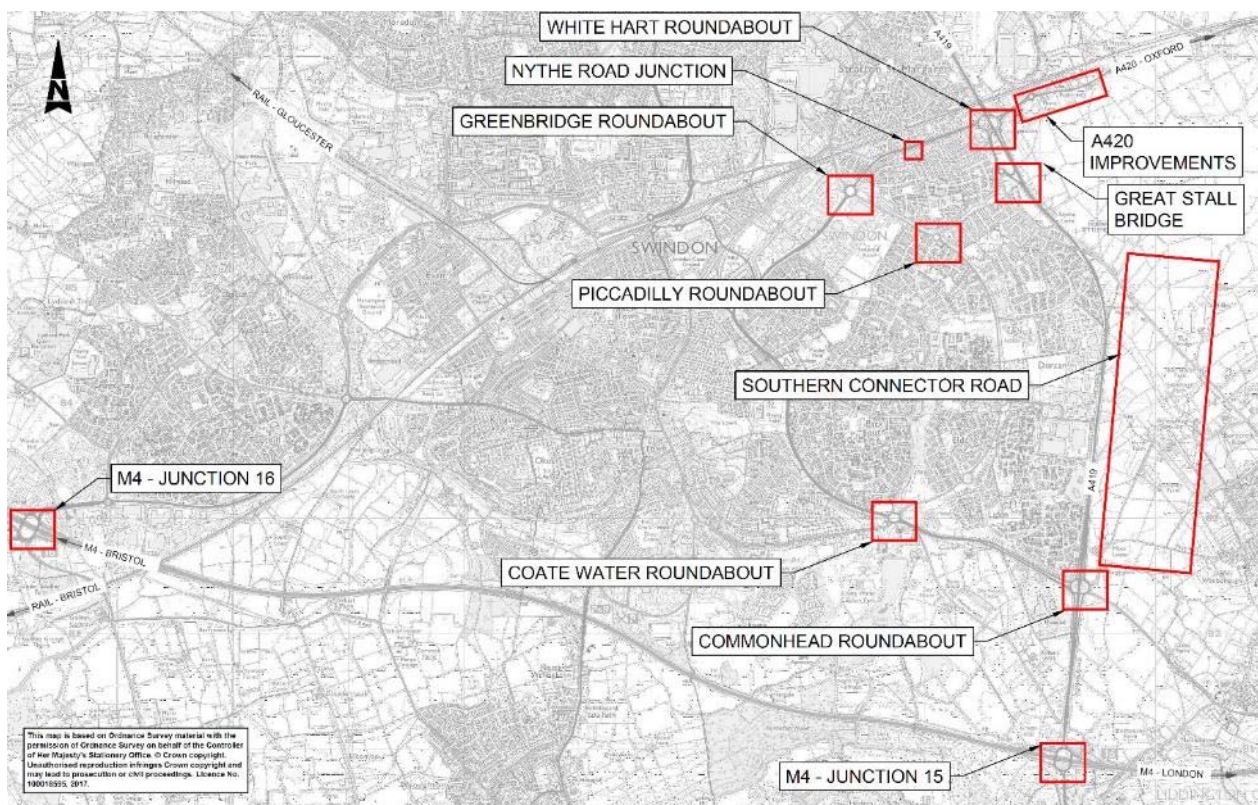
2. Strategic Case

2.1 Overview of the Strategic Case

The Strategic Case sets out the ‘case for change’ for the West of A419 schemes sub-package of the Swindon New Eastern Villages (NEV) transport package. It explains the rationale for investment and how the proposed schemes fit with the strategic policy.

Swindon is a growing town with a vibrant economy and is a key growth zone identified in the Swindon and Wiltshire Strategic Economic Plan. The Swindon Borough Local Plan 2026 identifies a need for 22,000 new dwelling to be provided between 2011 and 2026, along with 77.5 hectares of additional employment land. The Local Plan identifies the NEV area, located east of the A419, as the preferred location for a major urban extension including 8,000 new dwellings (although subject to recently submitted planning applications, this has grown to around 8,650), 40 hectares of employment land, retail and community facilities. To deliver this scale of development a package of transport measures will be required, including the Gablecross Junction (GCJ) improvements, the White Hart Junction (WHJ) improvement, the Southern Connector Road (SCR), and schemes to the west of the A419.

Figure 2-1: NEV Infrastructure Context Plan



Traffic modelling, completed in 2014, shows that the Swindon road network west of the A419 is operating within capacity, however some key routes such as Oxford Road could be vulnerable to congestion in the future, given the spikes that occur in peak hour congestion at this location. Further modelling of key junctions to the west of the A419² found that by 2026, with full NEV development in place, Oxford Road/Nythe Road junction would have a PRC of -29.4% in the AM peak and -9.9% in the PM peak. When Piccadilly Roundabout was modelled under the same scenario, it was found that both Dorcan Way and Marlborough Road would fail, resulting in extensive queuing.

This suggests that these junctions would not be able to cope with future traffic conditions and the additional trips associated with proposed developments. Under these conditions, the Oxford Road/Nythe Road junction has the potential to constrain the whole of the Oxford Road corridor and issues at Piccadilly Roundabout. Without mitigation, future transport and development growth is likely to lead to increased delay and reduced journey time

² Eastern Villages Mitigation Works West of A419 Report, prepared by CH2M Hill in December 2013.

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reliability, as well as trip redistribution on this section of the network. Therefore, the proposed transport scheme is required to mitigate these impacts.

Transport objectives have been defined which aim to address these problems and contribute to the strategic outcome to 'Enable Swindon to achieve the housing and economic growth targets set out in the adopted Swindon Local Plan and Economic Strategy, through full development of the NEV'. The objectives seek:

- To improve capacity at Oxford Road/Nythe Road junction, leading to better route consistency and journey quality for trips travelling through the Oxford Road corridor
- To improve capacity at Piccadilly Roundabout, leading to better route consistency and journey quality for trips travelling via Piccadilly Roundabout
- To minimise the traffic impacts of New Eastern Villages housing and employment growth on trips entering and exiting the existing residential areas in East Swindon

Initial options considered have included upgrading the A4312 Drakes Way/Marlowe Avenue and A4312 Drakes Way/Penny Lane (signalised staggered crossroads). However, this option was not carried forward as modelling indicated that, with the addition of a 15% increase in traffic, the current layout would continue to operate within capacity.

Works considered at Oxford Road/Nythe Road Junction included small-scale kerb works to increase the turning radius on Nythe Road, allowing stop lines to be moved forward and reduced intergreen periods; removal of the bus stops adjacent to the junction, so that the junction does not block (requiring consideration of the highway boundary) or moving the bus stops further away from the junction; and considering bus 'priority' at the junction, which could double up as a bus layby. Works considered at Piccadilly Roundabout included widening of the approaches to the roundabout on Covingham Drive to two lanes for a length of 55m; and widening of the approaches and exits to two lanes for both Dorcan East and West.

After consideration of the proposed options, the recommended Oxford Road/ Nythe Road Junction scheme includes the following measures:

- A two 3.25m wide lane approach in both directions on Oxford Road
- Two lane approach on Oxford Road West (one ahead and one right lane at the stop line) and two-lane approach on Oxford Road East (one left and ahead and one ahead lane at the stop line)
- Relocation of the bus stop further east of Nythe Road junction
- 3.0m shared cycle route and on-road bus stops, with the removal of some grass verge on Oxford Road

After consideration of the proposed options, the recommended Piccadilly Roundabout scheme includes the following measure:

- All arms of Piccadilly Roundabout are to be flared to provide two-lane entry except Dragonfly Road.

The West of A419 schemes aim to prevent future delays and reductions in journey quality on the Oxford Road corridor and at Piccadilly Roundabout. Along with the proposed Gablecross improvements, White Hart Junction improvements and Southern Connector Road, the schemes will help to enable the full development of the NEV and delivery of Swindon's housing and economic growth targets.

2.2 Business Strategy

2.2.1 Policy and economic context

The policy and economic context is broadly the same for the NEV transport schemes, so this section aligns with the Gablecross FBC. Swindon has a pivotal location on the M4 and Great Western Rail Line, which provide rapid access eastwards via Reading to the London area and westwards towards Bristol and South Wales. The Strategic Economic Plan (SEP) 2016-2026 for Swindon and Wiltshire anticipates that the combined population of Swindon and Wiltshire will have increased from 699,000 in 2014 to 764,000 by 2026, with most of this growth located in the Swindon M4 Growth Zone. In 2015, the population of Swindon Borough was estimated to be 217,000 – an increase of 8,000 from the 2011 Census. By 2026, it is projected to increase by a further 21,000 to 238,000 people.

Swindon has one of the most productive economies outside of London and is home to major companies including BMW, Intel, Nationwide Building Society and Npower, as well as seven national Research Councils and the Space Agency. The Swindon and Wiltshire Local Enterprise Partnership (SWLEP) is planning to build on these strengths in advanced manufacturing, technology and commerce, by making strategic investments in new and existing Further and Higher Education facilities, transport infrastructure and urban regeneration. Through three local growth deals, £169m of government funding has been secured to deliver these investments which will trigger further growth and underpin future success.

SBC has a clear vision for how it sees Swindon developing in the future 'By 2030, Swindon will have all of the positive characteristics of a British city with one of the UK's most successful economies; a low-carbon environment with compelling cultural, retail and leisure opportunities and excellent infrastructure. It will be a model of well managed housing growth which supports and improves new and existing communities. Swindon will be physically transformed with existing heritage and landmarks complemented by new ones that people who live, work and visit here will recognise and admire. It will remain, at heart, a place of fairness and opportunity where people can aspire to and achieve prosperity, supported by strong civic and community leadership'.

To achieve the vision, SBC's cabinet committed to four priorities and 26 pledges in September 2018. The priorities are:

- Improve infrastructure and housing to support a growing, low-carbon economy
- Offer education opportunities that lead to the right skills and the right jobs in the right places
- Ensure clean and safe streets and improve our public spaces and local culture
- Help people to help themselves while always protecting our most vulnerable children and adults

SBC are the local Unitary Authority where the proposed west of A419 schemes are located. Therefore, the authority has the role of highway authority and is responsible for public local roads. In addition, SBC are promoter of the scheme, and are also responsible for the delivery of this scheme improvement.

Of particular relevance to this FBC, the priority linked to improving infrastructure recognises that hundreds of millions of pounds will be spent on building new homes and supporting infrastructure over the next 20 years. The growing population means new homes are crucial for Swindon's future, and there are wide-ranging plans for developing the town centre, major upgrades to the road network and facilitating the development of over 30,000 new homes.

Pledge 6 (under this priority) includes a commitment to 'Deliver infrastructure in a timely way to assist in phased housing and employment delivery for the New Eastern Villages including White Hart Junction and A420'. The progress in delivering this pledge is currently assessed to be on track.

The Swindon Borough Local Plan 2026 is the principal planning policy document for Swindon Borough, providing the development strategy to deliver sustainable growth to the year 2026 in accordance with the Government's planning policies for England that are set out in the National Planning Policy Framework. The Local Plan identifies how much housing, employment and retail development the Borough needs and where this should be located. It was formally adopted by SBC in March 2015.

Overall, the Local Plan identifies a need for over 22,000 new dwellings to be constructed between 2011 and 2026, along with 77.5 hectares of additional employment land, which will support over 10,000 new jobs. The development strategy aims to meet Swindon's development needs whilst protecting the Borough's most important assets. Development is to be concentrated primarily at Swindon as the focal point for the economy, services and facilities and transport for the Borough and the wider area. However, SBC recognises that not all of Swindon's development needs can be met within the existing urban area and is consequently adopting a rational and responsible approach to town expansion to deliver the best and most sustainable outcomes.

The main strategic development sites identified in the Local Plan are listed in Table 2.1.

Section 2: Strategic Case

Table 2.1 Swindon Borough Local Plan 2026 strategic development allocations

Area	Dwellings (rounded)	Additional employment land & floorspace employment
Swindon's Central Area	1,000	-
Remainder of Swindon's existing urban area	3,500	-
New Eastern Villages	8,650	About 40 hectares
Wichelstowe	4,100	12.5 hectares
Tadpole Farm	1,700	5 hectares
Kingsdown	1,650	-
Commonhead	900	15 hectares
Highworth	At least 200	-

2.2.2 The New Eastern Villages development

The NEV area, east of the A419 and south of the A420, was first identified in the Swindon Joint Study (2005) as the most sustainable location in the Borough for a large-scale mixed-use development. Originally it was proposed that up to 12,000 dwellings could be located here, but this was scaled down during the Local Plan process following revised assessments of housing need and reflecting local views gathered during consultation.

The Sustainable Development Strategy (Policy SD2) within the Local Plan confirms that the NEV remains the most suitable location within the Borough for large scale development which, including the allocations for neighbouring Rowborough and South Marston, would comprise about 8,650 new dwellings (about 8,000 in policy) and 40 hectares of additional employment land – i.e. around half of the Borough's overall housing and employment land requirement between 2016 and 2026. The NEV development is therefore vital to Swindon's continued growth and, being one of the largest urban expansion proposals in the UK, is significant at a regional and national level in terms of helping to meet the demand for housing in the south of England.

The detail of the vision for the NEV is set out in Policy NC3 and in the NEV Draft Supplementary Planning Guidance. Policy NC3 states that the form of the development "shall comprise a series of new inter-connected distinct villages and an expanded South Marston village defined by the network of green infrastructure corridors" and that it will provide:

- About 6,250 dwellings at the NEV (south of the A420)
- About 1,500 dwellings at Rowborough (north of the A420)
- 500 dwellings at South Marston
- High quality public realm including outdoor civic public space, an extensive green infrastructure network, and sport and leisure facilities
- About 40 hectares of employment land to be located south and east of the A420 and A419 respectively adjacent to the White Hart Junction
- About 12,000m² of retail floorspace including a high-quality District Centre
- Facilities for primary and secondary education, health care and community functions

2.2.3 The NEV transport package

The Local Plan recognises there will potentially be very significant traffic impacts on the existing road network around east Swindon, resulting from the NEV, given the scale of the proposed development. These impacts were investigated in the Eastern Villages Transport Study, undertaken by JMP for SBC in 2011-12. The greatest impacts are expected to be on routes towards Swindon town centre, including the White Hart Junction, Gablecross Junction, A419, Oxford Road (A4312), Covingham Drive and Greenbridge Roundabout. The study identified and assessed transport solutions to mitigate the impacts.

Based on the Transport Study recommendations, the Plan concludes that there should be more than one access point towards Swindon town centre. Policy NP3 proposes various transport improvements that will be required to support the NEV development and mitigate potential impacts on the road network. They comprise a combination of sustainable transport links and road upgrades, as follows:

Sustainable transport links

- Walking and cycle network improvements that integrate with existing networks and provide good connectivity within the development and to the surrounding area
- An express bus network through the District Centre that connects the Eastern Villages to Swindon Town Centre as part of phase 1 of the development, which includes residential development north of the A420, the District Centre and the employment allocation
- Additional public transport services to connect with Swindon and internally within the development
- A 1000 space (3 ha) Park and Ride site

Road upgrades

- Introduce a signal-controlled roundabout at Gablecross to accommodate and manage additional NEV traffic, cyclists and pedestrians
- An improved gateway junction at White Hart to manage additional demand and deliver high quality public realm
- Improvements to the Oxford Road/Drakes Way and Covingham Road/Dorcan Way transport corridors
- A new road link to the Commonhead Roundabout
- A new road link under the Bristol / South Wales to London railway line connecting the development north and south at Rowborough
- New and/or improved accesses to the A420 for proposed residential and employment uses
- Measures to minimise rat-running through existing adjacent villages and east Swindon

In addition, a New Eastern Villages Transport Masterplan was produced for SBC by CH2M in October 2016. This document outlines the 'broad development requirements with relation to the proposed highway network within the New Eastern Villages development site' and sets out the non-motorised user and highway hierarchy for the site.

2.3 Planned changes to the transport network in Eastern Swindon

The West of A419 schemes are part of a wider package of transport investments that are being progressed by SBC to facilitate the NEV development. These investments are due for completion by June 2021. Improvements are also being undertaken by Highways England to M4 Junction 15, which is programmed for completion in 2021.

In addition, other developer-funded highway schemes will provide access to the NEV development at three key points along the A420:

- Western access (approximately 400m east of Gablecross Junction) for developments to the south of the A420
- Old Vicarage Lane (approximately 1600m east of Gablecross Junction) for developments to the north of the A420 (South Marston and Rowborough)
- Eastern access (approximately 2400m east of Gablecross Junction) for developments to both the south and north of A420

A summary of the main planned changes is as follows:

- M4 Junction 15 – Junction improvements on A419 will include a dedicated left turn lane on the southbound entry to the roundabout for London bound traffic and widening A419 approach and exit to/from the junction. Further widening works will include the A346 northbound entry, M4 eastbound off slip and the junction's southern circulatory road. In addition to the prohibition of vehicular access under the A419 bridge on Day House Lane and converting it to a quiet route for pedestrians, cyclists and equestrian users. Construction works on the road network commenced in August 2020 and completion is programmed in June 2021.

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- A419/A420 White Hart junction – widening and signalisation of the existing roundabout; provision of a new northbound on-slip to A419; widening and extension of existing southbound off-slip from A419; changes to Ermin Street access onto A4312; new pedestrian crossings. Scheme is considered a permitted development and LGF funds are allocated. Construction works have commenced in October 2019 and roads will be open for public in June 2021.
- Southern Connector Road – construction of a new road linking the NEV development to A419 Commonhead Roundabout south of Wanborough Road. Currently, both tendering and design are being progressed and allocated LGF funding is subject to planning permission and final approval from DfT. Construction works are programmed to commence in March 2021 and to complete in August 2022.
- Gablecross junction improvements – extending the roundabout southwards to provide additional circulatory capacity; relocation of the existing Sainsbury's roundabout; increasing the size and improving the alignment of the Thornhill Road entry arm; signalising both the A420 entry arms and Thornhill Way entry arm; re-signalising the Police Station junction with signal timings linked to Gablecross to improve traffic flow along the A420; providing a new signal-controlled pedestrian crossing across the A420; and retaining the existing signal-controlled pedestrian crossings immediately to the west of the roundabout. Scheme is currently being progressed, with OBC completed in December 2018.

Analysis undertaken for the White Hart Junction/Southern Connector Road business case and reported in the Gablecross Junction OBC prepared by Atkins, indicates that without the overall package of transport interventions, the development of the NEV is likely to be constrained to around 50% of the proposed 8,650 dwellings and 40 hectares of employment land, resulting in a major impact on Swindon's ability to meet demand for future housing and employment land. The overall sustainability of the NEV could also be affected as it is dependent on achieving sufficient scale and pace of development to support the provision of key facilities such as the district centre and secondary school. Although the West of A419 schemes are subject to a separate business case, if they were not implemented, they would constrain traffic flow on key corridors and reduce the overall effectiveness of the NEV transport package in mitigating the impact of the development.

2.4 Traffic problems in the West of A419 area

2.4.1 Current and future traffic problems

In 2019, according to the Department for Transport Road Traffic Statistics³, the estimated annual average daily flow along the A4312 (between the junction with the A313 and the A419 junction) within Swindon is 7,436 vehicles eastbound and 8,533 vehicles westbound. This was estimated based on manual counts carried out along this road in 2016, which found an average daily flow of 7,423 motor vehicles eastbound and 8,524 motor vehicles travelling westbound along the A4312. According to the Department for Transport Road Traffic Statistics⁴, the observed annual average daily traffic flow (AADT) along Dorcan Way (between the B4006 and the A419) in 2019 was 16,297 vehicles in the eastbound direction and 14,326 vehicles in the westbound direction.

In addition, TrafficMaster data from 2018⁵ shows journey times along Oxford Road of between 118.67 seconds (westbound) and 135.96 seconds (eastbound) during the PM peak (see Table 2.2). This is compared to morning peak journey times of between 96.84 seconds and 98.93 seconds, suggesting significantly increased levels of congestion within the PM peak along this route. This is also shown in the journey times for Dorcan Way, with PM peak journey times up to 21.52 seconds longer in the southbound PM peak compared to AM peak. Therefore, improvements to the junctions along this route including at Nythe Road, could help to reduce the congestion experienced along this route, particularly within the PM peak.

³ <https://roadtraffic.dft.gov.uk/manualcountpoints/57127>

⁴ <https://roadtraffic.dft.gov.uk/manualcountpoints/16911>

⁵ <https://highwaysanalyst.basemap.co.uk/Account/Login?ReturnUrl=%2F>

Table 2.2: Journey time data (TrafficMaster, 2018)

Road name	AM PEAK Journey times (sec)		PM PEAK Journey times (sec)	
	Eastbound	Westbound	Eastbound	Westbound
Oxford road-A4312	98.93	135.96	96.84	118.67
	Southbound	Northbound	Southbound	Northbound
Dorcan Way-B4006	69.93	91.45	77.4	83.95

In 2014 traffic modelling showed the local road network to the west of the A419 was within capacity, but some key routes, such as Oxford Road, were considered vulnerable as they experienced spikes in peak hour congestion⁶. To ensure the network remains within capacity with the addition of NEV, specific junctions at A4312 Oxford Road/Nythe Road, A4312 Greenbridge roundabout, A4312 Drakes Way/Marlowe Avenue/Penny Lane and B4009 Piccadilly Roundabout were all investigated to assess if upgrades would be required as a result of the development. For the purpose of this FBC, this section includes the results for the Oxford Road/Nythe Road junction and Piccadilly Roundabout.

The junction assessment modelling was carried out under the following scenarios:

- 2013 base flows, plus 15 per cent growth to account for day-to-day variation in flow
- 2026 'do minimum' (no NEV)
- 2026 NEV Phase 2 – with full development

The modelling results presented have been taken from the Eastern Villages Mitigation Works West of A419 Report, prepared by CH2M Hill in December 2013.

Table 2.3 shows the results of modelling analysis on the Oxford Road/Nythe Road junction.

Table 2.3: Junction assessment summary at Oxford Road/Nythe Road

Model Scenario	PRC in AM peak	PRC in PM peak	Individual arms with DoS (degree of saturation) greater than 85%
2013 base	27.3%	46.6%	No
2013 base plus 15%	10.8%	27.7%	No ^a
2026 'Do Minimum'	-1.2%	50.0%	Oxford Rd east, and Nythe Rd in the AM peak ^b
2026 Phase 2	-29.4%	-9.9%	Oxford Rd east, Nythe Rd, Oxford Rd west ahead right in the AM peak. Nythe Rd in the PM peak ^c

a 2013 base plus 15%: although no arms exceed 85%, both Nythe Road and Oxford Road eastbound have PRCs approaching 85%, which suggests that they are susceptible to fluctuations in traffic flow.

b 2026 'Do Minimum': General traffic growth has an impact on this junction.

c 2026 Phase 2: Under this scenario, the junction in its current form cannot cope with predicted traffic volumes.

Table 2.4 shows the results of modelling analysis for Piccadilly Roundabout.

⁶ New Eastern Villages Mitigation Works West of A419 and Apportionment of Impacts (March 2014)

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Table 2.4: Junction assessment summary of Piccadilly Roundabout

Model Scenario	Max RFC in AM peak	Max RFC in PM peak	Individual arms with RFCs greater than 85%
2013 base	0.52	0.68	No
2013 base plus 15%	0.59	0.76	No. ^a
2026 'Do Minimum'	0.85	0.88	Covingham Drive AM and Dorcan Way west PM. ^b
2026 Phase 2	1.02	0.98	Covingham AM and PM, Dorcan Way AM and PM. ^c

a 2013 base plus 15%: The output shows this junction is just working under current conditions.

b 2026 Do Minimum: As show Dorcan Way and Marlborough Road achieve 90+% saturation under proposed traffic growth

c 2026 Phase 2: Both Dorcan Way and Marlborough Road fail under this scenario with projected extensive queuing as a result. The longest on Dorcan Way.

2.4.2 Impact of not changing

TrafficMaster journey time data has indicated that in 2018, there were significantly longer journey times in the PM peak along Oxford Road and Dorcan Way⁷ when compared to the AM peak, suggesting a high level of delay in the PM peak. Therefore, improvements to junctions along these roads i.e. Piccadilly Roundabout and Oxford Road/Nythe Road junction, has the potential to address the current levels of delay and consequent journey time reliability issues that are present along these routes.

In addition, based on the results of modelling completed as part of the New Eastern Villages Mitigation Works West of A419, and Apportionment of Impacts report (2014), it was concluded that the Oxford Road/Nythe Road junction has the potential to constrain the whole Oxford Road corridor in the future. Oxford Road is an important route for strategic and local distributional trips and traffic issues along this corridor will be exacerbated by the addition of NEV trips. This could result in knock-on impacts with trip redistribution and increased journey times and unreliability. The purpose of the scheme is therefore to increase capacity so that future issues with journey quality and delays are reduced, ensuring that long distance trips remain on this route rather than diverting onto local roads.

The Piccadilly Roundabout will be an important junction for connecting buses from the Great Stall Bridge to the town centre and for distributing other vehicles. This roundabout may also accommodate new bus service provisions that use the SCR, past the hospital and through Covingham. Although the junction currently operates within capacity, both the Covingham Drive and Dorcan Way arms exceed capacity with the addition of NEV traffic. This is likely to cause congestion on the network, which will impact on local businesses and the quality of life for people living and travelling in the area.

2.4.3 Collisions

Oxford Road/Nythe Road Junction

The collision data indicates that no collisions took place at the Oxford Road/Nythe Road junction between 01/01/2013 to 31/12/2017.

Piccadilly Roundabout

The collision data from 01/01/2013 to 31/12/2017 indicates that five collisions took place at Piccadilly Roundabout. These accidents are displayed in Figure 2.2 and details indicated in Table 2.5.

⁷ <https://highwaysanalyst.basemap.co.uk/Account/Login?ReturnUrl=%2F>

Figure 2-2: Piccadilly Collisions – 01/01/2013 to 31/12/2017

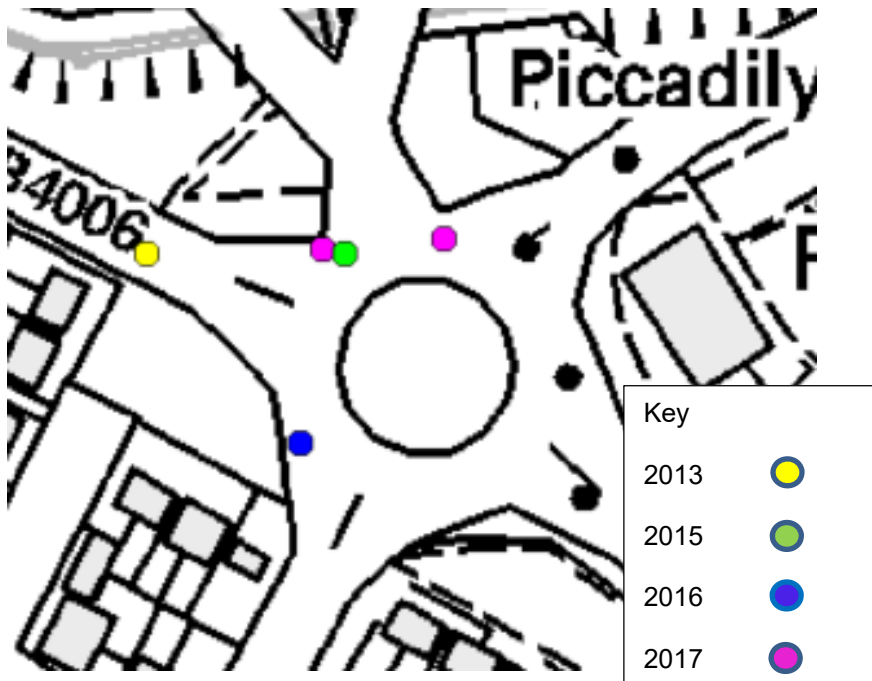


Table 2.5: Piccadilly Collisions – 01/01/2013 to 31/12/2017 - Severity

Year	Fatal	Serious	Slight	Total
2013	0	0	1	1
2014	0	0	0	0
2015	0	0	1	1
2016	0	1	0	1
2017	0	1	1	2
Total	0	2	3	5

Of the 5 accidents, nearly all accidents occurred in 'optimum' driving conditions; during daylight hours, fine weather and a dry road surface. Only one of the collisions occurred during the hours of darkness, but street lights were present. From the available data, on average one collision occurs per year. This data does not indicate that there is a significant safety problem at Piccadilly Roundabout.

2.4.4 Summary

The key problems identified at the West of A419 junctions that need to be addressed by the schemes are:

- The Oxford Road/Nythe Road junction is a critical constraint on the link's ability to accommodate current and future demand. Oxford Road is considered fragile, with spikes of peak hour congestion. This will get worse with the addition of NEV traffic. The scheme is required to mitigate the impacts of future traffic demand and to ensure that delays and journey quality is maintained or improved along the corridor.
- Piccadilly Roundabout operates effectively under current traffic conditions, however both Covingham Drive and Dorcan Way are predicted to exceed capacity with the addition of NEV traffic.

2.5 Objectives and measures of success

An overarching strategic outcome has been agreed for the NEV transport schemes. This outcome has been used for the White Hart Junction/Southern Connector Road schemes and the Gablecross Junction improvement scheme. The transport objectives for the West of A419 schemes have been defined to directly address the identified problems at these junctions, as well as contributing towards the delivery of the strategic outcome.

The strategic outcome is to 'Enable Swindon to achieve the housing and economic growth targets set out in the adopted Swindon Local Plan and Economic Strategy, through full development of the NEV'. The scheme objectives and measures of success are set out in Table 2.6.

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Table 2.6: Scheme Objectives

Transport objectives	Measures of success
To improve capacity at Oxford Road/Nythe Road junction, leading to better route consistency and journey quality for trips travelling through the Oxford Road corridor.	By 2022, there will be improved perception of the Oxford Road corridor for all trips, including those from residential areas, compared to current perceptions of this corridor. Additionally, in 2022 there will be no overall increase in delay on the Oxford Corridor for all trips, when compared to the Do Minimum modelling scenarios as described within the SATURN modelling for this FBC.
To improve capacity at Piccadilly Roundabout, leading to better route consistency and journey quality for trips travelling via Piccadilly Roundabout.	There will be no overall increase in delay at Piccadilly Roundabout in 2022, compared to the Do Minimum modelling scenarios as described within the SATURN modelling for this FBC.
To minimise the traffic impacts of New Eastern Villages housing and employment growth on trips entering and exiting the existing residential areas in East Swindon.	By 2022, there will be no overall increase in delay and journey time reliability for trips from existing residential areas on Oxford Road and Dorcan Way, when compared to the to the Do Minimum modelling scenarios as described within the SATURN modelling for this FBC.

2.6 Options considered

The option development is fully documented in the Option Assessment Report, (Appendix A) and summarised in this section.

Locations where highway improvements may prove necessary were investigated within the NEV Mitigation Works West of the A419 and Apportionment of Impacts report. This report highlighted a potential upgrade to the A4312 Drakes Way/Marlowe Avenue and A4312 Drakes Way/Penny Lane (signalised staggered crossroads). This junction is a key signalised junction on the primary route to Swindon town centre from the east. It connects Covingham Drive, Dorcan Way and Greenbridge Road corridor with Drakes Way. With an addition of 15% traffic, the current layout is modelled to operate within capacity albeit with a Degree of Saturation of over 85% on the Drakes Way arms. This junction was not carried forward as a proposal because the results of the modelling concluded that the junction would continue to operate effectively under current and future traffic conditions.

A Preliminary Design Report for the Nythe Road Junction and Piccadilly Roundabout Improvement Works was issued by Jacobs to Swindon Borough Council on 5th April 2019. The report considers conceptual layouts produced by CH2M Hill in December 2013.

In addition, a number of active travel schemes have been proposed as part of the 'Illustrative New Eastern Villages Green Infrastructure Masterplan'. These included proposals for a number of strategic footpaths and cycleways throughout the NEV development site. However, despite these schemes, it was concluded that in order to deal with future traffic growth and the addition of development trips on this section of the network, a junction improvement scheme was required at Oxford Road/Nythe Road junction and Piccadilly Roundabout.

2.6.1 Oxford Road/Nythe Road junction

To mitigate the vulnerabilities of the Oxford Road/Nythe Road junction highlighted within the modelling, the following measures were considered in previous work:

- Small-scale kerb works to increase the turning radius on Nythe Road, allowing stop lines to be moved forward and reduced intergreen periods. This will make the junction more efficient at discharging traffic. Further investigation shows that the location of access driveways does limit the movement of proposed stop lines and there will be limited improvement to the junction operation.
- Removing the bus stops adjacent to the junction so that the junction does not block (this will require consideration of the highway boundary) or moving the bus stops further away from the junction.

- Considering bus 'priority' at the junction which could double up as a bus layby.

These measures would maintain the existing cycle provision in its current form, however modelling suggested that the junction would still constrain the Oxford Road corridor and effect traffic on the wider network.

2.6.2 Piccadilly Roundabout

Potential mitigations considered for the Piccadilly Roundabout have included:

- Widen the approaches to the roundabout on Covingham Drive to two lanes for a length of 55m.
- Widen the approaches and exits to two lanes for both Dorcan East and West.

2.7 Project scope

Following the consideration of options, the scope of the schemes is as follows.

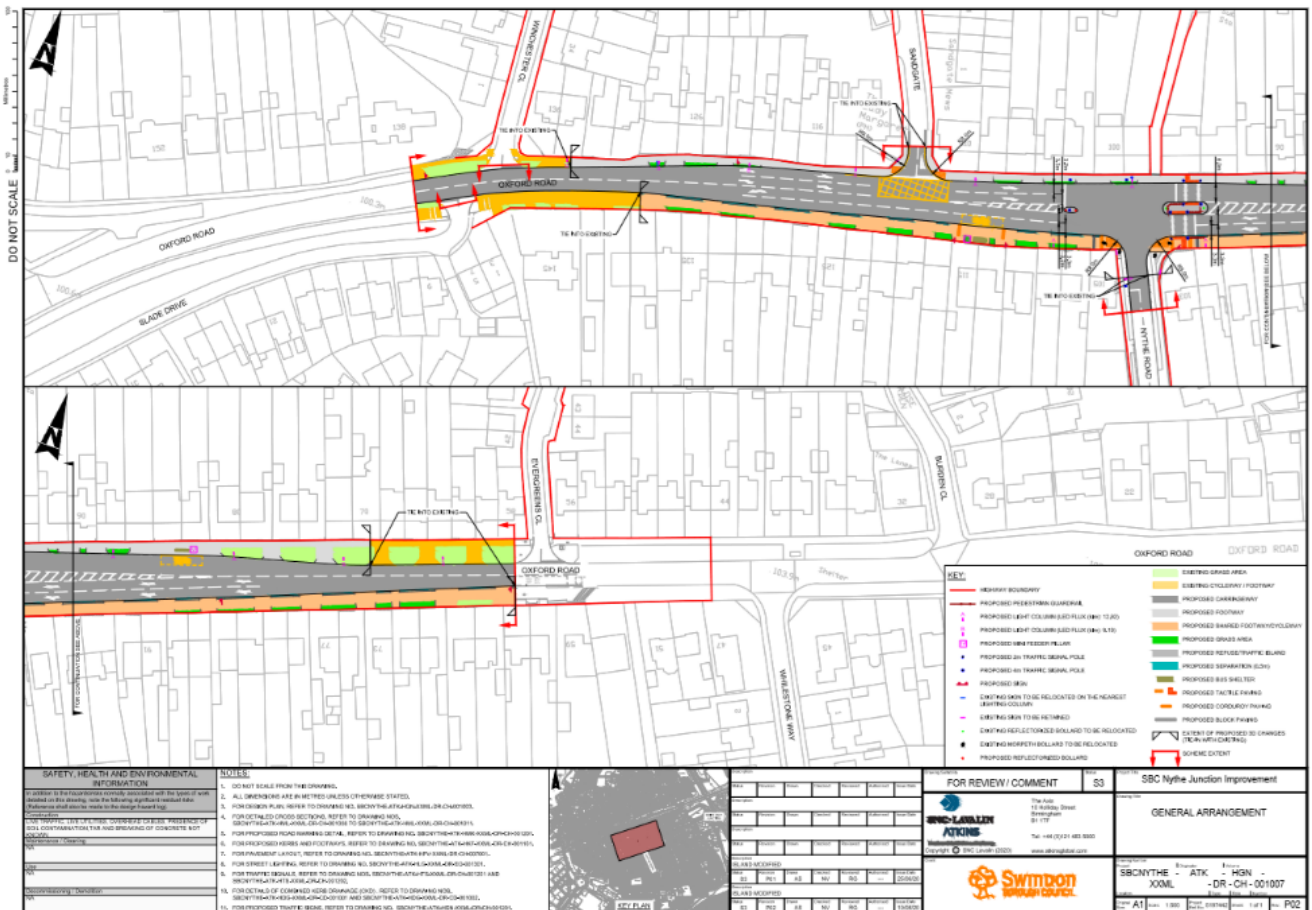
2.7.1 Oxford Road/Nythe Road junction

The recommended scheme comprises of:

- A two 3.25m wide lane approach in both directions on Oxford Road
- Two lane approach on Oxford Road West (one ahead and one right lane at the stop line) and two-lane approach on Oxford Road East (one left and ahead and one ahead lane at the stop line)
- Relocation of the bus stop further east of Nythe Road junction
- 3.0m shared cycle route and on-road bus stops, with the removal of some grass verge on Oxford Road

A layout plan of the scheme is shown in Figure 2-3.

Figure 2-3: Layout plan of the Oxford Road/Nythe Road scheme

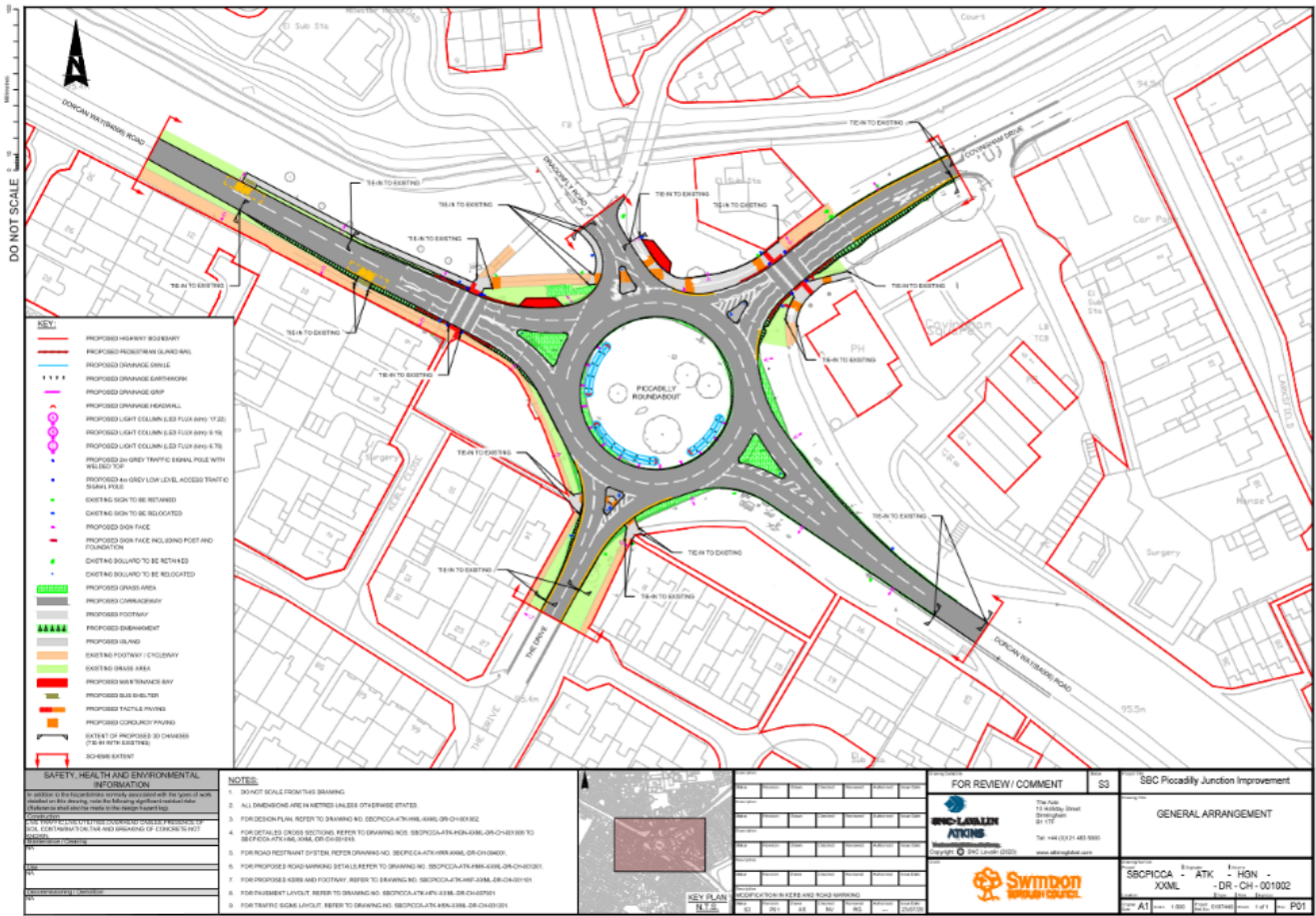


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2.7.2 Piccadilly Roundabout

In the scheme, all arms of the roundabout have been flared to provide two-lane entry (except Dragonfly Road), which has been reflected in revised exit widths. The alignment and extent of flaring is heavily constrained by significant underground utilities identified through visual observation. The circulatory carriageway has been restricted to two lanes. Exit and entry alignments have been configured to avoid subways, which are to be kept due to the unconflicted nature of the pedestrian crossing. A layout plan of the scheme is shown in Figure 2.4.

Figure 2-4: Layout plan of the Piccadilly Roundabout scheme



2.8 Scheme impacts and outcomes

2.8.1 Oxford Road/Nythe Road scheme modelling

Modelling shows that two lanes at the junction can accommodate traffic pressures estimated for both 2026 scenarios. Oxford Road (west) and Nythe Road have the highest degree of saturation of 82% in the morning peak under Phase 2. This is due to an increase in outbound traffic to the new development and is contrary to existing traffic flow patterns. The proposed two-lane configuration can be accommodated with a 3.0 m shared cycle route and on-road bus stops. Some grass verge will require removal. Table 2.7 summarises the junction assessment modelling work for the Oxford Road/Nythe Road junction.

Table 2.7: Junction assessment summary of Oxford Road/Nythe Road junction with mitigation scheme in place

Model Scenario	PRC in AM peak	PRC in PM peak	Individual arms with DoS greater than 85%
2026 with mitigation base	10.4%	70.5%	None

2.8.2 Piccadilly Roundabout scheme modelling

This design performs well within the 2026 scenario. Table 2.8 summarises the junction assessment modelling work for the Piccadilly Roundabout junction.

Table 2.8: Junction assessment summary for Piccadilly Roundabout with mitigation scheme in place

Model Scenario	Max RFC in AM peak	Max RFC in PM peak	Individual arms with RFC's greater than 85%
2026 mitigation base	70%	89%	The Dorcan Way West arm has a RFC of 89% in the PM peak

2.9 Constraints

Constraints have been identified that impact on the scheme options considered for these junctions. These include:

- Oxford Road/Nythe Road junction:
 - The route needs to accommodate demand from private cars, buses and cycles
 - There are bus stops in the vicinity of the junction
 - The pedestrian phase at the signalised junction is heavily used
 - Frontages and private driveways limit options for highway layout changes and increased capacity
 - Verges used as additional parking for residential properties, so converting them to cycle provision would require consultation
 - Cycle provision needs to be maintained as route is part of the Eastern Flyer
 - It is not acceptable to limit access from Nythe Road residential area onto Oxford Road
- Piccadilly Roundabout:
 - The number of arms on the roundabout and lack of available land makes changes to the roundabout difficult
 - In the vicinity of the junction there are known utilities and structures including culverts, a cycle bridge/subway and a bus stop

2.9.1 Utilities

The utilities effected by the Oxford Road/Nythe Road scheme are:

- BT
- COLT
- C&W
- KCOM
- SSE
- Thames Water
- Virgin
- WW

The utilities effected by the Piccadilly junction scheme are:

- BT
- C&W
- Geo Networks
- SSE

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- Thames Water
- Virgin
- WW

2.10 Interdependencies

2.10.1 Scheme packages

Modelling has shown schemes are required in the East Swindon area to accommodate trips generated by the NEV development in order to maintain and improve journey quality on these routes. The schemes proposed are related and form part of a package of measures, but they are grouped together for ease of delivery.

The Oxford Road/Nythe Road junction improvement scheme is required to maintain the attractiveness of this route for long distance trips and minimise the number of these trips which choose to divert onto local roads.

Piccadilly Roundabout may accommodate new bus service provisions that use the SCR, past the hospital and through Covingham.

2.10.2 Planning

The work to date indicates that that these works are Permitted Development therefore planning consent is not required.

2.10.3 Land ownership

The work to date indicates that there is no land outside SBC ownership required to implement these schemes.

2.11 Stakeholders

Joint working and stakeholder engagement are integral to the effective delivery of the NEV. Numerous public consultation events have been held to inform stakeholders, including residents and interested parties, of NEV proposals, related to planning documents and submissions and transport schemes.

The NEV development and its associated package of transport measures were subject to several stages of detailed public consultation as part of the Local Plan preparation between 2007 and 2011, prior to examination in 2014 and adoption of the plan in 2015. Updated scheme proposals were published on the SBC website in April 2018.

Consultation events to date have considered the wider NEV transport package and include:

- A420 Users Group
- Wiltshire and Swindon Freight Partnership
- Environment Agency
- Landowners
- Developers

Highways England are stakeholders, particularly due to the interaction with White Hart Junction serving the A419. Initial engagement was initiated by SBC to discuss issues relevant to Highways England regarding all NEV schemes.

Consultation has been held at each stage of the Proposed Scheme's design development. Scheme-specific consultation was carried out in tandem with other schemes in public consultation events in a series of consultation activities between March 2016 and October 2019, in accordance with the requirements set out in the adopted Statement of Community Involvement (SCI 2013).

West of A419 scheme consultation feedback has been received from a range of individuals from the public and interested parties to statutory consultees. Key decisions have been implemented as a result of the West of A419 schemes feedback, as summarised in section 5.8.2 of this FBC.

With particular relevance to the West of A419 schemes, Table 2.9 summarises the role of the key stakeholders.

Table 2.9: Summary of key stakeholders

Stakeholder	Role
Swindon Borough Council, as local planning and highway authority	Responsible for scheme delivery in support of the NEV development, and future maintenance of local road infrastructure
Swindon and Wiltshire LEP	Approval authority for LGF – have allocated proposed LGF for the schemes, subject to approval of Outline and Full Business Cases
Utility companies (water, electric, gas, telecoms)	Providing consents required for changes to highway infrastructure that may require relocation of existing utilities, and agreement regarding incorporation of utilities into new highway designs. This is particularly relevant at the Nythe Road junction and Piccadilly roundabout.
Highways England	The scheme will interact with White Hart Junction serving the A419.
Cabinet and Ward members	Wards within the east of Swindon will be directly impacted by the scheme.
Parish Councils	Covingham Parish is directly affected by the highway infrastructure proposals to serve the NEV, particularly the Package 2 schemes.
Local residents and interest groups	Input into scheme designs to ensure needs of local residents, pedestrians, cyclists and others are understood and incorporated into scheme designs. This is critical if the schemes at Nythe Road and Piccadilly are to be implemented successfully.
Businesses within close proximity to the development or who rely on deliveries coming through the junctions affected	Input into scheme designs to ensure needs of local businesses are understood and incorporated into scheme designs.
Road users (from outside of the borough) including public transport operators	Input into scheme designs to ensure their needs are understood and incorporated into scheme designs.

2.12 Summary of Strategic Case

The infrastructure provided as part of the NEV will play an important role in both the transport infrastructure and place shaping strategic objectives.

Table 2.10 provides a summary of how the proposed intervention at Oxford Road/Nythe Road junction and Piccadilly Roundabout will facilitate the achievement of transport objectives. In achieving these objectives, it is anticipated that the schemes will contribute to the strategic outcome of enabling full development of the NEV.

The scheme aims to prevent future delays and reductions in journey quality on the Oxford Road corridor and at Piccadilly Roundabout. The schemes will provide further capacity to cope with the additional NEV-related traffic, enabling more efficient traffic flows and minimising the impact on residents. The scheme aims to maintain these routes as attractive for long distance trips, thereby reducing the likelihood that these journeys will divert on to local roads. Along with the proposed Gablecross improvements, White Hart Junction improvements and Southern Connector Road, the schemes will help to enable the full development of the NEV and delivery of Swindon's housing and economic growth targets.

Table 2.10: Summary of scheme impacts

Transport objectives	Impact description
To improve capacity at Oxford Road/Nythe Road junction, leading to better route consistency and journey quality for trips travelling through the Oxford Road corridor	Modelling has identified Oxford/Nythe Road junction as a future constraint on the Oxford Road corridor. Additional NEV traffic could put further pressure on this corridor. The scheme will increase capacity at this location so that the additional demand on the junction does not

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Transport objectives	Impact description
	have a negative impact on delays and journey quality, reducing the likelihood that long distance trips will divert onto local roads.
To improve capacity at Piccadilly Roundabout, leading to better route consistency and journey quality for trips travelling via Piccadilly Roundabout	<p>Modelling has identified Covingham Drive and Dorcan Way arms as a future constraint at Piccadilly Roundabout. Additional NEV traffic could put further pressure on this location.</p> <p>The scheme will increase capacity at this location so that the additional demand on the junction does not have a negative impact on delays and journey quality.</p>
To minimise the traffic impacts of New Eastern Villages housing and employment growth on trips entering and exiting the existing residential areas in East Swindon	Without intervention existing residential areas in east Swindon will be adversely affected by NEV traffic. These schemes will provide additional capacity to reduce impacts.

3. Economic case

3.1 Introduction

This section presents the Economic Case for the West of A419 schemes. It details the modelling undertaken, assumptions and subsequent results of assessing the impact of the schemes using the DfT software TUBA (Transport User Benefits Analysis). It also includes the monetised and non-monetised impacts in terms of the economic, environmental, social and distributional impacts.

3.2 Transport modelling

Model runs have been undertaken by Atkins (as owners of the model) and then skims have been produced from the model. These skims provide the traffic volumes, travel time and travel distance information in matrix form for the TUBA. General reporting about the model data, validation, forecasting will be provided for the Gablecross Junction FBC.

3.2.1 SATURN modal and skims

To provide the skimmed data for the TUBA, the 2014 Swindon Transport SATURN model has been used. The 2014 Swindon Transport SATURN model has been prepared to provide a more robust assessment of transport schemes and development proposals around the town. The model has been informed by a data collection exercise undertaken in Autumn 2014. The data collection programme included new Roadside Interview surveys, automated and manual traffic counts and car park surveys. Journey time data has been taken from Traffic Master data and some surveyed routes.

The model includes:

- A Highway Assignment Model (HAM) representing vehicle-based movements across the study area
- Variable Demand Model (VDM) in DIADEM which can represent modal shifting by taking costs from the HAM and public transport costs from the associated assignment model

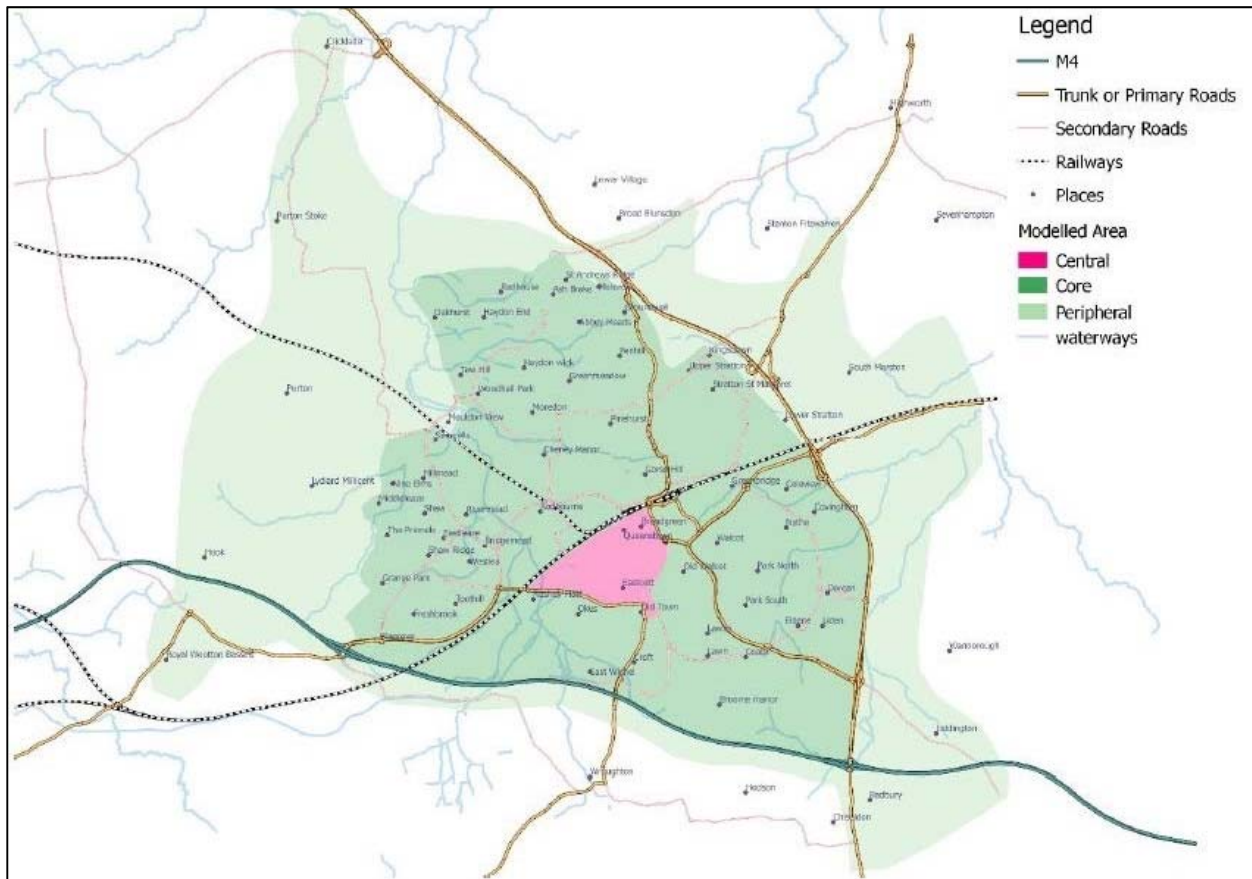
The Geographical area is divided into four parts – see Figure 3.1

- Central: majority of Swindon urban centre
- Core: all suburbs around the central area
- Peripheral: hinterland immediately around the core
- Wider area: beyond the periphery

In addition to the model reports provided as part of the Gablecross Junction FBC, Appendix B contains a Technical Note addressing queries raised by the SWLEP Independent Transport Advisor, Systra, about the OBC work.

Section 3: Economic case

Figure 3.1: Model Coverage



The SATURN model covers three modelled time periods for a base year (2014) and two forecast years of 2022 and 2040.

- AM peak: 08:00-09:00
- Inter-peak (average hourly traffic): 10:00-16:00
- PM peak: 17:00-18:00

For each forecast year, two scenarios have been provided, a Do Minimum scenario and then a Do Something scenario which includes the proposed schemes at Nythe Road/Oxford Road and at the Piccadilly Roundabout. As well as 'core' scenario, both 'high' and 'low' growth scenarios were provided by Atkins for the TUBA assessment. An alternative Scenario has also been tested which includes both the Southern Connector Road (SCR) and its dependent development. This scenario includes the full NEV development comprising of 8,650 dwellings and 40ha employment.

The Gablecross Traffic Forecasting Report (Section 7) sets out details of the dependant development assessment associated with the NEV infrastructure. Adjustments have been made to the TUBA input files to remove demand to/from the Honda site to reflect the planned closure of the site in 2021.

3.2.2 TUBA assumptions

Once the skims were extracted from the SATURN model, the TUBA was created. The appraisal period is 60 years from 2022, with the horizon year being 2080. Appraisal results are presented in 2010 prices, discounted to 2010 values. The Scheme parameters are largely determined by the parameters used in the forecasting SATURN model, i.e.:

- Construction Year - 2021
- Scheme Opening Year – 2022
- Horizon Year – 2080; and
- Modelled Years – 2022 and 2040

- Price base year: 2010
- Discounting current year: 2020
- Current year 2020
- Discount rate 3.5% for 30 years from current year and 3% thereafter

Moreover, a masking matrix was applied in the results so that only the benefits of the impact area are considered. The zones of the model were assigned to 21 sectors and some movements between sectors were excluded from the benefits as they are not expected to be affected by the scheme. Therefore, the masking matrix in Figure 3-2 was created and was multiplied with the matrix of the benefits. Figure 3- 3-3 and 3-4 contain the list and the map that the SATURN zones were assigned to.

Figure 3-2: Masking matrix

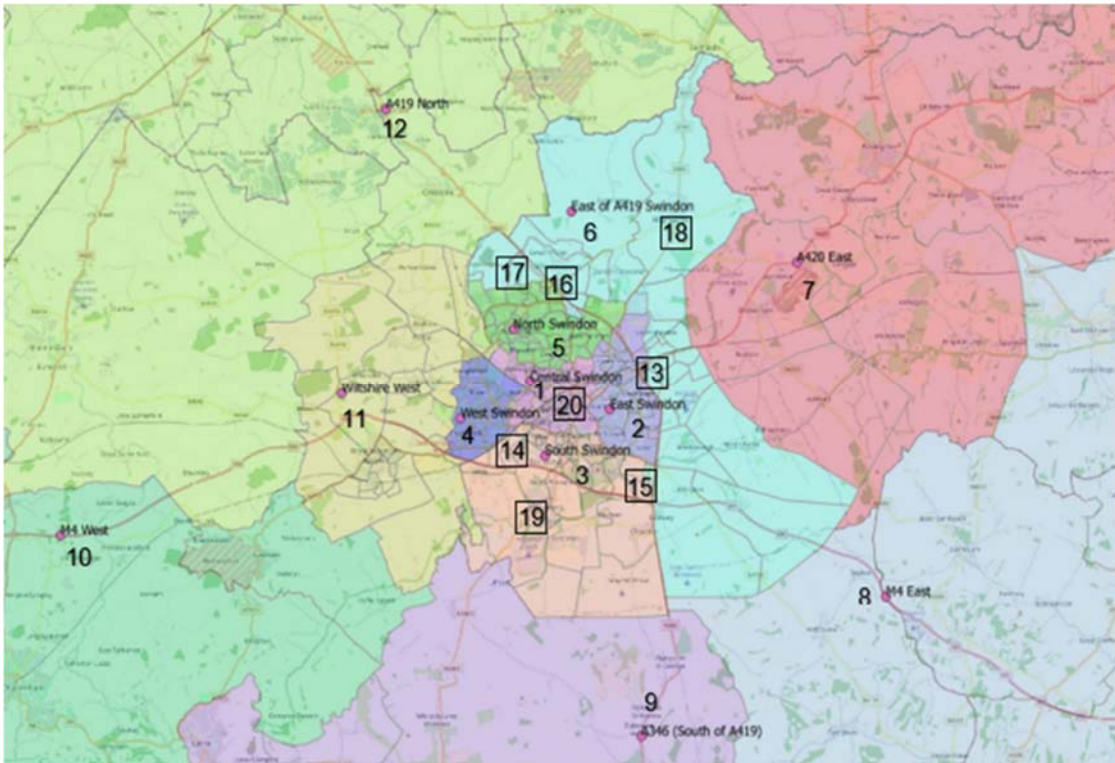
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	0	1	1	0	1	1	1	1	1	0	0	1	1	0	1	1	1	1	0	0	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1
4	0	1	0	0	0	1	1	0	0	0	0	0	1	0	1	0	0	1	0	0	0
5	1	1	1	0	1	1	1	1	1	0	0	1	1	0	1	1	0	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
8	1	1	1	0	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	1
9	1	1	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1
10	0	1	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	1	0	0	0
11	0	1	1	0	0	1	1	0	0	0	0	0	1	0	1	0	0	1	0	0	0
12	1	1	1	0	1	1	1	1	1	0	0	0	1	1	1	0	0	1	1	1	0
13	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
14	0	1	0	0	0	1	1	1	1	0	0	1	1	0	1	1	0	1	0	0	1
15	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1
16	1	1	1	0	1	1	1	1	1	0	0	0	1	1	1	0	1	1	1	1	0
17	1	1	1	0	0	1	1	1	1	0	0	0	1	0	1	1	0	1	1	1	1
18	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1
19	0	1	0	0	1	1	1	1	1	0	0	1	1	0	1	1	1	1	0	1	1
20	0	1	1	0	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	0	1
21	1	1	1	0	1	1	1	1	1	0	0	0	1	1	1	0	1	1	1	1	0

Figure 3-3: Masking matrix sector table

Geographical areas	Developments
1 Central Swindon	13 NEV
2 East Swindon	14 Wichelstowe
3 South Swindon	15 Commonhead
4 West Swindon	16 Kingsdown
5 North Swindon	17 Tadpole Farm
6 East of A419 Swindon	18 Highworth
7 A420 East	19 Wroughton
8 M4 East	20 Central Swindon developments
9 A419 South	21 Other developments (not shown in Figure)
10 M4 West	
11 Wiltshire West	
12 A419 North	

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Figure 3-4: Masking matrix sector map



As part of the TUBA process, user classes have been allocated vehicle and purpose types which are shown in Table 3.1.

Table 3.1 TUBA user classes

User Class No.	User Class	Parking	Vehicle Type	TUBA inputs	
				Vehicle / Submode	Purpose
1	Work (commute)	Non	Car	1	2
2	Employers Business	Non	Car	1	1
3	Other (shopping, education, leisure etc)	Non	Car	1	3
4	Work	Long Stay	Car	1	2
5		Short Stay	Car	1	2
6	Employers Business	Long Stay	Car	1	1
7		Short Stay	Car	1	1
8	Other	Long Stay	Car	1	3
9		Short Stay	Car	1	3
10	LGV	-	LGV Personal	2	2
11	LGV	-	LGV Freight	3	1
12	HGV	-	OGV1	4	1
13	HGV	-	OGV2	5	1

Other assumptions included in the TUBA modelling are:

- The economic parameters file used for this scheme is based on the July 2020 v1.13.1 TAG Data Book
- Total journey time, flow and distance changes between Do Minimum and Do Something scenarios were derived from the SATURN Model
- The negative flows of the provided by Atkins model matrices were changed to zero.
- These schemes are Local Government funded schemes

- For the economics, file provided by the DfT, version 1_13_1 was used.
- Optimism bias of 3% has been applied.

3.2.3 Annualisation factors

The Swindon model has three time periods (AM 08:00 – 09:00, IP - average hour from 10.00 – 16.00 and PM 17:00 – 18:00). The annualisation factors were derived as part of the Gablecross Junction FBC work and are summarised in Table 3.2

Table 3.2 Annualisation Factors

	AM	IP	PM
Peak hour to period factor, (volumetric)	2.81 (07:00-10:00)	6.00 (10:00-16:00)	2.77 (16:00-19:00)
Peak hour to period factor, revised for economics	2.05 (07:00-09:00)	7.52 (09:00-15:45 and 18:15-19:00)	2.41 (15:45-18:15)
Single to annual weekdays	253	253	253
Annualisation factor for economics	520	1,904	610

3.3 Model outputs

The models have been used to assess the scheme traffic impacts on the network, including consideration of junction performance, absolute traffic flows and journey times. Note that the traffic assignments in this section include traffic demand to/from the Honda site in 2040. This demand has been removed from the TUBA assessment and therefore does not influence the economic assessment.

3.3.1 Absolute differences in traffic flows

Figures 3-5 to 3-7 show modelling outputs for the West of A419 schemes on the highway network in 2022.

The plots show that in the AM, inter and PM peak periods there is minimal impact on the network, both locally and further afield.

The biggest changes in flows are expected in Oxford Road westbound route where in the AM peak, the Do Something scenario is expected to have 153 more PCUs than the Do Minimum scenario. There are also changes to the traffic flows along Dorcan Way across AM peak period where in the Do Something scenario, 40 more PCUs are expected, compared to Do Minimum.

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Figure 3-5 Traffic flow differences in the AM peak

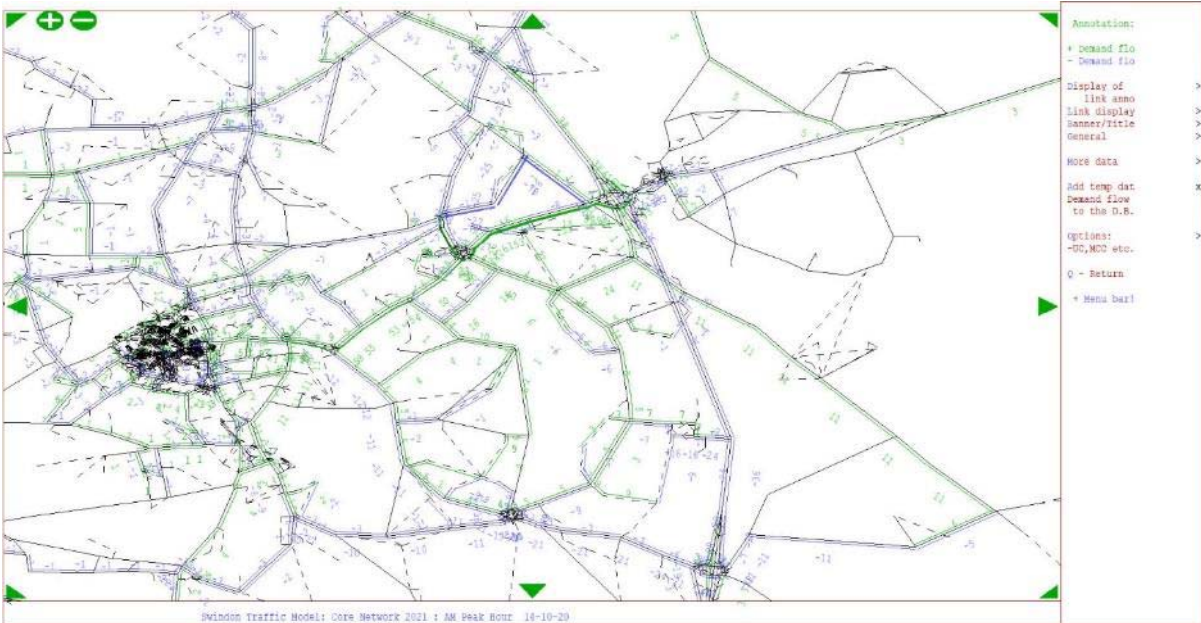


Figure 3-6 Traffic flow differences in the interpeak peak

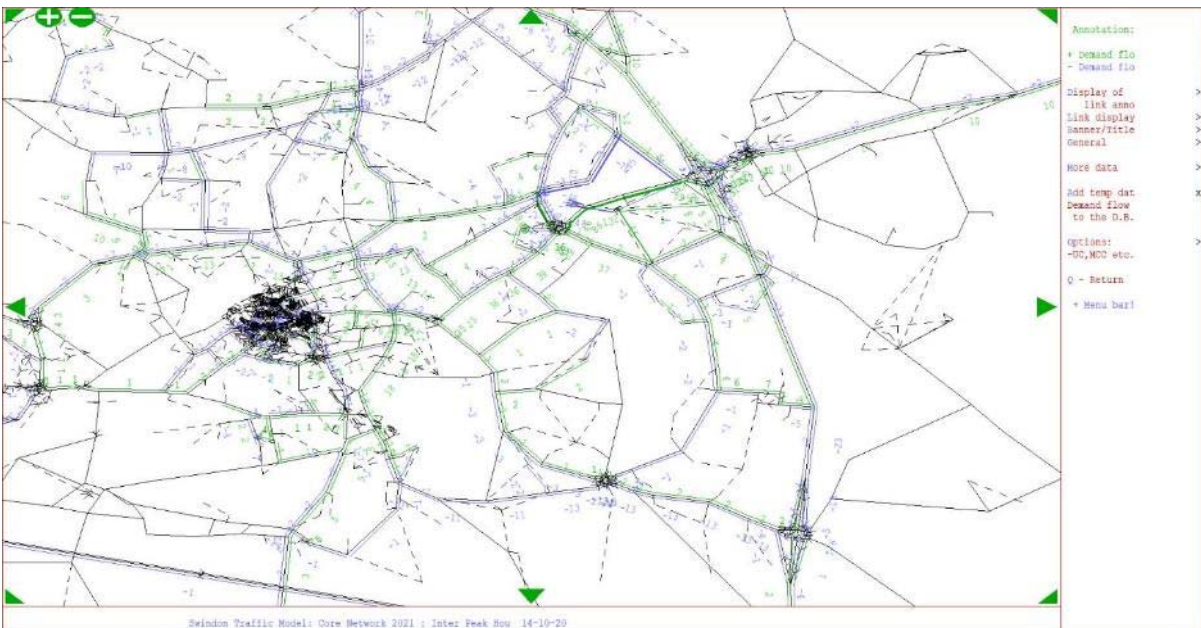
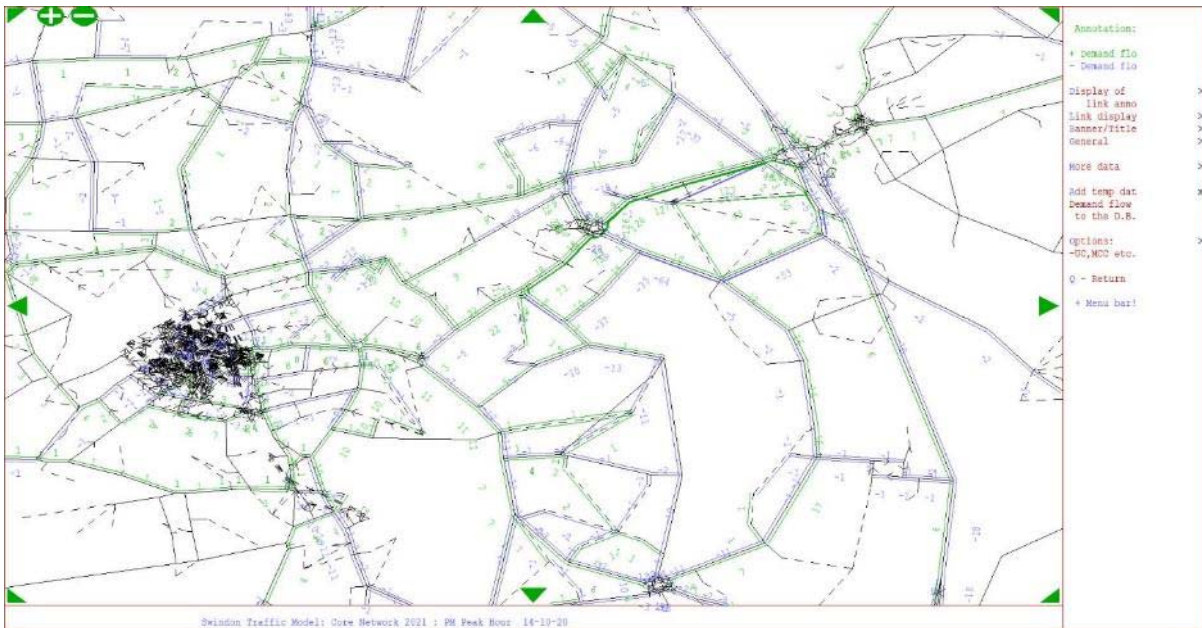


Figure 3-7 Traffic flow differences in the PM peak



3.3.2 Journey time information

The changes in modelled journey times are shown in Table 3.3.

There are impacts on journey times along Oxford Road, with savings of maximum 44 second across all three time periods in the 2022 Do Something compared to 2022 Do Minimum scenarios and a change in journey time of maximum 41 seconds across all three time periods between the 2040 Do Something compared to Do Minimum scenarios. On the eastbound route of Oxford Road in the 2040 Do Something AM Peak period, an increase of journey time by 12 seconds is expected.

On Dorcan Way, there are smaller journey time savings on the westbound route, when comparing Do Something against Do Minimum scenarios. The greatest journey time savings are found during the AM peak period, with the greatest reductions between Do Minimum and Do Something being a decrease of 6 seconds on the westbound route in the 2040 AM peak period.

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Table 3.3 Changes in modelled journey times

		Model Information						Absolute Difference					
		AM		IP		PM		AM		IP		PM	
		Time (s)	Av Speed (kph)	Time (s)	Av Speed (kph)	Time (s)	Av Speed (kph)	Time (s)	Av Speed (kph)	Time (s)	Av Speed (kph)	Time (s)	Av Speed (kph)
Oxford Road WB (White Hart Rbt to Greenbridge Rbt)	2022DM	147	28.3	127	32.7	139	29.9						
	2022DS	103	40.4	103	40.4	102	40.8	-44	12.1	-24	7.6	-37	10.9
	2040DM	156	26.7	133	31.3	154	27.0						
	2040DS	115	36.2	104	40.0	103	40.4	-41	9.5	-29	8.7	-51	13.4
Oxford Road EB (Greenbridge Rbt to White Hart Rbt)	2022DM	100	41.6	102	40.8	105	39.6						
	2022DS	99	42.0	102	40.8	105	39.6	-1	0.4	0	0.0	0	0.0
	2040DM	103	40.4	111	37.5	122	34.1						
	2040DS	115	36.2	109	38.1	122	34.1	12	-4.2	-2	0.7	0	0.0
Dorcan Way WB (Edison Rbt to Greenbridge Rbt)	2022DM	210	40.8	193	44.4	203	42.2						
	2022DS	208	41.2	193	44.4	202	42.4	-2	0.4	0	0.0	-1	0.2
	2040DM	218	39.3	195	44.0	208	41.2						
	2040DS	212	40.4	193	44.4	205	41.8	-6	1.1	-2	0.5	-3	0.6
Dorcan Way EB (Greenbridge Rbt to Edison Roundabout)	2022DM	222	38.6	210	40.8	216	39.7						
	2022DS	223	38.4	210	40.8	216	39.7	1	-0.2	0	0.0	0	0.0
	2040DM	224	38.3	210	40.8	221	38.8						
	2040DS	225	38.1	210	40.8	221	38.8	1	-0.2	0	0.0	0	0.0

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3.3.3 Sensitivity tests

As part of this study, a number of sensitivity test scenarios have been assessed using TUBA, including:

- Scenario 1: 'core' scenario (as previously described)
- Scenario 2: 'low' growth scenario (with demand reduced by 7.07% of base level demand in 2022 and 12.75% in 2040)
- Scenario 3: 'high' growth scenario (with demand increased by 7.07% of base level demand in 2022 and 12.75% in 2040)
- Scenario 4: 'SCR' scenario (with Southern Connector Road and its dependent development included)
- Scenario 5: based on the core scenario, with costs increased by 20%
- Scenario 6: based on the core scenario, with costs reduced by 20%

Costs are set out in Table 3.4 (note that scenarios 1-4 all assume the same scheme costs). The costs of Table 3.4 include 3% Optimism Bias increase.

Table 3.4: Scheme costs by scenario (excluding sunk costs and including optimism bias)

Type of Costs	Scenario 1-4	Scenario 5 20% increase	Scenario 6 20% decrease
Construction	£3,677,639.61	£4,413,167.53	£2,942,111.69
Preparation	£770,135.50	£924,162.60	£616,108.40
Supervision	£41,200.00	£49,440.00	£32,960.00
Total	£4,488,975.11	£5,386,770.13	£3,591,180.09

An additional sensitivity test undertaken using version 1.14 of the data book is reported in section 3.4.3.

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3.4 Economy Impacts

The summary of overall benefits and costs for all scenarios is shown in Table 3.5 (all tables are in '000s). The full results of the assessment and sensitivity tests are included TUBA Technical Note (provided in Appendix C). In all tests, the results were masked with the process mentioned above. The analysis presented in this section is based on TUBA inputs files with demand to/from the Honda site removed.

Table 3.5 Summary of overall benefits and costs for all scenarios

Output	Test 1: Core Scenario	Test 2: Low Growth	Test 3: High Growth	Test 4: SCR Scenario	Test 4: 20% increase	Test 5: 20% decrease
Present Value of Benefits (PVB)	7,966	5,900	14,047	9,164	7,966	7,966
Present Value of Costs (PVC)	3,120	3,120	3,120	3,120	3,744	2,502
Net Present Value (NPV)	4,846	2,780	10,927	6,044	4,222	5,464
Benefit to Cost Ratio (BCR)	2.55	1.89	4.50	2.94	2.13	3.18

Table 3.6 is the Economic Efficiency of the Transport System (TEE) table for the core scenario.

Table 3.6 TEE Table for the Core Scenario

Consumer - Commuting user benefits	All Modes	Road	
Travel Time	3154	3154	
Vehicle operating costs	195	195	
User charges	0	0	
During Construction & Maintenance	0	0	
NET CONSUMER - COMMUTING BENEFITS	3349	3349	
Consumer - Other user benefits	All Modes	Road	
Travel Time	1882	1882	
Vehicle operating costs	389	389	
User charges	0	0	
During Construction & Maintenance	0	0	
NET CONSUMER - OTHER BENEFITS	2271	2271	
Business	All Modes	Road Personal	Road Freight
Travel Time	2184	858	1325
Vehicle operating costs	293	190	102
User charges	0	0	0
During Construction & Maintenance	0	0	0
<i>Subtotal</i>	<i>2476</i>	<i>1048</i>	<i>1428</i>
Developer contributions	0		
NET BUSINESS IMPACT	2476		
TOTAL			
Present Value of Transport Economic Efficiency Benefits (TEE)		8096	
Note: Benefits appear as positive numbers, while costs appear as negative numbers.			
Note: All entries are present values discounted to 2010, in 2010 prices			

3.4.1 Core Scenario – Public Accounts Impact

Table 3.7 is the Public Accounts Impact for the core scenario.

Table 3.7 Public Accounts Impact for the Core Scenario, £'000

Local Government Funding	All Modes	Road
Revenue	0	0
Operating Costs	0	0
Investment Costs	3120	3120
Developer Contributions	0	0
Grant/Subsidy Payments	0	0
Net Impact	3120	3120
Central Government Funding: Non-Transport	All Modes	Road
Revenue	0	0
Operating Costs	0	0
Investment Costs	0	0
Developer Contributions	0	0
Grant/Subsidy Payments	0	0
Net Impact	0	0
Central Government Funding: Transport	All Modes	Road
Indirect Tax Revenues	223	223
TOTALS		
Broad Transport Budget	3120	3120
Wider Public Finances	223	223
Note: Benefits appear as positive numbers, while costs appear as negative numbers.		
Note: All entries are present values discounted to 2010, in 2010 prices		

3.4.2 Core Scenario – Analysis of the Monetised Costs and Benefits

Table 3.8 shows the total costs and benefits of the schemes, with an overall BCR calculated for the scheme of 2.34.

Table 3.8 Analysis of the Monetised Costs and Benefits: Core Scenario, £'000

Greenhouse Gases	92.63
Economic Efficiency: Consumer Users (Commuting)	3349
Economic Efficiency: Consumer Users (Other)	2271
Economic Efficiency: Business Users and Providers	2476
Wider Public Finances (Indirect Taxation Revenues)	-223
Present Value of Benefits (PVB)	7966
Present Value of Costs (PVC)	3120
Net Present Value (NPV)	4846
Benefit to Cost Ratio (BCR)	2.56

TEE tables, public account impacts and analysis of monetised costs and benefits for the sensitivity tests can be found in Appendix C.

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3.4.3 Core scenario – TAG data sensitivity test

Transport Appraisal Guidance (TAG) Data Book v1.13.1 should be used for economic assessments. However, version 1.14 of the data book is intended for use as a sensitivity test in scheme appraisals in the meantime. TUBA v1.9.14 Release Notes (associated with the DfT’s “Appraisal and modelling strategy: route map for updating TAG during uncertain times”⁸.) state it is anticipated that the TAG Data Book v1.14 will be incorporated into formal guidance after February 2021

As such, a sensitivity test was conducted for Core scenario and the results are presented below. The parameters in this dataset are more pessimistic than v1.13.1, and as such the BCR is reduced, though is still just above 2.0.

Table 3.9: Summary of Overall Benefits and Costs – core scenario TAG data sensitivity test

Output	Core scenario Sensitivity Test (£'000s, 2010 values)
Present Value of Benefits (PVB)	6944
Present Value of Costs (PVC)	3120
Net Present Value (NPV)	3824
Benefit to Cost Ratio (BCR)	2.23

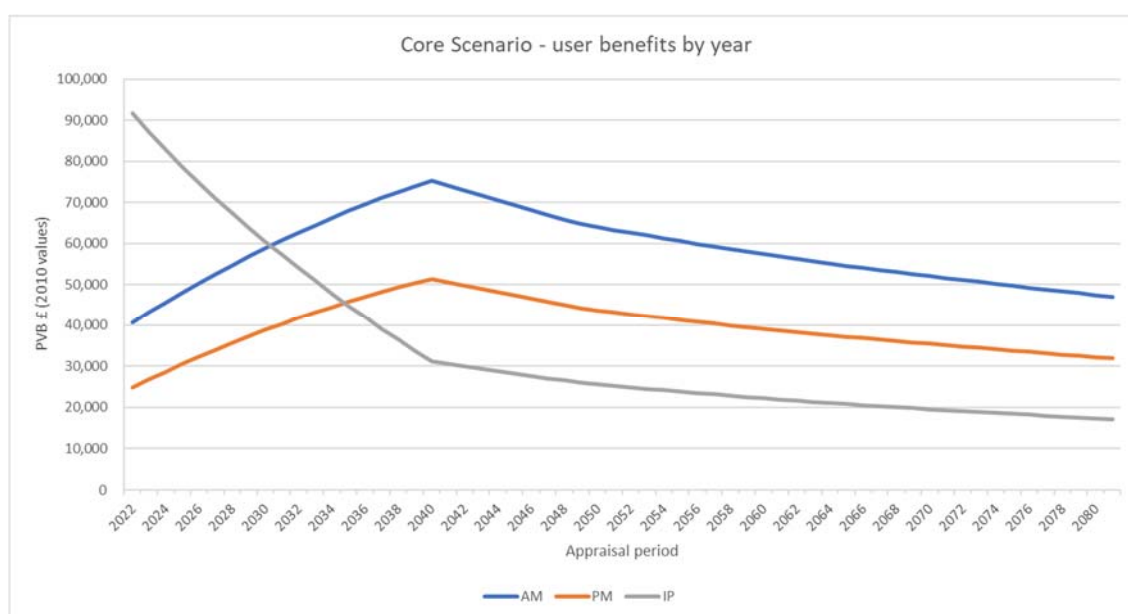
3.4.4 User benefit context

Context for the transport user benefits calculated are shown in Figure 3.8 and Table 3.10.

Figure 3.8 shows the profile of user benefits over time, identifying the contributions of the AM peak, PM peak and inter-peak periods. Overall, the peaks derive around 75% of the total benefit (split 60:40 in favour of the AM peak), although the interpeak period contributes more in early years as the scheme assists movements that are currently compromised with existing arrangements away from peak periods.

Table 3.10 shows the breakdown by sector of benefits for the Core Scenario. Note those which are blank have been filtered out to remove model noise as those sectors/movements are not expected to be materially impacted by the scheme. Most of the benefits are forecast from sectors 2 (East Swindon), 6 (East of A419 Swindon), 7 (A420 east) and 12 (A419) to other sectors across Swindon. There is a correlation with movements associated with accessing central and east Swindon from the A419.

Figure 3-8 Profile of user benefits over time (core scenario)



⁸ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/903176/tag-route-map-2020.pdf

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Table 3.10 User benefits by sector-sector movement

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL	
1	-	-£318,173	-£5,623	-	-£227,622	-£58,298	£56,507	£37,949	-£66,170	-	-	£30,264	£23,094	-	£10,665	£3,756	-£5,605	-£491	-	-	-£21,161	-£540,908	
2	£307,590	£743,511	£152,016	£22,812	£130,541	£79,715	£71,374	£42,162	£17,604	£61,491	£16,580	£67,297	£75,062	£23,449	£14,695	£7,485	£8,750	£530	£701	-	-	£60,099	£1,903,465
3	£49,211	£103,290	-	-	-£9,470	£25,308	£26,676	-£918	-£82,302	-£11,173	-£18,401	£23,874	£42,106	-	£2,446	£2,294	-£2,269	-£99	-	-	-	£3,872	£154,446
4	-	£55,895	-	-	-	£19,946	£10,118	-	-	-	-	-	£7,552	-	£2,968	-	-	-£47	-	-	-	-	£96,432
5	£324,390	£290,061	£38,640	-	£69,652	-£12,976	£7,433	-£28,734	£13,360	-	-	£28,246	£17,938	-	£5,040	£1,448	-	-£359	-£69	-	-	£26,311	£780,381
6	£547,804	£329,830	£76,841	£93,659	-£116,041	-£29,987	£74,170	£1,256	£3,296	£18,794	£5,914	£46,131	£8,993	£17,939	£200	-£4,870	-£7,706	-£113	£14	£2,313	£53,414	£1,121,853	
7	£912,289	£111,692	£145,300	£62,630	-£252,832	£13,295	-	£90,218	£12,241	£215,982	£24,490	-£127,054	£2,754	£33,770	£1,382	-£11,136	-£9,610	-£860	£308	-	-	£73,559	£1,298,416
8	£288,694	£116,794	£70,912	-	-£39,526	-£628	-£25,137	-	£2,114	-	-	-£12,412	-£6,272	£22,026	£127	£679	-£160	-£223	£169	-	-	£34,144	£451,302
9	£39,011	£15,182	£9,147	-	£7,849	-£5,174	-£1,311	£211	-	-	-	£5,186	-£12,335	£5,524	£701	£333	-£267	-£95	£15	-	-	£6,214	£70,190
10	-	£50,144	£9,454	-	-	£19,202	-£33,794	-	-	-	-	-	£8,456	-	£4,683	-	-	-	£398	-	-	-	£58,543
11	-	£25,887	£10,174	-	-	£9,371	£5,123	-	-	-	-	-	£16,552	-	£2,554	-	-	-	£134	-	-	-	£69,795
12	£855,281	£221,768	£88,748	-	£110,623	-£12,188	-£28,783	-£124,415	-£2,042	-	-	-	£14,973	£8,073	£2,215	-	-	-	£127	£266	-	-	£1,134,647
13	£399,516	£210,397	£119,332	£79,331	-£78,772	-£18,100	-£8,198	£52,716	£20,628	£30,817	£24,047	-£133,750	£38,959	£24,007	£2,768	-£6,253	-£8,181	-£657	£241	-	-	£26,604	£775,453
14	-	£25,713	-	-	-	£12,822	£18,206	£4,371	£5,758	-	-	£11,493	£7,886	-	£1,118	£1,073	-	£68	-	-	-	£7,380	£95,887
15	-£2,193	£5,029	£4,259	£1,252	£1,124	£1,274	£558	£325	£1,566	£1,415	£1,339	£2,691	£2,263	-£9	-	£324	£0	-£6	£12	-	-	£419	£21,643
16	£32,281	£22,526	£4,322	-	£8,859	-£833	£986	-£2,035	-£887	-	-	-	£2,225	£3,129	-£77	-	-£40	-	-	-	-	-	£70,447
17	£19,293	£20,340	£2,212	-	-	-£1,095	£411	-£2,117	£2,812	-	-	-	£1,675	-	-£5	-£0	-	-£3	£1	-	-	£3,773	£47,298
18	£8,555	£4,661	£1,119	£867	£2,012	-£122	£72	-£238	-£106	£183	£106	£547	£205	£33	-£9	-	-£9	-	-£1	-	-	£843	£18,720
19	-	£154	-	-	£154	-£53	-£113	-£89	-£535	-	-	£53	£28	-	£4	£7	-	-£5	-£3	-	-	£105	-£293
20	-	-	-	-	-	£265	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	£265
21	£113,210	£110,868	£16,528	-	£14,018	£10,088	£17,314	£4,259	-£3,845	-	-	-	£7,959	£1,443	£1,111	-	-£731	-£141	£1	-	-	-	£292,083
TOTAL	£3,894,933	£2,145,568	£743,381	£260,550	-£379,431	£51,833	£191,611	£74,923	-£76,509	£317,509	£54,077	-£57,434	£260,073	£139,383	£52,586	-£4,859	-£25,832	-£1,839	£1,652	£2,313	£275,576	£7,920,065	

All figures are 2010 prices and values

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3.4.5 Reliability Benefits

Highway reliability is based on variation in journey times caused by events unpredictable by the users such as incidents or recurring congestion in certain days (day-to-day variability). Predictable elements like varying levels of demand by time of day, day of week or seasonal effects are excluded, as travellers are assumed to be aware of them. TAG unit A1.3 (section 6) contains a methodology for calculation of reliability benefits, specifically in section 6.3 for urban roads.

Variability of journey times can be measured by standard deviation of the journey time; the bigger the spread of values around the mean, the less reliable the transport system is. It is possible to derive the change in the standard deviation delivered by the scheme inside urban areas with using modelled time and distance values as in the formula:

$$\Delta\sigma_{ij} = 0.0018 \cdot (t_{ij2}^{2.02} - t_{ij1}^{2.02}) \cdot d_{ij}^{-1.41}$$

where:

- $\Delta\sigma_{ij}$: change in standard deviation of journey time between i and j;
- t_{ij1} and t_{ij2} : journey times between i and j, prior (1) and post (2) scheme introduction; and
- d_{ij} : journey distance between i and j.

The consequent formula to calculate benefits is:

$$Benefit = - \sum_{ij} \Delta\sigma_{ij} \cdot \left(\frac{T_{ij2} + T_{ij1}}{2} \right) \cdot VOR$$

where:

- T_{ij2} and T_{ij1} : number of trips between i and j in Do-Minimum (1) and Do-Something (2) scenarios; and
- VOR, Value of Reliability ratio: product of Value of Time (VoT) and reliability ratio (0.4).

Combining two of above-mentioned equations leads to the following final formulation:

$$Benefit = - \sum_{ij} (C_{ij2} - C_{ij1}) \cdot \left(\frac{T_{ij2} + T_{ij1}}{2} \right) \cdot VOT$$

where:

$$\text{Journey time variability for scenario X: } C_{ijX} = 0.0018 \cdot d_{ij}^{-1.41} \cdot t_{ijX}^{2.02} \cdot VOR$$

and within this formula:

- 'd' = distance from origin 'i' to destination 'j';
- 't' = journey time from 'i' to 'j' for scenario 'X' (scenarios with and without scheme, for each purpose and vehicle class, and for each time period); and
- VOR = Value of Reliability ratio = 0.4 (from TAG unit A1.3)

TUBA is used to calculate the benefit, thus employing standard values of time, discount rates, etc. The only elements that need to be calculated prior to TUBA analysis are C_{ijX} . Extracts were taken from models to estimate the change in standard deviation of journey time using the above formula. Highway trip matrices for all time periods (AM, IP and PM), analysis years (2022 and 2040), and scenarios (do minimum and do something) were used. Time and distance skim matrices were extracted and fit appropriately into the formula above to receive the C_{ijX} values. These values, along with trip and other skim matrices, were fed into TUBA, using the same basic assumptions as overall TUBA benefit calculations (purposes and vehicles, annualisation and economic file parameters), as well as adjusted using the mask derived to eliminate benefits not likely to be intrinsic to the scheme.

Results of the analysis indicate that highway reliability benefits of £298,712 could be realised (2010 present values). Some £67k is realised by business users, with £80k by commuters and the balance 'other' trip purposes.

3.4.6 Wider impacts and regeneration

Analysis undertaken for the White Hart Junction and Southern Connector Road business cases, and reported in the Gablecross Junction Traffic Forecasting Report, states that:

The main finding from the SCR assessment is that the deadweight quantum for the SCR is 4,500 and thus there will be 4,150 dwellings at NEV dependent on the SCR.

The overall sustainability of the NEV could also be affected as it is dependent on achieving sufficient scale and pace of development to support the provision of key facilities such as the district centre and secondary school. Although the West of A419 schemes are subject to a separate business case, if they were not implemented, they would constrain traffic flow on key corridors and reduce the overall effectiveness of the NEV transport package in mitigating the impact of the development.

3.4.7 Comparison with OBC benefits

The TUBA analysis technical note (Appendix C) reports the changes in results noted in the FBC, since the OBC.

In essence, the modelling work has been updated to reflect new forecast years and an updated uncertainty log of future year assumptions. In addition, the annualisation factors used in TUBA assessments have been updated; notably these are slightly larger, encapsulating as they do a greater allowance for shoulder peaks.

In particular though, as a result of these changes, the FBC model is more congested in the design year compared to the OBC design year model, with commensurately greater journey time savings. Overall therefore, there is a significant difference in the user benefits of the design year between the two models. This is, however, offset by a similar scale of increase in costs, resulting in a BCR that is not significantly different to that presented at the OBC stage.

3.5 Environmental impacts

All arms of the Piccadilly roundabout have been flared to provide two-lane entry except Dragonfly Road, which has been reflected in revised exit widths in the scheme. The alignment and extent of flaring is heavily constrained by significant underground utilities identified through visual observation. The circulatory carriageway is two lanes and exit and entry alignments have been configured to avoid subways, which are to be kept due to the unconflicted nature of the pedestrian crossing.

Oxford Road/Nythe Road junction proposed alterations include two 3.25m wide lane approaches in both directions on Oxford Road, two lane approaches on both Oxford Road West and Oxford Road East, 3m shared cycle route and on-road bus stops involving the removal of some grass verge.

The majority of the proposed scheme areas are existing highways infrastructure and are within highway boundaries. However, some areas of land needed for the scheme would be taken from beyond the highway boundary, i.e. the removal of some grass verge as part of the Nythe Road/Oxford Road junction.

It was concluded that the proposed works do not require a full environmental impact assessment (EIA). The Appraisal Summary Report (ASR) documented the scope of the environmental appraisal of the West of A419 schemes. Based on this, a qualitative assessment on the likely environmental effects from the proposed development is required, relating to the following impacts:

- Air Quality and Noise
- Landscape and Visual (Lighting)
- Townscape
- Historic Environment
- Biodiversity
- Water Environment

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3.5.1 Air Quality and Noise

Piccadilly Roundabout and Oxford Road/Nythe Road junction are located within an urban area, with a large number of residential and commercial receptors within 600m of the schemes, including a number of schools, the closest of which (Colebrook Junior School) is located approximately 215m from Piccadilly Roundabout and within approx. 530 m of the Oxford Road/Nythe Road junction.

The 2022 modelling work indicates there will be a difference of an 1642 AADT on Oxford Road, as a result of the scheme. The modelling shows an increase of less than 1000 AADT on Dorcan Way in 2022 as a result of the scheme. The changes are higher than predications at the OBC for the reasons set out in section 3.4.7.

The air quality negative impacts on Oxford Road and Dorcan Way will be offset to some extent by the congestion relief at the schemes, this is evidenced in the journey time savings presented in Table 3.3.

The noise levels in the vicinity of the schemes, are largely associated with the existing traffic, and therefore the forecast changes in traffic flow are unlikely to have a noticeable impact to residents.

Due to the scale traffic volume changes in the vicinity of the Piccadilly Roundabout and Oxford Road/Nythe Road junction schemes and the predicted increases in traffic speeds, the changes to noise and air quality are expected to be limited, so the impact is likely to be slight adverse.

3.5.2 Landscape and Visual Impacts

The proposed schemes will not significantly alter the appearance of the Nythe Road junction or Piccadilly Roundabout or the access roads into surrounding properties. Some elements of the proposed schemes may affect the views of a number of receptors including the occupiers of nearby residential properties, road users and users of nearby businesses such as the Post Office close to Piccadilly Roundabout. The existing landscape already contains a highway feature, so the expected visual change is likely to be minimal. Once operational, the proposed scheme would be lit during hours of darkness. However, the effect of lighting from the proposed scheme will be minimal, as street lighting already exists on the current roundabout and junction.

It is expected that the proposed schemes would have a neutral impact visually and on landscape.

3.5.3 Townscape

Townscape is the physical and social characteristics of the built and non-built environment. It is the mix of characteristics and perceptions that contribute to townscape character and give a sense of place or identity. The urban environment is not likely to change significantly due to the Oxford Road/Nythe Road junction and Piccadilly Roundabout schemes. No significant alteration to the appearance of the roundabout and junction is proposed. There may be short term disruption, such as delays and lane closures, during construction works. Visual receptors in nearby residential properties, road users and non-motorised users may be impacted during these construction works. However, we expect these impacts to be mitigated, at least in part, by traffic management plans.

The Nythe Road junction includes the removal of some grass verge and the introduction of a 3m shared cycle route which may have some 'place-based' impacts but generally the works are minimal and are not expected to dramatically alter the sense of place.

Overall, we consider the proposed scheme to have a neutral impact on townscape.

3.5.4 Historic Environment

There is a 'Site of Roman town, West of Wanborough House' which is located approximately 788 m to the north east of Piccadilly roundabout at its closest point⁹. This site is registered as a Scheduled Monument. In addition, there are two listed buildings located within 1km of the roundabout. These include:

- Stratton Park (Grade II) located approx. 913 m to the north east of Piccadilly roundabout;
- Outhouse to north of Nythe Farmhouse (Grade II) approx. 982 m east of Piccadilly roundabout.

⁹ <https://magic.defra.gov.uk/MagicMap.aspx> (Retrieved 02/01/2019)

The 'Site of Roman town, West of Wanborough House' is located approximately 1 km to the south east of Nythe Road/Oxford Road junction. There are also a number of listed buildings within 1km of the Nythe Road junction, these include:

- Roman Road Bridge (Grade II) located approx. 470 m to the north east of the junction
- Stratton Park (Grade II) approx. 625 m east of the junction
- Dockle Farmhouse (Grade II) approx. 764 m west of the junction
- Church Farmhouse (Grade II) approx. 830 m north of the junction
- 73, Swindon Road (Grade II) approx. 869 m north west of the junction
- The Wheatsheaf (Grade II) approx. 870 m north of the junction
- Church of St Margaret (Grade I) approx. 875 m north of the junction
- Churchyard Tomb of Susanah Nicholas Van Acker of Erith (Grade II) approx. 875 m north of the junction; and
- Pigeon House to rear of premises of Coventry Drafting Company (Grade II) approx. 1 km north west of the junction.

There is minimal potential for the listed buildings or their setting to be affected by the proposed scheme. Due to the limited scale of the works it is not anticipated that the scheme will have any significant effect on the historical environment, given existing conditions of Piccadilly Roundabout and Oxford Road/Nythe Road Junction.

Overall the current scheme is expected to have a neutral impact on the historic environment.

3.5.5 Biodiversity

Piccadilly Roundabout and Oxford Road/Nythe Road junction are not located within any Special Areas of Conservation, Special Protection Areas, Sites of Special Scientific Interest (SSSI) or National Nature reserves and there are no such designations within 1 km of the proposed schemes.

Piccadilly Roundabout and Oxford Road/Nythe Road junction are located within an SSSI Impact Risk Zone due to its proximity to Coate Water SSSI (within 3 km to the south west of the proposed schemes). However, this is a traffic improvement scheme and therefore would not need to consult Natural England on likely risks in this case.

Local Nature Reserves within approx. 4 km of the schemes include:

- Stanton Park Local Nature Reserve (LNR)
- Seven Fields LNR
- Radnor Street Cemetery LNR
- Coate Water LNR and Quarry Wildlife Garden LNR

Other SSSIs located within 4 km of the schemes include:

- Okus Quarry SSSI
- Great Quarry Swindon SSSI
- Old Town Railway Cutting Swindon SSSI

Notable habitats in the area include deciduous woodland, mixed mainly conifer woodland, shrub woodland and young woodland¹⁰. The schemes are located within a 'Priority Species for Targeting – Lapwing' area. Notable species sighted within approx. 5km of the schemes include birds, mammals such as Hedgehog, Otters and Brown Long-eared bats, and amphibians such as the Smooth Newt, among other species¹¹. During construction, relevant environmental protection legislation should be followed, including the Conservations of Habitats and Species Regulations 2017, and Wildlife and Countryside Act 1981 (as amended).

¹⁰ <https://magic.defra.gov.uk/MagicMap.aspx> (Retrieved 10/01/2019)

¹¹ <https://records.nbnatlas.org/explore/your-area#51.5743757189469041-1.743256965132445612|Amphibians> (Retrieved 10/01/2019)

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Given the schemes involve small alterations of existing highway infrastructure, there is expected to be neutral impacts on biodiversity.

3.5.6 Water Environment

Figure 3-9 Flood Zone Map of Area Surrounding Oxford Road/Nythe Road Junction



(Source: Flood Map for Planning¹²)

The map above shows that the Nythe Road junction is not located within any flood zones and is therefore considered at very low risk of flooding at the junction. Flood zones 3 and 2 are located to the south of the junction, following the River Cole from the south east to south west and potentially impacting on Greenbridge roundabout at the southern end of Oxford Road, which could have an effect on traffic to and from the Nythe Road/Oxford Road junction.

Figure 3-10 Flood Zone Map of Area Surrounding Piccadilly Roundabout



(Source: Flood Map for Planning¹²)

The map above shows that Piccadilly Roundabout is located within Flood zones 2 and 3 due to its location less than 40 m south of the River Cole. The current location of the roundabout is already within flood zones 2 and 3.

¹² <https://flood-map-for-planning.service.gov.uk/confirm-location?eastings=414969&northings=184761&placeOrPostcode=swindon> (Retrieved 02/01/2019)

Development in Flood Zone 3 requires a flood risk assessment as there is a high probability of flooding in the location, with a 1 in 100 or greater annual probability of river flooding¹³.

The proposed scheme will take a small amount of additional land e.g. the removal of some grass verge at Oxford Road/Nythe Road, but overall should not result in a major loss of floodplain storage and impeding of water flows or lead to increased flood risk elsewhere. As such, water environment impacts of the Nythe Road/Oxford Road junction and Piccadilly Roundabout are expected to be slight adverse, though all detailed design work must include assessment of the effectiveness of the drainage strategy and identify any required mitigation works.

3.6 Social impacts

3.6.1 Physical Activity

The Oxford Road/Nythe Road scheme will see minor relocation alterations to the existing signalised Toucan crossing on the eastern arm of the junction to account for the additional lanes being installed.

A shared footway/cycleway is retained on Oxford Road and the bus stop is to be relocated further east of Nythe Road junction. These changes will not change the physical activity in the area.

With regards to the works at Piccadilly Roundabout, none of these are assumed to have an effect upon pedestrians as there are only minor alterations to the shared path and footways, and bus stop relocation taking place.

Therefore, the overall impact on 'Physical Activity' is considered to be neutral.

3.6.2 Security

The relocation of the existing staggered Toucan crossing on the eastern arm of the Oxford Road/Nythe Road junction is not expected to provide any additional security benefits. Street lighting is already in-place at this junction.

The minor alterations to the footways of Piccadilly Roundabout are not expected to provide any additional security benefits. Street lighting is already in-place at this junction.

Therefore, the impact on 'Security' is considered to be neutral.

3.6.3 Severance

The works that will take place at the Oxford Road/Nythe Road junction have been classified as having little or no hinderance to pedestrians. The existing bus stops which are located on Oxford Road at the junction will be relocated but will still be able to be accessed. The shops that are located approximately 300m to the south of the junction will still be accessible after the scheme takes place.

The works that are due to take place at Piccadilly Roundabout will have little or no hinderance to pedestrians in the area, particularly as the subways will be retained. The crossing points that are located on north-western, north, and north-eastern arms are not to be altered by this scheme. This means that pedestrians will still be able to access facilities such as the Covingham Square to the immediate east of the roundabout.

Therefore, the impact on 'Severance' is considered to be neutral.

3.6.4 Journey Quality

The Oxford Road/Nythe Road scheme will improve capacity at the junction with the introduction of an additional lane on the eastern and western arms, thus reducing driver stress. It is envisaged that the journey quality for pedestrians and cyclists will not change.

¹³ <https://www.gov.uk/guidance/flood-risk-and-coastal-change#flood-zone-and-flood-risk-tables>

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The Piccadilly Roundabout scheme will improve capacity at the roundabout with the introduction of additional lanes on all arms except the northern arm, thus reducing driver stress. It is envisaged that the journey quality for pedestrians and cyclists will not change.

Therefore, the impact on 'Journey Quality' is considered to be slightly beneficial.

3.6.5 Option and non-use values

At this stage, both schemes are not expected to have substantial changes to the availability of transport services. Railway patronage will not be affected by the schemes due to their respective distances to Swindon Railway Station.

In accordance with Chapter 7 of TAG Unit A4.1 'Social Impact Appraisal' guidance, this aspect has not been assessed.

3.6.6 Accessibility

The works affecting accessibility are relatively minor. As a part of the Oxford Road/Nythe Road scheme, the bus stop will be relocated to the east of the junction. As a part of the Piccadilly Roundabout scheme, the two bus stops on the north-western arm of the roundabout are due to be moved to the west of their current location.

Therefore, the impact on 'Accessibility' is considered to be neutral.

3.6.7 Personal affordability

For both schemes, there are no expected cost changes to elements such as parking, road pricing and public transport.

Therefore, the impact on 'Personal affordability' is considered to be neutral.

3.6.8 Distributional Impacts Assessment

Utilising guidance found in TAG Unit A4.2 'Distributional Impact Appraisal' guidance, this section sets out the Distributional Impacts Assessment for both schemes.

Step 1: Screening

The first step in the assessment process involves undertaking an initial screening of the key impacts. These are specified in WebTAG Guidance Unit A4.2. This is in order to identify those impacts that could potentially be affected by the proposals and any that are unlikely to be affected. Key outcomes and conclusions of the initial screening are summarised in Table 3.11.

Table 3.11 Screening of distributional impacts

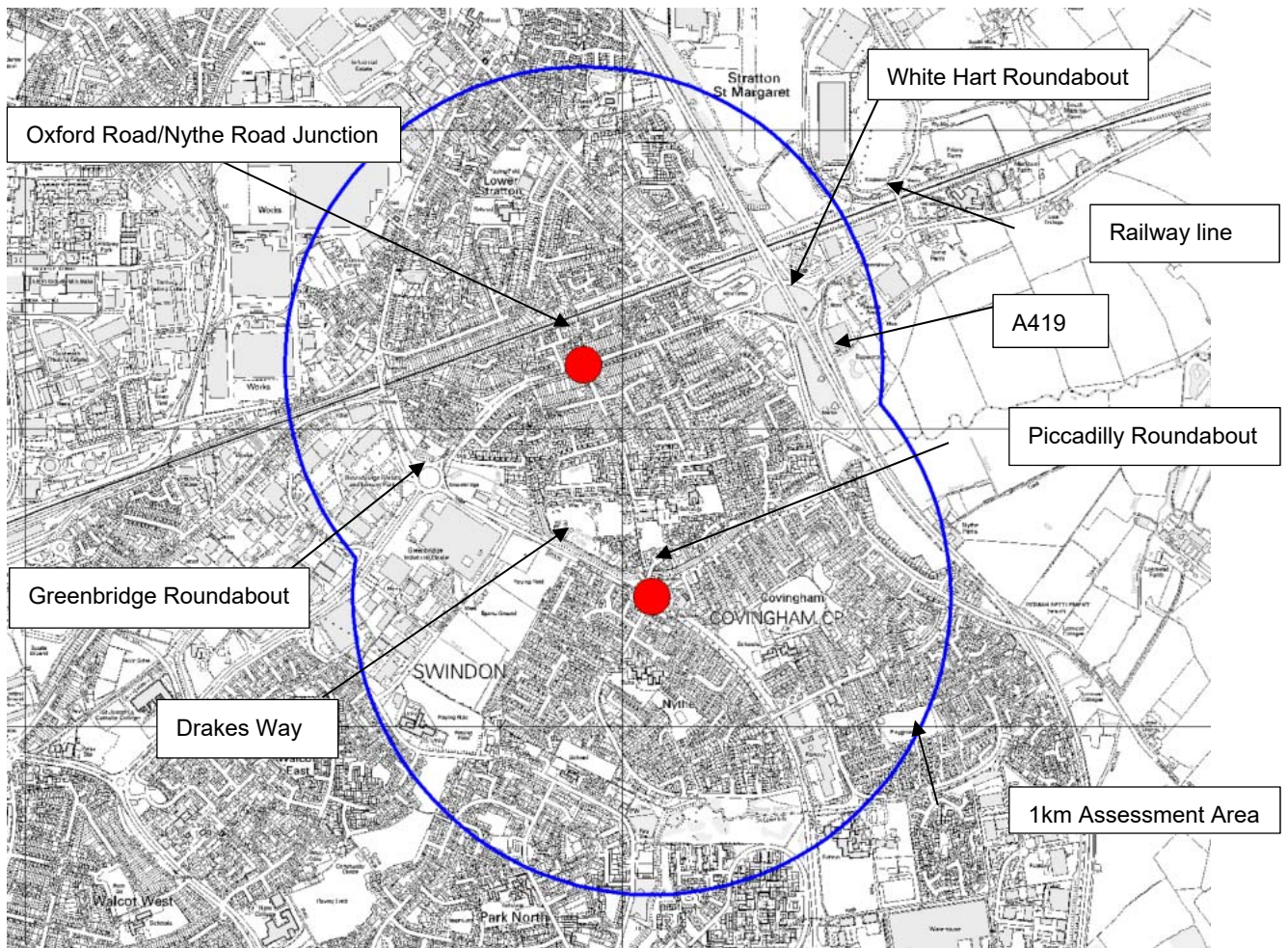
Indicator	Potential Impact	Comments
User Benefits	Beneficial	The scheme has an overall beneficial impact. Light touch distributional impacts assessment has been carried out of user benefits.
Noise	Slight adverse	The impact on 'noise' is considered to be slight adverse. No quantitative assessment undertaken. There is no further distributional analysis.
Air Quality	Slight adverse	The impact on 'air quality' is considered to be slight adverse. No quantitative assessment available There is no further distributional analysis.
Accidents	Neutral	The impact on 'accidents' is considered to be neutral. There is no further distributional analysis.
Security	Neutral	The impact on 'security' is considered to be neutral. There is no further distributional analysis.
Severance	Neutral	The impact on 'severance' is considered to be neutral. There is no further distributional analysis.
Accessibility	Neutral	The impact on 'accessibility' is considered to be neutral. There is no further distributional analysis.
Affordability	Neutral	The impact on 'affordability' is considered to be neutral. There is no further distributional analysis.

Step 2a: Confirmation of areas impacted by the intervention – Initial Assessment Area

An initial assessment area of 1km around each of the junctions has been identified to illustrate the demographic characteristics of the area. This assessment area covers parts of Stratton, Covingham, Park North and Walcot, which are all located in east Swindon and can be seen in Figure 3-11. Traffic modelling has covered a wider impact area, so this has also been considered for distributional assessments of user benefits, specifically encompassing the Swindon Borough area.

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Figure 3-11 Distributional Impacts Assessment Area



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Step 2b: Identification of Social Groups in the Impact Area

This section provides an assessment of the social groups affected by the proposals, based on the potential impacts identified in the screening assessment in Step 1 and the 'affected areas' identified in Step 2a. Noting that the only impact taken through screening to assessment is user benefits, other demographic groups have been considered to provide context and background for the assessment.

Population and household statistics have been extracted from the 2011 Census data for the initial assessment area, Swindon and England. Table 3.12 displays the information relating to 'population'. From the information in Table 3.12, the population of the initial assessment area from the 2011 Census data was 23,800. Of this total, 4,448 (18.69%) are classified as being 'Elderly People 65+', which is higher than the figures produced for Swindon (13.80%) and England (16.34%). Regarding those under the age of 16, the assessment area had 4,381 (18%) individuals, which is lower than the figures produce for Swindon (19.79%) and England (18.91%).

Data relating to 'household' social statistics are found in Table 3.13 and indicates that there is a total of 10,092 households within the assessment area. Of this total, 2,135 (21.16%) are without a car or van, and 2,872 (28.46%) are households with dependent children. Both of these statistics are lower than the values given for Swindon and England respectively.

Table 3.12 Social statistics for the Assessment Area - Population

Population Group	Assessment Area		Swindon		England	
	Number	% of Total Population	Number	% of Total Population	Number	% of Total Population
Under 16	4,381	18.41%	41,382	19.79%	10,022,836	18.91%
Young People (16-24)	2,611	10.97%	22,690	10.85%	6,284,760	11.86%
Elderly People (65+)	4,448	18.69%	28,854	13.80%	8,660,529	16.34%
Female Population	12,170	51.13%	104,538	49.98%	26,943,308	50.82%
Black/Asian/Minority Ethnic	1,764	7.41%	21,258	10.16%	7,731,314	14.58%
Total Population	23,800	100%	209,156	100%	53,012,456	100%

Table 3.13 Social statistics for the Assessment Area - Households

Households Group	Assessment Area		Swindon		England	
	Number	% of Total Households	Number	% of Total Households	Number	% of Total Households
Households with No Car/Van	2,135	21.16%	19,060	21.57%	5,691,251	25.80%
Households with Dependent Children	2,872	28.46%	27,039	30.60%	15,984,478	72.45%
Total Households	10,092	100%	88,360	100%	22,063,368	100%

Based on data acquired from the Indices of Deprivation (2019), Figure 3-12 is a graphical representation of the spatial distribution of income deprivation for the assessment area and eastern areas of Swindon. Figure 3-12 shows income deprivation with respect to Swindon borough on its own and Figure 3-13 shows income deprivation with respect to the whole of England. Most of the assessment area is within the top categories of 'least deprived' areas on the scale, though with pockets of slightly greater deprivation, and in particular to the south of the immediate assessment area. Table 3.14 summarises income deprivation across Swindon, identifying the population in each quintile of income deprivation.

Table 3.14 Income deprivation (ID 2019) – wider assessment area

	Index of Deprivation Income Domains					Total
	1	2	3	4	5	
			←	→		
Population in impact area	59,966	48,518	47,421	36,840	31,543	224,289
Proportions	26.7%	21.6%	21.1%	16.4%	14.1%	100%

Note – population figures are 2019 estimates for consistency with ID 2019

Step 2c: Identification of Amenities in the Impact Area

The only impact being considered in the distributional impact assessment is user benefits. As indicated in the previous section, the only social group to which this is material is the distribution of benefits with respect to income. As such, no specific amenities are considered in the assessment.

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Figure 3-12 Spatial distribution of income deprivation within Swindon

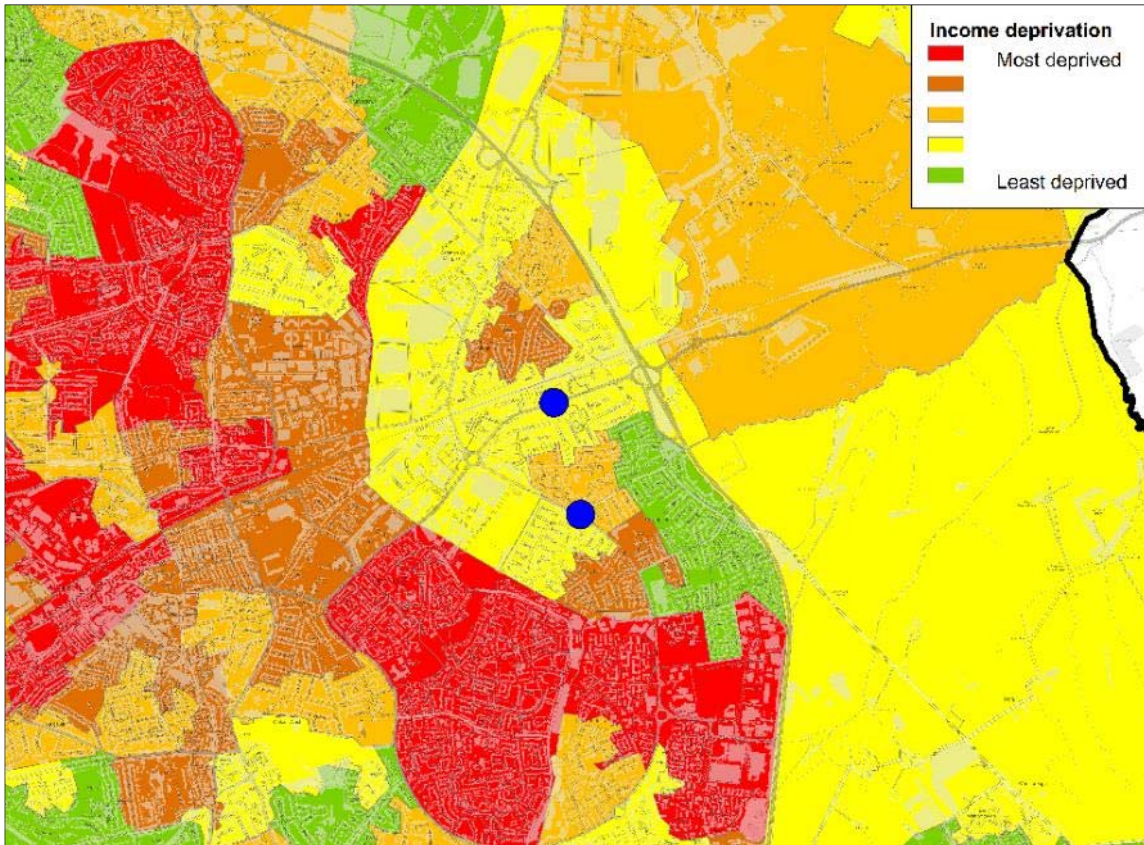
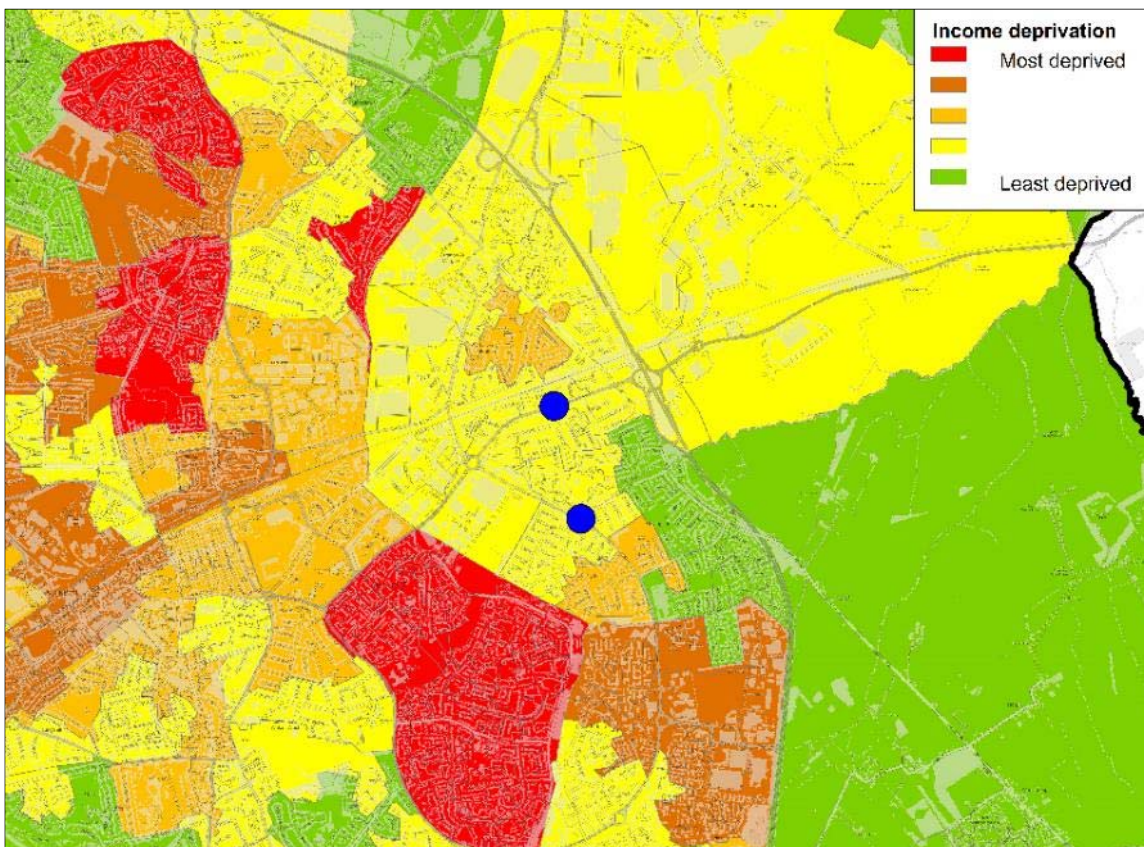


Figure 3-13 Spatial distribution of income deprivation for England as a whole



Step 3: Appraisal

Step 1 (screening) determined that only user benefits would be taken forward for distributional impact assessment. Step 2 identified the impact area and affected user groups. This section sets out the final step (Step 3), in which the user benefits are assessed for distributional impact.

TUBA software has been used to determine the level of user benefits. This provides an assessment of the scheme's monetised benefits relating to travel time, vehicle operating costs, user charges, operator revenue, carbon and indirect tax revenues. Benefits are calculated over a 60-year period from the scheme opening year. Distribution of benefits is based on detailed sector results extracted from TUBA, that provide sector origin-destination benefits/disbenefits by journey purpose (commuting and other) and time period (AM, IP and PM). Totals for benefits/disbenefits related to trips FROM or TO each sector are calculated as follows:

- AM peak total benefit/disbenefit includes 100% of 'commuting' trip benefit/disbenefit FROM the sector in the time period, plus 50% of the 'other' trip benefit/disbenefit FROM the sector and 50% of the 'other' trip benefit/disbenefit TO the sector.
- Inter-peak total benefit/disbenefit includes 50% of 'commuting' trip benefit/disbenefit FROM the sector in the time period, plus 50% of 'commuting' trip benefit/disbenefit TO the sector, plus 50% of the 'other' trip benefit/disbenefit FROM the sector and 50% of the 'other' trip benefit/disbenefit TO the sector.
- PM peak total benefit/disbenefit includes 100% of 'commuting' trip benefit/disbenefit TO the sector in the time period, plus 50% of the 'other' trip benefit/disbenefit FROM the sector and 50% of the 'other' trip benefit/disbenefit TO the sector.

Each of the sectors has been assessed for the proportion of its population in the income domain quintiles; the final step is to identify the proportion of benefits/disbenefits allocated to each sector (using the assumptions above) that are related to the income quintiles for the sectors, with the results shown in Table 3.15.

The analysis shows there to be a relatively even distribution of user benefits across the five income domain quintiles. Disbenefits are less evenly distributed, with more allocated to areas in the least deprived income domain; however, the quantum of disbenefits is low, and net benefits are achieved across the area. It is concluded in the Appraisal Summary Table (AST) that scheme will result in a Neutral overall distributional impact in respect of user benefits.

Table 3.15 Distributional Impacts – user benefits

	IMD Income Domain					Total
	most deprived	←	→	least deprived		
	1	2	3	4	5	
Total benefits	£1,340	£1,017	£901	£1,023	£974	£5,255
Total disbenefits	-£99	-£84	-£72	-£71	-£160	-£485
Share of user benefits	25.5%	19.4%	17.1%	19.5%	18.5%	100%
Share of user disbenefits	20.4%	17.3%	14.8%	14.6%	33.0%	100%
% of pop in impact area	26.7%	21.6%	21.1%	16.4%	14.1%	100%
Assessment	✓✓	✓✓	✓✓	✓✓	✓✓	

Note: benefits are £'000s, in 2010 prices and values

3.7 Value for Money Statement

This Value for Money Statement outlines the conclusions of the Economic Case

Section 3: Economic case

3.7.1 Value for Money Category

Analysis has been undertaken on this study to identify suitable solutions to the problems posed by the NEV development on roads to the west of the A419. The final solution included a set of highway and cycle improvements at Piccadilly Roundabout and Oxford Road/Nythe Road Junction.

The proposed scheme interventions comprise mainly junction improvements, therefore most environmental and social aspects will most likely yield neutral or slight impacts. Hence, there are no significant non-monetised impacts likely to occur.

The assessment work presented in the economic case shows that there is a case for the West of A419 schemes proposed within this FBC. For the core scenario, the initial PVB equals to £8,210,000 and when compared against of PVC or £3,432,000 and when compared against costs, the scheme demonstrates an initial BCR of 2.34.

For the core scenario, the BCR is greater than 2, and therefore indicates that the scheme is envisaged to provide high value for money.

3.7.2 Key impacts on the public

The cost to broad transport budget is £3,432,000 (NPV).

The scheme improvements will increase capacity at the Oxford Road/Nythe Road junction and Piccadilly Roundabout in order to prevent the route becoming constrained by increases in traffic in the future. This increased capacity aims to reduce the impacts of future traffic on delays and journey quality along the Oxford Road and Dorcan Way corridors.

3.7.3 Drivers for value for money category

The key driver for this value for money category is the benefits to business users and transport providers and benefits to commuting and other users, through capacity improvements to the junctions, reducing congestion.

3.7.4 Confidence in value for money

The BCR for the core scenario is greater than 2, so there is fairly high confidence that the scheme should fall into the high value for money. Whilst the sensitivity tests show the low growth scenario and a 20% cost increase result in medium value for money categories, the sensitivity test undertaken using the TAG Data Book version 1.14 generates a BCR of 2.04.

3.8 Appraisal Summary

The Appraisal Summary Table (AST) for the core scenario is on the following page. ASTs for other scenarios have not been prepared as only the economic impacts vary between options and these are presented in section 3.4 of this chapter and the TUBA Report (Appendix C).

#

Section 3: Economic case

Table 3.16: Appraisal Summary Table

		Date produced:	5	Nov	2020	Contact:				
Name of scheme:		New Eastern Villages - West of A419 Package				Name	T Campbell			
Description of scheme:		Improvements at the Oxford Road/Nythe Road junction and Piccadilly roundabout.				Organisation	SBC			
						Role	Promoter/Official			
Impacts	Summary of key impacts	Assessment								
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp			
Economy	Business users & transport providers	Journey time savings are as expected, with more savings for shorter trips due to improvements to the two junctions, therefore removing some of the congestion.		Value of journey time changes(£)		£2,183,000	-	£2,476,000	Neutral	
			Net journey time changes (£)							
			0 to 2min	2 to 5min	> 5min					
			£2,114,000	£71,000	£-2,000					
	Reliability impact on Business users	Some reduction in highway traffic will result in small changes in journey time and reliability benefits; these have been calculated using the methodology set out in TAG unit A1.3		Not Applicable		-	£67,000			
	Regeneration	The scheme is part of the package infrastructure required to enable the NEV development. Around 50% of the proposed 8,250 dwellings and 40 hectares of employment land is dependant on the SCR scheme.		Not Applicable		Moderate beneficial	-			
	Wider Impacts									
Environmental	Noise	There are increases in vehicles on Oxford Road and Dorcan Way due to the scheme which may cause a slight increase in noise on these links.		Not Applicable		Likely to be slight adverse	Not Applicable	Not assessed		
	Air Quality	There are increases in vehicles on Oxford Road and Dorcan Way due to the scheme which may cause a slight increase in air pollution. However, the scheme reduces journey times and is designed to mitigate against the increase in congestion and subsequent air quality issues due to the NEV developments.		Not Applicable		Likely to be slight adverse	Not Applicable	Not assessed		
	Greenhouse gases	There are decreases in greenhouse gases with the scheme in place as congestion is reduced, that the scheme is designed to do.		Change in non-traded carbon over 60y (CO2e)		2099.28 tonnes decrease	-	£92,630		
				Change in traded carbon over 60y (CO2e)		58.2 tonnes decrease				
	Landscape	Predominantly urban landscape. Scheme is unlikely to change the landscape character. Potential visual impacts for residential and commercial receptors in proximity to the scheme but these are not expected to be significant.		Not Applicable		Neutral	Not Applicable			
	Townscape	The scheme is within an urban area within the east of Swindon. There is likely to be minimal direct impacts on townscape.		Not Applicable		Neutral	Not Applicable			
	Historic Environment	There are a number of listed buildings and a Scheduled Monument within 1km of the scheme. However, the scheme is unlikely to affect the setting or directly affect registered historic sites.		Not Applicable		Neutral	Not Applicable			
	Biodiversity	The scheme is not located within any Special Areas of Conservation, Special Protection Areas, Sites of Special Scientific Interest (SSSI) or National Nature reserves and there are no such designations within 1 km of the proposed schemes. The proposed schemes involve minor extension of existing highway infrastructure and therefore is likely to have minimal impact on habitats within the area.		Not Applicable		Neutral	Not Applicable			
Water Environment	Oxford Road/Nythe Road junction is at low risk of fluvial flooding, however Piccadilly roundabout is located within Flood zones 2 and 3, meaning that there is a high probability of fluvial flooding. The scheme will take a small amount of additional land but is unlikely to result in a major loss of flood plain storage and impeding of water flows or lead to increased flood risk elsewhere.		Not Applicable		Likely to be slight adverse	Not Applicable				
Social	Commuting and Other users	Journey time savings are as expected, with more savings for shorter trips due to improvements to the two junctions, therefore removing some of the congestion.		Value of journey time changes(£)		£5,037,000	-	£5,620,000	Neutral	
			Net journey time changes (£)							
			0 to 2min	2 to 5min	> 5min					
			£4,992,000	£45,000	£0					
		Reliability impact on Commuting and Other users	Some reduction in highway traffic will result in small changes in journey time and reliability benefits; these have been calculated using the methodology set out in TAG unit A1.3		Not Applicable		-	£152,000		
		Physical activity	Minor changes to the NMU provision and bus stop locations. Result in a neutral impact.		Not Applicable		Neutral	Not Applicable		
		Journey quality	At both scheme locations the scheme will improve capacity and therefore reduce driver stress. The journey quality is not expected to change for pedestrians and cyclists. Therefore the journey quality impacts are expected to be slightly beneficial.		Not Applicable		Slight Beneficial	Not Applicable		
		Accidents	The junctions do not currently have accident issues. The impacts of the scheme will be considered during the detailed design		Not assessed		Neutral	Not Assessed	Not assessed	
		Security	Street lighting is already in place at both locations and the scheme is not expected to provide additional security benefits. Therefore the expected security impact is neutral.		Not Applicable		Neutral	Not Applicable	Not assessed	
		Access to services	Changes to bus top provision are minimal therefore the accessibility is expected to be neutral.		Not Applicable		Neutral	Not Applicable	Not assessed	
	Affordability	There are no expected cost changes to elements such as parking, road pricing and public transport. Therefore the impact is expected to be neutral.		Not Applicable		Neutral	Not Applicable	Not assessed		
	Severance	The changes to junction layout and the minor changes to the NMU provision will not change severance for people crossing the roads.		Not Applicable		Neutral	Not Applicable	Not assessed		
	Option and non-use values	Neither scheme is expected to substantially change availability of transport services. Not applicable to this scheme.		Not assessed		Not assessed	Not Assessed			
Public Accounts	Cost to Broad Transport Budget	Costs include risk and optimism bias at 3% and £706 risk allowance. Funding assumed to be from LGF and SBC				Not applicable	£3,120,000			
	Indirect Tax Revenues	Based on an increase in vehicle km and increase in fuel consumption from higher capacity and utilisation, resulting in a gain in tax				Not applicable	£223,000			

4. Financial Case

4.1 Introduction

The financial case provides evidence on the affordability of the scheme, how it is to be funded and any technical accounting issues. It includes the financial profile for the scheme and the impact of the proposed investment on budgets and accounts.

The financial case contains:

- The expected implementation cost of the scheme
- Cost profile showing year-on-year costs, and breakdown by cost type and parties on whom they fall
- Consideration of the financial sustainability of the scheme

The costs presented in this section include the sunk costs incurred in and before 2019 for development work.

4.2 Scheme costs

Scheme costs for the NEV West of A419 schemes have been based on contractor prices and other cost information provided by SBC (see Table 4.1); further details are provided in the following sections.

Table 4.1 Summary of scheme implementation costs

Cost type	Cost
Development costs	£ 1,156,885.72
Construction costs	£ 2,864,523.89
Site supervision	£ 40,000 .00
QRA	£ 706,000 .00
Total (outturn prices)	£ 4,767,409.61

It has been assumed that the scheme will not increase maintenance costs for SBC.

4.3 Development costs

Development costs include all the necessary preparatory costs associated with the scheme, including project management, design and legal costs, and these are shown in Table 4.2.

Table 4.2 Development costs for West of A419 schemes

Development cost type	Cost
Project Management (SBC)	£ 263,228.80
Technical Approval	£ 97,603.50
Surveys / Investigations	£ 4,607.00
Detailed Design	£ 456,348.00
Design and Business Case	£ 223,269.42
ECl and pre-construction costs	£ 111,829.00
Development cost total	£ 1,156,885.72

Section 4: Financial Case

4.4 Construction costs

The construction costs are based on contractor prices, as summarised in Table 4.3. Further detail is set out in cost Appendix K.

Table 4.3 Oxford Road/Nythe Road junction construction cost breakdown summary

Item	Cost (£)
Preliminaries for both schemes	
Series 100 – Preliminaries	£492,828.24
PICCADILLY ROUNDABOUT	
Series 200 - Site Clearance	£26,282.38
Series 400 - Road Restraint System	£1,838.16
Series 500 – Drainage	£114,719.12
Series 600 – Earthworks	£78,327.05
Series 700 – Pavements	£292,137.04
Series 1100 - Kerbs, Footways and Paved Areas	£70,640.61
Series 1200 - Traffic Signs	£51,418.07
Series 1300 - Street Lighting	£43,772.89
Series 3000 - Landscape and Ecology	£517.30
Sub Total	£679,652.62
OXFORD ROAD/NYTHE ROAD JUNCTION	
Series 200 - Site Clearance	£60,073.71
Series 400 - Road Restraint System	£995.67
Series 500 - Drainage	£39,273.29
Series 500 - Drainage (Continued)	£153,953.05
Series 600 - Earthworks	£112,658.07
Series 700 - Pavements	£353,927.38
Series 1100 - Kerbs, Footways and Paved Areas	£112,679.29
Series 1200 - Traffic Signs	£42,518.24
Series 1300 - Street Lighting	£22,985.51
Series 3000 - Landscape and Ecology	£158.90
Sub Total	£899,223.11
TOTAL	£2,071,703.97

4.5 Risk and inflation

A risk budget is defined and allocated to cover any increased costs that may result from the full set of identified scheme risks, whether direct cost increases or indirectly due to scheme delays. Risks to infrastructure delivery have been assessed and appraised in line with the HMT Green Book and as part of SBC's ongoing programme management.

A risk register has been compiled to identify risks that are likely to affect the delivery of the West of A419 schemes. These risks cover legislative, policy, construction, planning and design. A workshop was held with key SBC officers to identify the risks, agree estimates from the attendees on the likelihood of risks occurring, the cost outcomes of each risk and ideas for mitigations. The risk register is presented in Appendix E. The Quantified Cost Risk Assessment (QCRA) shows a P(80) value of £706k.

The key risks identified for West of A419 schemes are set out in the Management Case.

Contractor prices and project management costs incurred following the submission of the business case are fixed and will not be subject to inflation.

4.6 Outturn cost profile

The forecast scheme expenditure profile is shown in Table 4.4.

4.7 Funding status and breakdown

It is proposed that the scheme will be funded by the Local Growth Fund (LGF) awarded by SWLEP and SBC funding. A total of £2,930,000 of LGF has been allocated for the scheme, representing 61% of the scheme cost. The profile of spend for the funding sources is set out in Table 4.5.

The proposed LGF funding is allocated but is subject to approval of this Full Business Case (FBC) by SWLEP. The SBC funding has been approved by SBC's Cabinet and is to be funded from Prudential borrowing and reclaimed by NEV developers via future Section 106 agreements. Appendix L contains a letter from SBC's Section 151 officer supporting this financial case. In addition to providing £1,837,409.61 for the scheme, SBC will also fund any cost increases in excess of the costs reported in the chapter.

4.8 Summary of Financial Case

The Financial Case demonstrates that the cost of the schemes is within the budget allocated by SWLEP for funding by LGF, if the FBC is approved by SWLEP. SBC contributing 39% of the scheme funding and will fund any cost increases above the costs set out in this chapter.

Section 4: Financial Case

Table 4.4 Scheme expenditure profile

Cost Elements	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total Cost
Development Costs							
Project Management (SBC)	£4,997.00	£ -	£ 55,886.37	£ 67,462.43	£ 106,937.00	£ 27,946.00	£263,228.80
Technical Approval	£ -	£ -	£ -	£ 95,805.50	£ 1,798.00	£ -	£97,603.50
Surveys / Investigations	£ -	£ -	£375.00	£ 375.00	£ 3,857.00	£ -	£4,607.00
Detailed Design	£ -	£ -	£ -	£ -	£ 456,348.00	£ -	£456,348.00
Design and Business Case	£ 39,285.00	£ -	£98,807.65	£ 35,176.77	£ 50,000.00	£ -	£223,269.42
Construction Costs							
Construction Cost (incl preliminaries)	£ -	£ -	£ -	£ -	£ 1,035,852.00	£ 1,035,852.00	£2,071,704.00
Construction Site Support	£ -	£ -	£ -	£ -	£ 20,000.00	£ 20,000.00	£40,000.00
ECl and pre-construction costs	£ -	£ -	£ -	£ 80,954.00	£ 30,875.00	£ -	£111,829.00
Service Diversions	£ -	£ -	£ -	£ -	£792,819.89	£ -	£792,819.89
QRA	£ -	£ -	£ -	£ -	£ 353,000.00	£ 353,000.00	£706,000.00
Total of Scheme	£ 44,282.00	£ -	£ 155,069.02	£ 279,773.70	£ 2,851,486.89	£ 1,436,798.00	£4,767,409.61

Table 4.5 Profile of funding contributions

Cost Elements	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	Total Cost
SWLEP	£ 44,282.00		£ 155,069.02	£ 279,773.70	2,450,875.28		£ 2,930,000.00
Swindon Borough Council					£ 400,611.61	£1,436,798.00	£ 1,837,409.61
Total of Scheme	£44,282.00	£-	£155,069.02	£279,773.70	£2,851,486.89	£1,436,798.00	£ 4,767,409.61

5. Management Case

5.1 Introduction

The purpose of the Management Case is to provide confidence that appropriate arrangements are in place to ensure the successful delivery of the West of A419 transport schemes. The approach is the same as that adopted for the other schemes being developed as part of the transport package to support delivery of NEV. This section sets out the governance, organisational structure and roles, as well as the programme assurance and approval processes to ensure risks are identified and mitigated. Ultimately, the Management Case is about delivering the scheme's objectives with the benefits being realised, assessed and monitored.

A traditional procurement approach is currently underway whereby Atkins will undertake detailed design and SBC will appoint a contractor to undertake construction through the OJEU process.

Construction of the scheme is programmed to be completed in June 2021.

5.2 Evidence of related projects

SBC has recent experience in delivering junction upgrades with the LGF funding provided by SWLEP. The successful completion of junction improvement schemes demonstrates that SBC has the resources and capability required to deliver the West of A419 schemes. Of particular relevance to the West of A419 schemes, is the £5.4m improvements to Greenbridge roundabout as part of the NEV programme were completed in January 2017. This comprised widening and signalling of the junction.

A summary of some of the most pertinent projects follows, as well as some of the key lessons learned that could be applied to support the delivery of the West of A419 schemes.

5.2.1 M4 Junction 16



This scheme was a motorway improvement scheme that increased the capacity of the junction. It involved improving the slip roads and circulatory, extensive drainage works, earthworks and landscaping and complex traffic management arrangements. The scheme opened on time in 2018 and was delivered over 18 months to a budget of approximately £12 million by SBC in partnership with Wiltshire County Council and Highways England.

Section 5: Management Case

5.2.2 Greenbridge Roundabout



The scheme was part of the NEV transport mitigation infrastructure package focusing on a key junction between the NEV and the town centre. Its aim was to improve traffic flows by installation of signals, improved drainage, landscaping and improving pedestrian and cycle infrastructure. The scheme was delivered within the NEV governance structure on budget at a cost of £5.4m over a 9-month construction period in 2016-17.

5.2.3 Wichelstowe Highways



These works involved construction of new highway to provide access to the newly built Wichelstowe District Centre including improvements to an existing signalised junction. Works include a new central street through the District Centre, with raised tables and enhanced paving denoting it as a central pedestrian movement corridor, in addition to two sections of street serving residential parcels and an access road to the new primary and secondary school campus. Drainage connections, including swales, street trees and new service connections were included as well as a temporary haul road serving the wider District Centre area. The scheme cost £3.5 million and was delivered over 17 months.

5.2.4 Bruce Street Bridges



This scheme was the first of a number of junction improvement schemes along Great Western Way, a key arterial route in Swindon. The scheme was required in response to wider growth and development in Swindon, leading to strains on its transport system and the need to accommodate displaced town centre trips on the more appropriate strategic network. The main objectives of the project were to increase capacity on the junction in order to deal more effectively with current traffic demands, as well as those that will be placed on the junction in future years. In addition to this, the junction suffered historic flooding (namely in 2007, 2008, 2009 and 2012) and providing increased protection to local properties and to the road network was also a priority.

5.2.5 Mannington Roundabout



Mannington roundabout is a key intersection in Swindon's strategic road network, connecting the M4 Junction 16 to the town centre and beyond. It is the second junction improvement on the Great Western Way programme. Due to the increase in traffic on Swindon's roads this junction has, over the years, become heavily congested at peak times. The objective of the £3.2m scheme was to alleviate the congestion and improve

Section 5: Management Case

conditions for those using the roundabout. Work on the initial phases began in February 2018 and was completed in February 2019.

5.2.6 White Hart Junction

The scheme forms part of the NEV mitigation infrastructure package focusing on the A419/A420 junction - a key junction on the A420 corridor linking the NEV development to the town centre and the strategic road network. Its aim is to increase the junction capacity by introducing a new northbound on slip to the A419 facilitated by stopping up Ermin Street, widening approaches to the junctions, adding an additional lane on the gyratory, signalling the roundabout, improving drainage and installing landscaping measures. The scheme will cost £30m and construction, which commenced in October 2019, will be complete by July 2021.

These projects were/are necessary to relieve a peak-time bottleneck and improve road links. The works were planned to minimise noise and disruption to nearby residents and businesses.

5.2.7 Lessons learnt

Experience from delivering these previous schemes has provided lessons which will be applied to the West of A419 schemes. The most pertinent lessons are collated in Appendix F of this FBC and summarised below:

- Early engagement with utility providers and designers made sure the correct depth was achieved
- Good communication to public through highways news updates, variable message signs and consultation events
- Weekly contract meetings to deal with site issues, compensation events and keeping budgets updated

A similar 'lessons learnt' process will be adhered to for the West of A419 schemes to inform future projects.

5.3 Project dependencies

The West of A419 schemes forms part of the NEV transport package, which also includes the White Hart Junction, Southern Connector Road and Gablecross Junction schemes. Apart from SCR being delivered in 2022, all other schemes are programmed to be completed by 2021 and are required to enable the full development of the NEV. However, the schemes can all be delivered independently and hence the delivery of the West of A419 schemes are not dependent on the delivery of any other project.

5.4 Governance, organisational structure and roles

The transport schemes that make up the NEV supporting transport package are all subject to the same governance, organisation structure and roles. The approach is based on PRINCE2 principles and the Project Management Handbook for Local Authorities, Version 5: Programme, Project and Change Management. They also consider the OGC guidelines for delivering projects. Specific attention has been given to governance, to provide a clearly defined structure for the role of the Cabinet, Programme Board, Project Manager and Project Teams.

The governance arrangements have been specifically tailored to meet the requirements of the scheme and the responsibilities of each role are detailed below.

The NEV Project Management Plan summarises the following key areas:

- Project Organisation and Responsibilities - involved parties and their roles
- Presentation of Project – deliverables, division into work units and time plan
- Project Planning and Control – technical approval, progress measurement and monitoring
- Communications Plan – meetings, decisions & action logs, highlight reports and open issues log

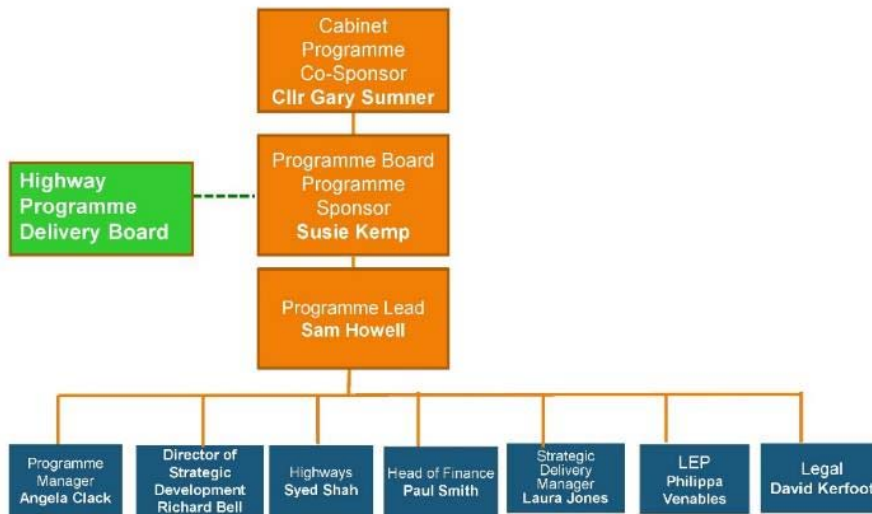
The governance arrangements also provide a clearly defined structure for the role of the SBC Cabinet, Programme Board, Operational Board and programme team.

5.4.1 NEV Programme governance

The West of A419 schemes form part of several transport components being delivered as part of the NEV development. The overall programme is working to ensure that all the principal elements of the NEV masterplan are delivered as this major new urban extension is developed. It includes provision of green infrastructure and landscaping, new primary and secondary schools and a District Centre in addition to key transport infrastructure.

The NEV Programme (see Figure 5.1) is overseen by a Programme Board comprised of SBC officers which reports to a Cabinet Member. The Cabinet Member’s responsibilities are to provide clear leadership and direction to the Programme Board, ensuring that the Programme delivers results and benefits in support of Cabinet and Council’s agreed policies and that decision-making occurs through the correct formal processes.

Figure 5.1 NEV programme governance structure including Programme Board



Source: SBC, August 2020

The NEV Programme Board is supported by the NEV Operational Board (Figure 5.2) The Operational Board provides a forum for peer scrutiny and coordination of NEV projects across disciplines and departments.

Figure 5.2: NEV Operational Board



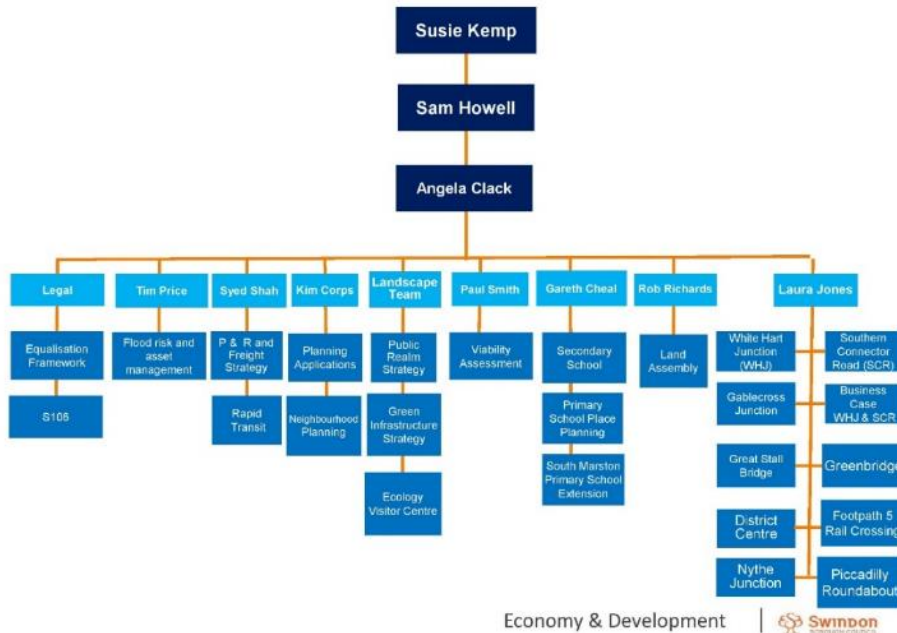
Source: SBC, August 2020

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5.4.2 NEV Infrastructure Team

The NEV major urban extension realisation team is drawn from various disciplines across the Council to coordinate the development of supporting infrastructure for the NEV development area (Figure 5.3). Oversight of the team is provided by Susie Kemp (Programme Sponsor), Sam Howell (Programme Lead) and Angela Clack (Programme Manager). Within the team, responsibility for delivery of the transport schemes including West of A419 is held with Laura Jones (Technical Programme and Strategic Delivery Manager).

Figure 5.3: NEV Infrastructure Team

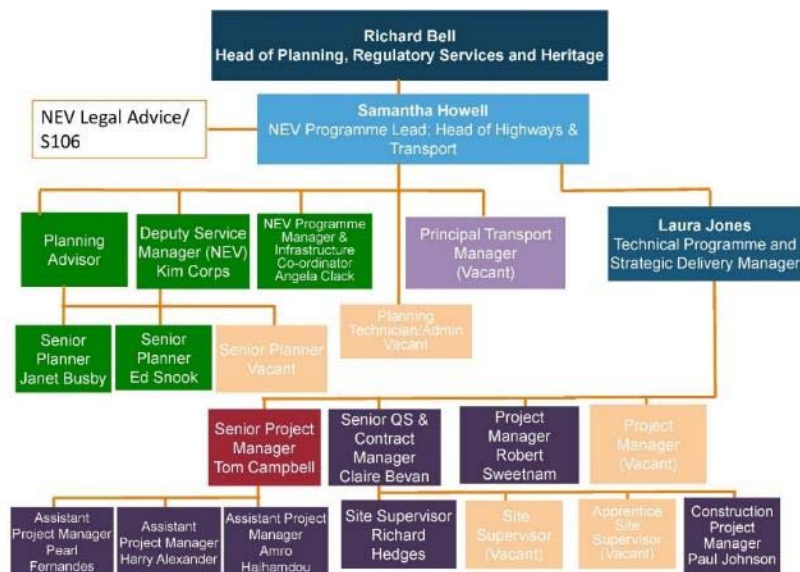


Source: SBC, August 2020

5.4.3 West of A419 project team structure and key roles

The project team structure is presented in Figure 5.4 which shows the dedicated team working on the NEV transport schemes, including the West of A419.

Figure 5.4: NEV project team structure



Source: SBC, August 2020

With regards to the West of A419 schemes, the key roles are set out in the following sections.

5.4.3.1 Responsible Officer

The Responsible Officer is Sam Howell. The role of the Responsible Officer is to lead the management and delivery teams and provide the interface with the executive team. In this instance, the Responsible Officer is required to:

- Report to and receive feedback from the Programme Board
- Ensure the appropriate resources, project management and technical expertise are in place for the project
- Make decisions and approve changes within agreed tolerances or seek authorisation if required
- Monitor and evaluate project progress against milestones and assess outcomes
- Provide guidance, support and direction to the Project Manager and project team

5.4.3.2 Programme Manager and Infrastructure Co-ordinator

The Programme Manager and Infrastructure Co-ordinator is Angela Clack. Angela facilitates the co-ordination of infrastructure required to support development at the NEV, liaising with stakeholders and engaging with key consultees to support the delivery of infrastructure as identified in the Infrastructure Delivery Plan and to develop an infrastructure delivery programme aligned to housing development. Angela is a member of Programme Board.

The role of the Infrastructure Co-ordinator is to:

- Project manage and co-ordinate projects and respective team members in the preparation, monitoring and review of planning related documents to support infrastructure delivery including the NEV Infrastructure Delivery Plan (IDP) and Supplementary Planning Documents (SPDs)
- Regularly collaborate and engage with colleagues from other service areas and external partners to help secure infrastructure required to support development at the NEV
- Represent the Borough Council through the preparation and presentation of evidence on all aspects of the NEV at public meetings, presentations, and planning related meetings

5.4.3.3 Technical Programme and Strategic Delivery Manager

The Delivery Manager is Laura Jones. Laura manages the project using PRINCE2 methods within set tolerances as agreed by the Programme Board. Laura leads the work of the Highway Infrastructure Team and is a member of Programme Board.

The role of the Delivery Manager is to:

- Lead and coordinate the project team and its work-streams
- Procure consultants and contractors
- Prepare and report project budgets
- Manage project risks and issues
- Report to and receive feedback from the responsible officer
- Produce periodic progress reports to relevant committees

5.4.3.4 Project Manager

For the West of A419 schemes, the Senior Project Manager is Tom Campbell. The Project Manager is responsible for the day-to-day management of the project ensuring that it progresses towards its objectives to deadline and within budget. The role of the Project Manager is to:

- Progress the scheme through its various stages of development to completion. These stages include the design process from concept design to detailed design, the planning process, procurement of the Principal Contractor and other suppliers, consultation, and the land assembly process
- Monitor progress and report through the governance structure to the relevant bodies, including SBC's NEV Programme Board and the Local Enterprise Partnership
- Develop the scheme programme and ensure work packages are adequately commissioned, monitored, and completed

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- Ensure the scheme is delivered within budget

5.4.3.5 Consultant project team

Atkins and Jacobs have supported SBC progressing the scheme. They have been responsible for producing preliminary scheme design and engineering assessment, transport modelling, economic appraisal, environmental assessment and business case development. The consultants PMs report to the SBC NEV project team and provide input required to inform key decisions regarding scheme development.

5.4.4 Reporting arrangements

For each phase of the scheme development, a Project Initiation Document (PID) is established and approved by the Programme Board. This is a 'working document' which defines:

- What the project intends to achieve
- Who is responsible
- How it will be achieved
- When it will be delivered

The PID document includes a detailed project plan, which captures the key tasks to be achieved prior to the project proceeding to the next stage.

The Programme Board's role is to ensure that the project is developed and managed in accordance with the PID and to provide oversight and advice to the Project Manager to enable progress in a timely fashion.

The Programme Board typically meets every eight weeks and its decisions are recorded and communicated to provide appropriate corporate governance for the project and its development. In advance of the Programme Board, the Project Manager submits a monthly highlight report, detailing progress in accordance with the PID. The Programme Board occasionally invites a wider audience to attend when deemed beneficial to the current stage of the project. Whilst these bodies will not have responsibility for the project, their attendance and participation are key to the successful delivery.

5.5 Programme

A detailed project plan, included in Appendix G of this FBC, has been produced for the delivery of the West of A419 schemes, setting out the main project stages and their anticipated timescales.

The Full Business Case will be submitted to the LEP for consideration at their November Board meeting. A detailed construction programme will be provided following the contractor being appointed through the tender process. It is anticipated that works will take 6 months to complete.

A summary of the anticipated completion dates for each activity is shown in Table 5.1.

Table 5.1: Key activity completion dates

Activity	Completion Date
Full Business Case	
Full business case submission	October 2020
LEP decision	December 2020
Design and procurement	
Preliminary design	February 2020
Fee Agreement	February 2020
Appoint Atkins	February 2020

Activity	Completion Date
TDM Approval	October 2019
TDM package submission	July 2020
Detailed Design complete	September 2020
Construction and procurement	
Soft marketing testing	March 2020
Gateway 2 preparation and sign-off	April 2020
Prepare and issue tender documents	August 2020
Tender period and assessment	September 2020
Gateway B review	October 2020
Preferred bidder appointed and standstill period	October 2020
Tender award confirmed and binding of legal documents	October 2020
Contract signing	November 2020
Construction	
Construction	June 2021

5.6 Key Issues for Implementation

Planning consent is not required for the scheme as the scheme is deemed to be Permitted Development. No Traffic Regulation Orders were required for this scheme. The key implementation workstreams are summarised in Table 5.2:

Table 5.2 West of A419 – key implementation workstreams

Implementation Workstream	Date
Construction	January 2021 – June 2021
Service Diversions	October 2020 – January 2021
Traffic Management	January 2021 – June 2021

5.7 Assurance and Approvals Plan

The business case development is following the guidance in SWLEP's Assurance Framework which defines the following four stages in the Value for Money assessment of candidate schemes:

- Stage 1 – Initial scheme assessment, sifting and prioritisation
- Stage 2 – Strategic Outline Business Case (SOBC) to set out the need for intervention (the case for change) and how this will further the SWLEP's objectives (its strategic fit)
- Stage 3 – Outline Business Case (OBC) that includes a full economic and financial appraisal, and develops the commercial and management cases

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- Stage 4 – Full Business Case (FBC) that builds on top of the OBC with a far greater emphasis on commercial, financial and management cases, ensuring arrangements are appropriate for effective delivery

This document represents Stage 4 of the process (submission of the FBC) which will be submitted to the LEP in October 2020.

The scheme does not require planning permission or Traffic Regulation Orders.

Within SBC, the Programme Board will continue to be responsible for Project Assurance, ensuring that the project remains on target in terms of business, user and technical objectives.

The detailed design was commissioned separately, and SBC have appointed a contractor to undertake construction through the OJEU process. Procurement of design and construction will be regulated through SBC Gateway assurance process.

Programme Board members receive regular Highlight Reports from the Project Manager, to aid them in the assurance process.

5.8 Communications and Stakeholder Management

5.8.1 Background

The stakeholder management strategy recognises that the transport infrastructure proposed to support the NEV was presented and examined by stakeholders at the Local Plan Inquiry. The Local Plan consultation allowed residents and other interested parties the opportunity to discuss the transport proposals alongside the development proposals. This consultation resulted in changes to the transport strategy proposals, including, but not exclusive to, 'protection' of Wanborough Village, which formed a key consideration in the final NEV LGF Package.

In addition, stakeholders have been regularly consulted throughout the process of consolidating the Strategic Economic Plan (SEP), NEV being an integral component. Transport issues were brought to the forefront of stakeholder workshops for the SEP, where it was noted that there is congestion on the A419 already without the proposed new development in place.

The approach to Communications and Stakeholder Management for the West of A419 schemes is assumed to be the same as that being adopted for the other NEV transport schemes.

5.8.2 Consultation activity undertaken

Consultation has been held at each stage of the Proposed Scheme's design development. Scheme-specific consultation was carried out in tandem with other schemes in public consultation events in a series of consultation activities between March 2016 and September 2019, in accordance with the requirements set out in the adopted Statement of Community Involvement (SCI 2013).

Consultation feedback has been received from a range of individuals from the public and interested parties to statutory consultees. The key decisions that have been implemented as a result of the West of A419 schemes feedback are summarised in Table 5.3 below.

Table 5.3 Scheme-specific consultation responses

Site	Consultation feedback	Response to feedback
Nythe Road	Residents raised concerns regarding increased traffic affecting air quality and increasing noise levels. Recommendations were made to implement a greener approach to the design of the junctions.	Scheme design has been amended to re-introduce a 1m verge where possible. Consultation will be undertaken in relation to increasing the number of trees or shrubs in the scheme.

Site	Consultation feedback	Response to feedback
Nythe Road	A resident on Oxford Road outlined their safety concerns regarding reversing out into the junction through tight boundaries by a bollard outside their property and highlighted that removing the verges would exacerbate the hazard.	Scheme design has been amended to accommodate this request by removing bollards from the proposed design.
Nythe Road	In relation to the right turn manoeuvre from Sandgate Road to Oxford Road, residents outlined their concerns that increased traffic may result in motorists taking risks here.	Scheme design has been amended to include queue detection loops that will activate a red-light phase to enable vehicles to exit Sandgate Road.
Nythe Road	A resident raised their concern regarding the difficulty of driving into their driveway due to an existing lighting column.	Scheme design has been amended to remove existing lighting columns and relocate the signal pole to accommodate this request.
Piccadilly Roundabout	During consultation, bus operators raised their concerns relating to bus stop relocations.	During preliminary design, consultations were carried out with bus operators to implement their recommendations at an early stage. No further changes to detail design were introduced.

The NEV team will continue to liaise with those people and businesses who will be directly affected by the NEV development, including the West of A419 schemes, as identified in the NEV Stakeholder Management Strategy (Appendix H).

5.8.3 Communications strategy

The NEV Communication Strategy sets out how communication with stakeholders will take place for the whole NEV programme. The communications strategy progress and implementation will be monitored via a standing agenda item on the monthly Project Management Group and Programme Board meetings. There will be good communications within and across the project team.

The aims and objectives of the communication strategy are:

- To increase the number of people aware of the proposals, especially residents and businesses whose journeys/travel will be temporarily and/or permanently affected by specific projects
- To ensure transport network users are aware of planned disruption on the transport network so that alternative routes or travel can be organised in advance to minimise travel disruption to the general public
- To improve member and key stakeholder involvement, with regular dissemination of information, throughout the scheme programme
- To present a 'united front' between SBC and other parties on the scope and delivery of the project, having resolved any differences prior to presentation to stakeholders/third parties/ the public/the media etc.
- To increase traffic or 'hits' on the dedicated New Eastern Villages website
- To increase the amount of public participation and amount of feedback received through public engagement exercises from key stakeholders, residents and businesses, about the effectiveness of the implementation of the New Eastern Villages transport schemes
- Consultation to inform detailed design to planning
- Feedback on project at key dates during the scheme development
- Dissemination of post opening project evaluation study carried out at first and fifth anniversary of scheme opening

In addition to the overarching objectives outlined above, the NEV Communication Plan aims to:

- Achieve 1,000 sign-ups to the new dedicated NEV newsletter. This is based on the fact that the last newsletter which was set up for a specific project (Bruce Street Bridges) reached 851 sign-ups

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- Achieve 80% of media coverage to highlight the benefits of the scheme and why the work needs to be done, minimising the reputational damage to the Council

SBC recognises that a co-ordinated approach to communications relating to the various NEV transport schemes that are planned to be under construction between late 2019 and 2022 is required. A Communications Plan has therefore been prepared for the NEV transport schemes including the West of A419 schemes (Appendix I)

Following tender submission with Contractor's Stakeholder Management Strategy, this context will be updated.

5.8.4 Key messages

It will be important to keep all relevant parties informed about the progress of the project, in a timely and appropriate manner that is suitable for their level of involvement. Certain key messages will be communicated as the scheme is developed, including that the scheme:

- Enables a new development for the town to the east of the A419 consisting of around 8,000 homes, new schools, employment space, and community facilities
- Delivers £72.5m of highways investment into the area, specifically contributing to reductions in existing and forecast traffic congestion on the A419
- Improves journey times and journey time reliability
- Improves safety for all highway users
- Is compatible with the infrastructure improvement needs of Swindon
- Is a key component of the SWLEP Strategic Economic Plan

5.8.5 Key audience for communications strategy

The current stage of engagement focuses upon meeting statutory requirements and formal liaison with third parties necessary to deliver the scheme. This includes land owners, businesses and statutory agencies with interests in the NEV.

Key audiences for the NEV Communication Plan include:

- Residents directly affected by the work and businesses within close proximity to the development
- Businesses who rely on deliveries coming through the junctions affected
- Other residents across the borough and commuters
- Delivery partners including developers, utilities providers and Highways England
- Cabinet and ward members
- Parish councils and local community/interest groups
- SBC staff
- Road users from out of borough, including public transport operators
- Swindon and Wiltshire LEP

Wider publicity will be provided through press releases in the local media, if necessary, and through consultation events where feasible. Stakeholders will continue to be consulted as the development plans progress and the stakeholder management strategy will be updated in order to ensure effective management of stakeholders.

5.8.6 Public engagement

Over the past three years, SBC has undertaken 14 public consultation events regarding the NEV transport schemes. From these consultations, we have sought to understand local opinions and needs which relate to the various junction improvement schemes. These opinions have influenced the design of the schemes and assisted the council decision making where multiple options were available. We anticipate a further round of information events prior to construction. During construction, we plan to make use of multi-media and strategically placed variable message signs to inform local residents and the travelling public.

SBC has also established a user group which is attended by key Swindon businesses that rely upon reliability of journey times along the A419 corridor. The purpose of this group is to inform business managers about the

proposed works so that they are aware of the construction for their business planning. During 2018 three meetings were held, and the frequency will increase as the construction stages approach.

5.9 Contract Management

A single Project Manager, who has been overseeing the project since 2016, will administer the construction contracts. This will include overseeing all aspects of programme, construction, risk management and cost control. Additional support will be provided by:

- A Senior Quantity Surveyor and Contracts Manager, who will include the assessment of compensation events and auditing of accounts on a monthly basis
- A Technical Programme and Strategic Place Delivery Manager
- A Finance Manager
- An Assistant Project Manager
- An external NEC contract specialist

The Contractor's Project Manager will be required to attend weekly progress meetings and weekly commercial meetings for the duration of the contract. The outcomes of these meetings will be reported to the Project Board within the same cycle.

The successful Contractor will be responsible for the construction of the scheme to budget and programme. The proposed NEC4 form of contract nurtures good relationships between the parties to the contract. It is a clear and simple document, using language and structure which are straightforward and easily understood.

A key document of the NEC4 ECC contract is the Accepted Programme and the accepted Contractor's Plan for the contract. This document is regularly updated and used as a management tool by both the contractor and the Project Manager to manage the delivery times of the scheme. This programme will contain not only details of construction sequence and information release, but also time risk and float allowances, which will give a true picture of the critical path of the project.

The contracts will be overseen by the Project Board in order to manage change. Contracting parties must notify the Project Board of any matter through an Early Warning, which could increase the prices, delay completion or impair the performance of the works in use. Contract management meetings are risk reduction meetings which will motivate both parties to identify problems as early as possible. It creates a proactive approach to finding a joint solution. Decisions and directions will be dealt with directly by the Project Board through the appointed Project Manager/Service Managers and the successful contractor. There will also be a role for an NEC4 Supervisor whose role will be limited to ensuring completion of the construction works in accordance with the specified standards set down in the Works Information.

The contract will define Compensation Events and they will include instructed changes to the Works Information. The successful contractor will submit a quotation for the changes to both time and cost. The Project Manager's acceptance of that quotation implements the change. This will enable the Project Manager to know the level of financial commitment usually before the works have started.

5.10 Risk management strategy

The accurate evaluation and pro-active mitigation of risk is critical to the success of the project. The risk management strategy is underpinned by the Quantitative Cost Risk Assessment (QCRA). The main purpose of the QCRA is to support the costings as presented within the financial case, by predicting the level of risk contribution, with a defined level of confidence to cover the implementation / operation of the scheme. The QCRA allows for uncertainty in unplanned additional cost items, including cost due to delay that cannot otherwise be included in the project costs. A QCRA has been developed for the White Hart, Gablecross and West of A419 schemes.

The QCRA is produced following a project team workshop facilitated by risk assessment specialists in Atkins and cost assessors from Faithful+Gould. A Monte Carlo simulation is used to calculate a risk budget which is the basis for the feasibility element of the overall cost estimate. The QCRA has been updated at key points in the scheme development.

The QCRA figure included in this FBC for the risks relating to the West of A419 schemes is the 80th Percentile (P(80)), shown in Table 5.4; the QCRA results are detailed in Appendix E.

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Table 5.4 QCRA Results (September 2020)

Risk (Financial + Delay)	Oxford Road / Nythe Road Junction	Piccadilly Roundabout	Grand Total Risk
P(80) value	£370k	£336k	£706k

To manage the scheme risk, the project team led by the Project Manager maintains a scheme Risk Register according to SBC corporate risk management policy. The risk register forms the first step of the QCRA process.

The risk register logs the full spectrum of potential risks to the planning and delivery of the scheme and records high impact risks and assesses likelihood, assigns owners and details mitigation plans. The aim is not to eliminate risk completely from activities, but to manage it appropriately, to maximise potential opportunities and to minimise threats.

The risk register was developed following an initial risk workshop with key officers. The workshop had the following objectives:

- To identify/update any ongoing, new or potential risks to the scheme
- To prioritise and quantify the risks (in broad terms)
- To identify mitigation measures where appropriate
- To assign actions

The risk register is updated monthly by the project team and progress on high risks are reported through the governance process to monthly Delivery Board meetings. The Delivery Board will assign further risk reduction actions if it feels they are necessary, and the sponsor will escalate risks corporately when required. Risks escalated to medium or high that could impact on the progress of the project will be referred to the Responsible Officer.

The top ten highest risks of the West of A419 schemes by Grand Total Risk (i.e. Financial + Delay) are summarised in Table 5.5. A copy of the QCRA report including full risk register is provided in Appendix E of this FBC.

Table 5.5 Summary of Highest Risks for the West of A419 schemes by Grand Total Risk

Risk			Current Qualitative Impact		Current Score
Risk Description	Risk Impact	Risk Stage	Probability	Impact Cost (£)	
Additional construction cost as a result of COVID-19 measures	Additional costs and programme delay	Stage 5 – Detailed Design / Construction	High	Medium	16
Abortive construction as a result of COVID-19	Additional costs and programme delay	Stage 5 – Detailed Design / Construction	Low	High	14
Unexpected site conditions such as contaminated land ground conditions	Additional costs	Stage 5 – Detailed Design / Construction	Medium	Medium	13
Underground / overhead utilities may impact the construction	Requirement of redesign causing programme delay, and service diversions.	Stage 5 – Detailed Design / Construction	Medium	Medium	13

Risk			Current Qualitative Impact		Current Score
Risk Description	Risk Impact	Risk Stage	Probability	Impact Cost (£)	
Dispute & Claims arise during construction	Additional costs	Stage 5 – Detailed Design / Construction	Medium	Medium	13
Scheme delayed due to exceptionally adverse weather	Delay in programme delivery with incurred additional cost.	Stage 5 – Detailed Design / Construction	Low	Medium	9
Additional supervision EW / RFI / TQ time becomes required	Additional costs	Stage 5 – Detailed Design / Construction	Low	Medium	9
Unknown construction items	Additional costs	Stage 5 – Detailed Design / Construction	Low	Medium	9
Compensation claims by the residents and businesses	Additional costs	Stage 5 – Detailed Design / Construction	Low	Medium	9
Existing pavement structure sub-layers may need replacing	Additional costs	Stage 5 – Detailed Design / Construction	Low	Medium	9

5.10.1 Contingency plan

Table 5.6 below details how the West of A419 Scheme will deal with the key residual risks.

Table 5.6 West of A419 - Contingency plan

Risk / Issue	Contingency Plan
Unexpected site conditions result in increased costs, particularly the discovery of unexpected utilities.	<p>A large amount of pre-construction investigation has taken place, including intrusive surveys to determine the ground conditions and the location of services. Consultation has taken place with the local highway authority to ensure knowledge gained through previous works in the area is retained. Consultation with service providers, including site visits, has taken place to ensure existing services are mapped as accurately as possible and diverted where necessary.</p> <p>However, the risk of unexpected site conditions remains, particularly as the site is heavily used by utility providers. The contractor has been briefed that this risk is present, and their method of construction will allow for this. SBC's Construction Project Manager is highly experienced in dealing with issues arising from unexpected site conditions and dealing with service providers and will be available to put in place contingency plans when necessary. Float has been put into the programme and contingency budget allowed for in the event that they are required.</p>
Stakeholder objections affect construction. In particular, the close proximity of residential dwellings to both sites.	<p>Particularly intensive consultation with local residents has been necessary in the development of this scheme as the works will be carried out very close to neighbouring houses. Residents at the Nythe Rad site have particularly been concerned and a number of one to one site visits have taken place during design development, resulting in a number of design changes to accommodate resident needs. As a result, local residents are now well-informed about the scheme.</p> <p>As part of the contract the contractor is required to put in measures to minimise impact on local residents, particularly relating to noise, air quality and access. SBC's project manager is experienced in managing schemes in residential areas and</p>

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Risk / Issue	Contingency Plan
	forming relationships with local stakeholders and flexibly adapting the scheme where required.
Covid-19 restrictions affect construction	<p>The risk of Covid-19 restrictions affecting time and costs sits with SBC under the terms of the contract. An allowance in the contingency budget has been provided to cover this.</p> <p>Government guidance has prioritised the continuation of construction work so the risk of construction needing to stop is now thought to be low. Experience of managing the construction phase of the White Hart Junction scheme has shown that some additional costs have been incurred as a result of Covid-19 measures, for example an enhanced cleaning regime at site offices, lack of car sharing but that these have not been as significant as first feared. The experience gained by the SBC team in operating on site during the Covid-19 period will be transferred to this scheme.</p>

5.11 Benefits Realisation

The key benefit of the West of A419 schemes is to reduce delays and journey times at Oxford Road/Nythe Road junction and Piccadilly roundabout during peak times. The West of A419 schemes will do this by increasing capacity along Oxford Road and Dorcan Way. By preventing an increase in delay as well as preventing a reduction in reliability for trips from existing residential areas, the West of A419 schemes will mitigate the increase in traffic flows generated from the NEV developments and from the strategic traffic along the Swindon to Oxford corridor in addition to minimising the negative impacts of employment growth. In turn, the scheme will maintain the attractiveness of these routes for long distance trips and improve journey quality on these routes, minimising the likelihood that these will divert onto local roads.

The West of A419 schemes, alongside others, will allow for the NEV developments to proceed. The NEV developments will provide housing, a new district centre, employment land as well as health, retail, education and leisure facilities which will serve local people. In this way, the West of A419 schemes will facilitate the development of community facilities and help to meet the demand for housing in southern England. In addition, the West of A419 schemes aim to improve road safety in the area. If successful, this would result in a reduction of collisions leading to personal injury across the wider transport network around Swindon.

Both the Oxford Road/Nythe Road junction and Piccadilly roundabout schemes have been suitably modelled and appraised in order to better understand their impacts. However, it is important that the benefits resulting from the schemes are monitored and that appropriate resources are made available in order to realise their full benefits and ensure they are resourced appropriately.

The West of A419 schemes are one component part of the NEV programme. The NEV Project Management Plan seeks to ensure that all the requirements for successful delivery of the NEV development are met and therefore provides the basis for benefits realisation for the transport schemes. Beyond the completion of the transport schemes, the NEV Programme includes neighbourhood planning and liaison with developers, provision of key community facilities including a District Centre, primary and secondary schools, and provision of green infrastructure.

The overall approach to benefits realisation, monitoring and evaluation for the transport schemes therefore sits within the framework provided by the NEV programme. However, specific attention will be required regarding transport benefits, for example ensuring that local traffic demands between the NEV and Swindon are met without adversely affecting strategic traffic movements on the key A419 corridor. Monitoring of traffic flows, congestion and journey times will be required following scheme construction to ensure that these and other objectives are met, and the approach to monitoring and evaluation is outlined in Section 5.12.

5.12 Monitoring and Evaluation

There is a commitment to monitor operational scheme impacts based upon WebTAG guidance for major transport schemes. The guidance requests details on the likely benefits and how they will be measured and reported.

In order to monitor the effectiveness of the scheme in addressing the identified problems and delivering against the stated objectives it will be necessary to compare 'before' and 'after' data. The Monitoring and Evaluation Plan will broadly follow the 'full monitoring' approach set out in the Monitoring and Evaluation Framework for Local Authority Major Schemes, although this effort will be adjusted accordingly to be appropriate, proportionate and cost effective.

For the West of A419 Schemes, it is proposed that the evaluation broadly considers the following questions:

- Was the scheme delivered to costs and timescale?

- Have the schemes delivered the types and scale of forecast transport and economic impacts?
- Has the package delivered the desired objectives?
- What lessons can be learnt to help shape future transport strategies for the Swindon and Wiltshire?

The scheme monitoring will focus on the main areas of impact of the scheme, namely Oxford Road, Nythe Road, Covingham Drive, Dorcan Way and The Drive.

Given that the primary purpose of the scheme is to help facilitate the growth of Swindon and to address capacity constraints which have (via existing Grampian Conditions) and will (through anticipated future conditions on NEV sites) continue to result in restrictions on the quantum of development that can come forward, the key benefit to be realised is related to housing and employment development. This will be measured via tracking of planning applications and build out/completions, via Swindon Borough Council.

Improved highway performance is a further benefit of the scheme. Pre-construction (2020) journey time and traffic count surveys cannot be collected, analysed and reported on due to the temporary impact of the Covid-19 pandemic on traffic flows and journey times in 2020. Therefore, in order to monitor highway performance, the following data is available for use as a 'before' baseline (for further information, see the Monitoring and Evaluation Plan in Appendix D):

- 2018 journey time data along Oxford Road and Dorcan Way
- 2019 estimated Average Annual Daily Traffic Flow (AADT) data between the A313 and the A419 via Oxford Road (A4312)
- 2019 manually counted Average Annual Daily Traffic Flow (AADT) data between the A4259 and the A419 via Dorcan Way (B4006)
- 2015 automatic traffic counts along Oxford Road and Dorcan Way¹⁴

For traffic count data, the road traffic statistics database from the DfT will be utilised. Journey time data will be extracted from the Highways Analyst tool, which is derived from the Trafficmaster dataset. Data collection and reporting will be undertaken prior to scheme construction, and one year and five years following completion of the schemes. Table 5.7 highlights the monitoring requirements for each objective.

Table 5.7 Monitoring requirements

Objective	How will this be monitored?	Data to be used
To improve capacity at Oxford Road/Nythe Road junction, leading to better route consistency and journey quality for trips travelling through the Oxford Road corridor.	Monitor queue lengths and journey times	Modelled flows/flow data. Flow data and journey time data would be monitored, and assessed alongside side observations, to determine if queue length surveys are required going forward.
To improve capacity at Piccadilly Roundabout, leading to better route consistency and journey quality for trips travelling via Piccadilly Roundabout.	Monitor queue lengths and journey times	Modelled flows/flow data. Flow data and journey time data would be monitored, and assessed alongside side observations, to determine if queue length surveys are required going forward.
To minimise the traffic impacts of New Eastern Villages housing and employment growth on trips entering and exiting the existing residential areas in East Swindon.	Monitor build out rates against adopted Local Plan allocations/planning permissions. Monitor journey times on key routes.	Trafficmaster journey time data. Modelled flows.

¹⁴ To present the 'before' flows along Dorcan Way, the observed 2015 traffic counts along Dorcan Way will be used to factor the 2019 estimated AADTs along the southern section of Dorcan Way

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5.13 Summary of Management Case

The Management Case demonstrates that SBC, supported by SWLEP, has the necessary resources and proven expertise to deliver the West of A419 Schemes in accordance with the programme and budget. It also shows that SBC has the necessary processes to ensure that decisions are made at the appropriate level and ensure that agreed assurance procedures are followed.

The scheme is being delivered as part of the NEV programme, overseen by a Programme Board and by a project team which will also be responsible for delivering the other strategic transport schemes. A plan for consultation and engagement is in place which includes key stakeholders directly affected by the scheme, general public and business users of the A419. Key risks have been identified and strategies agreed to reduce or mitigate the impact of these. Monitoring and evaluation will be co-ordinated through the Monitoring and Evaluation Plan which will assess the impacts and outcomes of the West of A419 Schemes.

6. Commercial case

6.1 Introduction

This section sets out the processes that have and will be adopted through the contracting and procurement strategy. It sets out the key requirements and assumptions for procurement of the contractor to deliver the schemes. For the purposes of the FBC, the Commercial Case has been updated to include developments since the OBC and the current status of the procurement of works and services to deliver the West of A419 schemes.

6.2 Procurement objectives

The Commercial Case for each scheme will describe the SBC procurement expertise, supported by the SBC Corporate Procurement Team. The team has a wealth of knowledge and experience with different types of contract.

The Procurement Strategy options to implement the West of A419 schemes needed to deliver value for money by maximising the likelihood of the project objectives being delivered in full for minimal out-turn cost (and within the budget available).

It is recognised that procurement covers much more than the form of contract. Hence the procurement strategy considered:

- Specification of requirements
- Form of contract
- Risk allocation
- Selection of suppliers
- methods of reimbursement and incentivising
- Performance management

The consideration of procurement options needed to take account of the stage the scheme has reached and make most effective use of invested knowledge and scheme development work to date. It also needed to take account of the availability of the skills and resources needed to deliver a successful outcome including the capability and capacity within the client organisation.

The strategy adopted for procurement sought to realise cost and process efficiencies, and hence economic, social and environmental factors, and manage quality and risk. It also aimed to deliver consistent quality standards that would result in successful scheme delivery. Key to the choice of the procurement strategy was to seek value for money through addressing the following issues:

- Price certainty/managing cost: a key requirement, linked to the overall value for money objectives; focus on whole life cost
- Opportunity/incentive for innovation: innovation is encouraged, especially where this may result in improved value for money/reduced capital cost
- Delivery on time: a key consideration, especially to ensure that timescales linked to the release of funds are met
- Ability for effective contract management: multiple contracts require additional project management. SBC resources are limited, therefore procurement options that streamline the project management activities are preferred
- Risk sharing: different procurement routes allocate risk in different ways. A traditional procurement approach is adopted whereby SBC appoints a contractor for construction only. This route offers a clear differentiation between the design and the construction. By procuring a construction only contract the risk inherent in detailed design does not need to be priced in by the contractor and the tendered costs will be lower.

Securing value for money will be achieved by the following:

- Use of existing and new contractor/supplier agreements to maximise flexibility and responsiveness in delivery

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- Using forms of contract which support proactive risk management and transparent payment mechanisms based upon Office of Government Commerce best practice and enhanced to incorporate lessons learned from other major schemes.

6.3 Output based specification

This section of the Commercial Case describes the skills and services required to deliver the West of A419 schemes. The development and assessment of the scheme utilises staff resources from a number of sources, including the local authority and its representative consultants. The project output specification for the West of A419 schemes is detailed in Table 6.1.

Table 6.1 Output based specification for the West of A419 schemes

Stage of scheme development	Work stream	Output
Preparation	Project management support	Provision of sufficient project management capacity, reflecting the dimensions of the scheme
	Highway design	Completion of highway design deliverables including detailed designs
	Modelling and appraisal	Completion of deliverables for WebTAG-compliant FBC
	Legal team	Provision of legal support for general support to deliver the scheme
	Communications	Provision of support for stakeholder management and in connection with planning and legal processes
	Commercial	Approach for procurement of construction and operation of scheme
Construction	Oxford Road/Nythe Road junction improvement	Construction to deliver highway works. Works completed in accordance with programme
	Piccadilly Roundabout improvement	Construction to deliver highway works. Works completed in accordance with programme
Maintenance	Ongoing maintenance of highway	Maintenance to be undertaken in accordance with SBC policies/asset management plan

The main infrastructure components of the scheme to be delivered are:

- A two 3.25m wide lane approach in both directions on Oxford Road
- Two lane approach on Oxford Road West (one ahead and one right lane at the stop line) and two-lane approach on Oxford Road East (one left and ahead and one ahead lane at the stop line)
- 3.0m shared cycle route and on-road bus stops, with the removal of some grass verge on Oxford Road
- All arms of Piccadilly Roundabout are to be flared to provide two-lane entry except Dragonfly Road.

6.4 Sourcing options

The OBC for this scheme recommended that the design and tender of the West of A419 schemes be packaged with the Gablecross Junction Improvements as a Design and Build contract through The Highways England (HE) Collaborative Delivery Framework (CDF). Due to the lack of competitiveness during the previous tender held under the CDF framework, a traditional procurement approach will be adopted whereby Atkins undertakes the design work and SBC appoints a contractor for construction. This is the preferred procurement route as it enables SBC to focus procurement resources on the external construction contract, it offers the potential to reduce the cost of design to lower than market cost, and it establishes a clear differentiation between the design and the construction which strengthens the management and sharing of risk. Due to constrained available funding, the Hampshire County Council GEN 4 Procurement Framework, which is an OJEU compliant framework, was considered the best option of tendering.

The West of A419 schemes will be fully designed and tendered separately from the Gablecross Junction Improvements due to the difference in timescales and requirements to complete the full design process.

This procurement approach will use a fixed price contract.

Table 6.2: Procurement options considered

Procurement route	Key features	Appropriateness	Option for West of A419 schemes?
Traditional approach	Client (or term Professional Services Consultant) undertakes designs and SBC appoints contractor to construct the scheme through OJEU process. Provide opportunity to test value for money.	Allows SBC to focus procurement resources on external build contract, strengthens management and share of risk, and may reduce cost of design to lower than market cost. An appropriate route and selected as the preferred route.	Yes
Design and build	Contractor undertakes detailed scheme design and works. Centralises design and construction responsibility.	Design and build single award to single supplier involves a resource-intensive and complex procurement process, with uncertainty around management and sharing of risk leading to inflation of final cost. Not considered an appropriate route.	No
Design and build with discrete contracts for enabling works	As above, except use of existing Professional Services Contract and/or Term Civil Engineering Contract for advance surveys/enabling works	As above but with added flexibility to manage programme risks. However, a resource-intensive and complex procurement process, with uncertainty around management and sharing of risk. Not considered an appropriate route.	No
Use of existing term civil engineering contract	Local knowledge and familiar working practices can achieve good value for money on smaller works contracts	If scheme could have been split into sub phases for good value for money this avenue could have been appropriate.	No
Early contractor involvement	Contractor joins the team from the beginning and is involved with planning, assessing buildability, cost estimating and value engineering.	Utilities contractors' unique understanding of construction processes to optimize the design and delivery process. Provides opportunity to test value for money. However, engaging design contractor could delay project and restricts internal design experience. Not considered an appropriate route.	No

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6.5 Procurement strategy

In April 2020, procurement discussions with GEN4 suppliers were undertaken with all eight (8) contractors, who have qualified to join the framework via preceding assessment. The soft market testing suggested the tendering process will be competitive.

It was decided that the best procurement option for this scheme was through the Gen 4-2 (Lot 1&2) Works, with a value range of £50k to £10m. The procurement process will involve a mini-competition with a two-envelope bid system: one based upon price and the other on quality. A copy of the Invitation to Tender is provided in Appendix J. Construction will be managed through an NEC4 Engineering and Construction Contract (ECC) Options A to E, which will be awarded to a single supplier. It is aimed at medium size and/or specialist Civil Engineering works. The OJEU Contract Notice was advertised in January 2020 and the Framework commenced on the 1st April 2020 and consisted of the following eight (8) suppliers:

- Alun Griffiths
- Dyer and Butler
- Eurovia UK
- John Graham Construction
- Kier Integrated Services
- Mildren Construction
- Knights Brown Construction
- R&W Civil Engineering

The GEN 4- 2 standard ITT documents were used, which included specific project questions. The Contract was awarded to a single supplier using an NEC4 ECC under option A: Activity Schedule. The Contract includes the SBC contract clauses and additional Z clauses to suit contract requirements.

The conditions within the NEC4 ECC provide the following benefits:

- Clearly sets out payment terms of the project, with changes captured and managed through the early warning and compensation event process.
- Employer and Contractor responsibilities/liabilities are clearly defined.
- Incorporates a Risk Register which provides early warning of risks and transparency in how risks will be managed. The tender evaluation process will be separated into two stages, selection and award.

A NEC contract specialist has been appointed to advise on contract strategy and provide ongoing support through the construction period.

The recommendation was that the Interim Director of Operations undertakes the procurement in line with the agreed strategy and signs the moves to Gateway B on the procurement of Nythe Road / Oxford Road Capacity Enhancements, Piccadilly Roundabout in August 2020.

6.5.1 Contract length

The main contract is for six months (until June 2021) to cover the period required for construction.

6.5.2 Tender process

A single contractor will act as the sole point of responsibility to SBC, for the management and delivery of the construction project, on time, within budget (defined over the lifetime of the project) and in accordance with a performance specification.

SBC is subject to European Union procurement procedures. The scheme is subject to the Public Contract Regulations 2006, EU Directive 2004/18/EC and subsequent amendments. This means that selection of consultants, contractors and goods are subject to the procurement rules covered by these regulations. The project falls under the Services, Works and Goods Directives, which mean that all the services, works and goods purchased for the design, construction and maintenance of the projects must be either procured using these directives or sourced from contracts which have been procured through the Regulations. These procurements state that the type of services, works and goods that can be omitted from the total expected value of the services, works and goods, does not exceed the value stated on the Contract Notice for that particular contract.

New procurements are carried out under the Restricted Procedure, which uses a pre-qualification stage to filter out suitable contractors and a tendering stage where the successful contractors will be invited to submit a tender. The tender opportunity was issued to the eight (8) suppliers on the framework for the mini competition via the South West Portal on 1st April 2020. The pre-qualification stage for this scheme has already been undertaken through the GEN4 pre-qualification stage that enabled the eight (8) contractors to be successfully awarded. This process filtered out applicants that did not have the requisite financial standing and insurances, adequate health and safety track record, adequate quality control, relevant experience in similar schemes, and adequate environmental controls.

The GEN 4- 2 standard ITT documents will be used, which includes specific project questions. The Contract was awarded to a single supplier using an NEC4 Engineering and Construction Contract under option A: Activity Schedule. The Contract includes the SBC contract clauses and additional Z clauses to suit contract requirements.

The tendering stages consisted of a two-envelope bid system: one based upon price and the other on quality. The tenders were assessed in line with the 'MEAT' (Most Economically Advantageous Tender) assessment criteria, through a series of quality questions which allowed tenderers to demonstrate ability in some key areas, linked to the main project risks. Some of the responses were in the form of method statements, which were derived specifically for the contract. The following areas were evaluated:

- Management team structure and controlling of costs
- Site management and quality systems
- Selection and management of the supply chain
- Interfaces with other utility sub-contractors and stakeholders
- Approach to managing delays to the programme

The second part of the tenders consisted of the financial bids. Contractors will provide activity schedules and prices in the tender. They used the method of measurement, the works information and the drawings to do this. A financial assessment panel assessed this separately. Marks were allocated relative to the cheapest bid using standard local authority procurement practices.

A quality financial split is consistent with the Office of Government Commerce's recommendations for the size and complexity of these schemes. A quality price evaluation model was prepared in advance of issuing the tenders to determine the marking criteria for the quality questions, describe how the overall marks were to be allocated and how the final ranking of applicants is determined. The quality evaluation was subject to a review and challenge process and moderation exercises via a meeting of key evaluators. Responses to the quality questions were awarded marks based on a pre-determined scoring matrix.

6.6 Pricing framework and payment mechanisms

6.6.1 Pricing framework

The construction contract is priced as a lump sum against an activity schedule. The contract will be managed onsite by NEC competent team using NEC 4 contract. During the tender process the tenderers were asked to provide cost components for people cost and equipment that would be used to justify any compensation events that occur during the contract. Any costs occurred that are not included in the agreed rates will be evaluated against the Civil Engineering Contractors Association (CECA) schedule of rates. Monthly applications will be submitted to SBC for approval this will be carried out on the last working day of each month.

6.6.2 Payment mechanisms

The project manager will assess the amount due at each assessment date. The amount due on each application will consist of the price of works completed to date, plus any other amounts due to the contractor less the amount already paid to the contractor and retained. Any tax that the law requires the employer to pay to the contractor is included in this amount e.g. VAT.

The project manager will certify a payment within one week of each assessment date. The first payment is the amount due. Other payments are the change in the amount since the last payment certificate. Each certified payment is made within three weeks of the assessment date.

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6.6.3 Compensation events

The changes to the process are assessed as the effect of the compensation event upon:

- The actual defined cost of the works already completed
- The forecast defined cost of the work not yet done
- The resulting fee

Assessment of the effect of a compensation event includes risk allowance for cost and time for matter which have a significant chance of occurring and are at the contractors' risk under the contract. Assessments are based upon assumptions that the contractor reacts competently and promptly to the compensation event. A compensation event is implemented when the project manager notifies his acceptance of the contractor's quotation.

6.6.4 Employer's risk

Under the contract the employer's risks are claims, proceedings, compensation and cost payable which are due to:

- Use or occupation of the site by the works or for the purpose of the works which is unavoidable
- Negligence, breach of statutory duty or interference with any legal right.
- A fault of the employer or a fault in his design
- Loss or damage to Plant and Materials supplied to the contractor until the contractor has received and accepted them
- Loss or damage to the works, Plant and Materials due to war, civil war, rebellion, revolution, insurrection, military or usurped power, strikes, riots and civil commotion not confirmed to the contractor's employees
- Radioactive contamination
- A defect which existed at take over
- An event occurring before takeover which was not itself an employer's risk or activities of the contractor on site after takeover.

6.6.5 Contractor's Risk

From the starting date until the defects certificate has been issued, the risk that are not carried by the employer are carried by the contractor. Until the defect's certificate has been issued the contractor replaces loss and repairs damage to the works. Both parties will indemnify the other against claims, proceedings, compensation and costs due to an event which is it at their risk.

6.6.6 Defects

The contractor will correct any notified defect before the end of the defect correction period. The defect correction period begins at completion for defects notified before completion. If the contractor is given access in order to correct a defect but it has not been corrected within the defects period, the project manager will assess the costs to the employer of having the defect corrected by others and the contractor will pay the amount.

6.6.7 Retention

NEC clause X16 is used in this contract to define the retention percentage held by the employer. This contract states a retention amount of 5% is held until completion. This is reduced to 2.5% until the defects period is completed (1 year from achieving contract completion).

6.7 Contract management

A single Project Manager, who has been overseeing the project since 2016, will administer the construction contracts. This will include overseeing all aspects of programme, construction, risk management and cost control. Additional support will be provided by:

- A Senior Quantity Surveyor and Contracts Manager, who will include the assessment of compensation events and auditing of accounts on a monthly basis

- A Technical Programme and Strategic Place Delivery Manager
- A Finance Manager
- Two Assistant Project Manager
- An external NEC contract specialist.

The Contractor's Project Manager will be required to attend weekly progress meetings and weekly commercial meetings for the duration of the contract. The outcomes of these meetings will be reported to the Project Board within the same cycle.

6.7.1 Specific management

The successful Contractor will be responsible for the construction of the scheme to budget and programme. The proposed NEC4 form of contract stimulates good management of the relationships between the parties to the contract. It is a clear and simple document, using language and structure which are straightforward and easily understood.

A key document of the NEC4 ECC contract is the Accepted Programme and the accepted Contractor's Plan for the contract. This document is regularly updated and used as a management tool by both the contractor and the Project Manager/Service Manager to manage the delivery times of the scheme. This programme must contain not only details of construction sequence and information release, but also time risk and float allowances, giving a true picture of the critical path of the project.

The contracts will be overseen by the Project Board in order to manage change. Contracting parties must notify the Project Board of any matter through an Early Warning, which could increase the prices, delay completion or impair the performance of the works in use. Contract management meetings are risk reduction meetings which will motivate both parties to identify problems as early as possible. It creates a proactive approach to finding a joint solution. Decisions and directions will be dealt with directly by the Project Board through the appointed Project Manager/Service Managers and the successful contractor. There will also be a role for an NEC Supervisor whose role will be limited to ensuring completion of the construction works in accordance with the specified standards set down in the Works Information.

The conditions within the NEC4 ECC will have the following benefits:

- Clearly set out payment terms of the project, with changes captured and managed through the early warning and compensation event process
- Employer and Contractor responsibilities/liabilities are clearly defined
- Incorporates a Risk Register which provides early warning of risks and transparency in how risks will be managed.

The contract will define Compensation Events and they will include instructed changes to the Works Information. The successful contractor will submit a quotation for the changes to both time and cost. The Project Manager's acceptance of that quotation implements the change. This will enable the Project Manager to know the level of financial commitment usually before the works have started.

The contract will contain additional Z clauses, including a clause that will deal with any further outbreaks of the Covid-19 pandemic and issues around Brexit.

6.8 Procurement timescales

Table 6.3 shows the key dates for the West of A419 schemes.

Table 6.3: Procurement programme

Stage	Timescale
Tender process commences	August 2020
Detailed Design completion	September 2020
Award of contract	October 2020
Start of works	January 2021

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Stage	Timescale
Construction completion	June 2021

6.9 Summary of Commercial Case

The Commercial Case has shown that SBC has the necessary contracts and procurement processes in place to deliver the scheme.

Following a review of procurement options, a traditional procurement approach is proposed whereby Atkins will undertake the design and SBC appoints a contractor through the Hampshire County Council GEN 4 framework. The tender process for the West of A419 schemes commenced in August 2020, with the main contract extending for six months from January 2021 to June 2021.

The Commercial Case has described how best value for money will be achieved from the contracts, and how the contractors will be incentivised to deliver the scheme on time and on or within budget.