

St Margaret's Roundabout and A27 Corridor Improvements Fareham

TRANSPORT BUSINESS CASE – 09.01.15





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1 Introduction

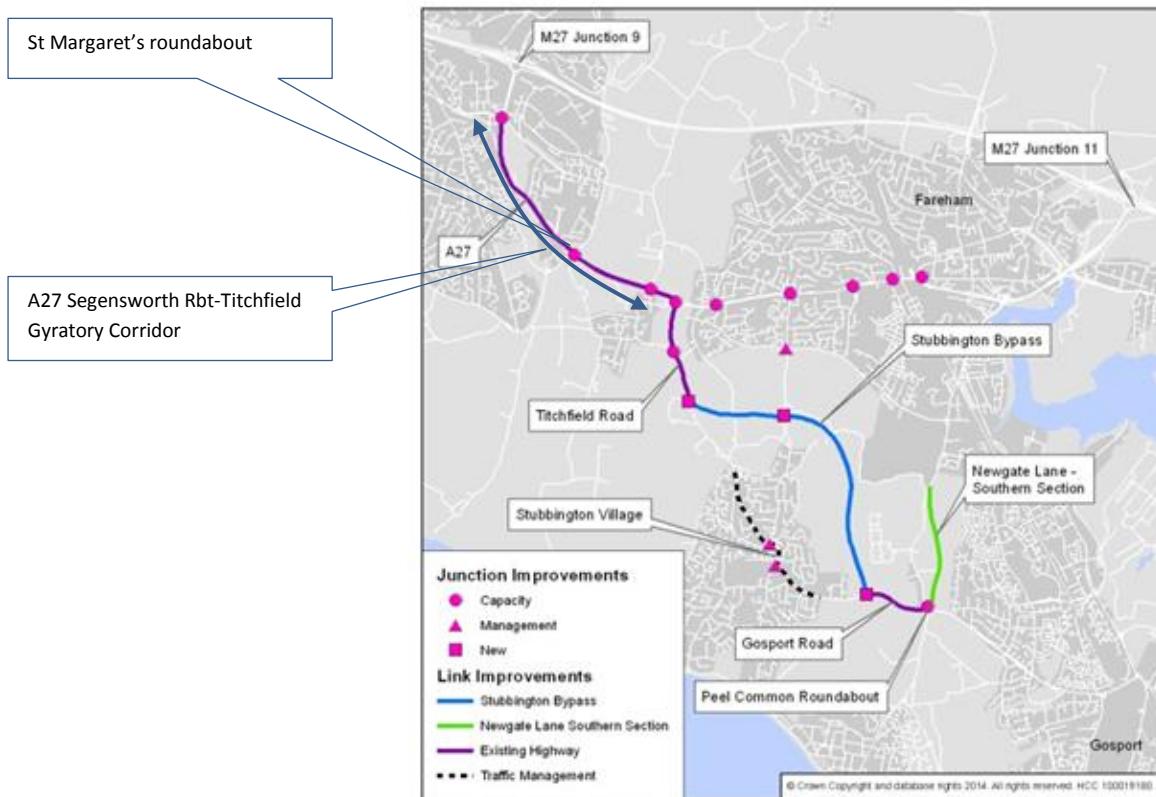
- 1.1.1 The A27 Corridor Improvements form part of an overarching package of works for Fareham and Gosport Boroughs which are aimed at enhancing transport connectivity across the sub-region to help facilitate housing growth and the delivery of employment floor space and jobs. The full package of works includes:
- New infrastructure to directly enable development at Welborne including an all movement M27 Junction 10;
 - Improved access to the Fareham and Gosport Peninsula from the west including a new bypass for Stubbington, along with improvements to the **A27 corridor between Segensworth and Titchfield Gyratory** including improvements to **St Margaret's roundabout**; and
 - Improved access to the Fareham and Gosport Peninsula from the east including improvements to Newgate Lane South and Peel Common Roundabout.
- 1.1.2 The A27 Improvements, commencing with improvements to St Margaret's roundabout, will be delivered as a phased package of work seeking to improve access to the Gosport peninsula. The improvements will provide the opportunity to better manage traffic in this heavily congested area, removing critical delay points south of the M27 at Segensworth, heading east towards Fareham town centre. Furthermore, they would start to address the removal of transport barriers to economic growth.
- 1.1.3 An overarching Green Book compliant full business case is being prepared, which will focus upon economic outputs and specifically the facilitation of new housing and employment. The overarching business case will provide a comprehensive appraisal of the delivery and benefit realisation of the entire package of schemes. As a supplement to the overarching business case, a series of four WebTAG compliant full business cases have been prepared to demonstrate how each of the respective packages perform in their own right and also how they will contribute to the overall strategy.
- 1.1.4 This document presents the business case for the proposed improvements to the **A27 Corridor, commencing with the St Margaret's roundabout improvement which is planned to be delivered in 2015/16**. This business case complies with the DfT WebTAG Guidance on Transport Business Cases and should be read alongside the overarching full business case.
- 1.1.5 Whilst the initial focus of the business case is the improvements to St Margaret's roundabout, the business case also provides additional context and appraisal information for the wider A27 capacity improvements between Segensworth Roundabout and Titchfield Gyratory immediately to the west and east of the St Margaret's roundabout.
- 1.1.6 This Business Case considers the following five cases for the St Margaret's roundabout and A27 Improvement schemes:

- Strategic
- Economic
- Financial
- Commercial
- Management

2 Strategic Case

2.1 Introduction

- 2.1.1 In January 2014 a bid was submitted to the Solent Local Enterprise Partnership (Solent LEP) for a £90m package of measures to improve access to Fareham and Gosport. The package was included in the Solent LEPs Strategic Economic Plan which was submitted to government for Local Growth Deal funding. The Local Growth Deal award in July 2014 included agreed funding for:
- preliminary works associated with the Stubbington Bypass (focused largely on the package of A27 works);
 - improvements to Peel Common Roundabout,
 - initial site preparation work/land remediation at Welborne; and
 - a provisional allocation to M27 Junction 10 upgrade to „all moves“ starting beyond 2016.
- 2.1.2 It is recognised that in addition to this initial investment, the local area have identified a requirement for further investment to support the wider raft of improvements to the strategic transport infrastructure on the Fareham/Gosport peninsula (including the construction of the Stubbington bypass) as well as onsite development at Welborne. This is informing the negotiation of the next iteration of the Solent Growth Deal (due to be agreed in January 2015).
- 2.1.3 The financial commitment to the overarching package is currently: £19.7m to improve transport connectivity in Fareham and Gosport and to support enabling works at Welborne. This figure includes a £6m contribution to works in 2015/16 of which £3m has been allocated towards St Margaret’s roundabout. In addition £3.9m has been allocated towards the A27 corridor improvements as enabling works for the Stubbington Bypass for delivery in 2016/17. Remaining sections of the A27 are being included in the subsequent funding requests by the Solent LEP.
- 2.1.4 The planned improvements to the A27 between Segensworth and Titchfield Gyration build upon a first phase of A27 improvements at Gudge Heath Lane junction and the Station Roundabout near to Fareham town centre and railway station. Funding was approved by the Local Transport Body (LTB) (now part of the Solent LEP) for Phase 1 and delivery is planned for 2016/17. The second phase of improvements along the A27 (the subject of this business case will add value and complement the first phase, by removing further blockages along the corridor and helping to keep traffic moving, particularly in peak periods. The A27 improvements are entirely consistent with the overarching objectives to improve access to Fareham and Gosport set out below.



- 2.1.5 This business case builds on that previously presented to the LTB in relation to the A27 Gudge Heath Lane junction and Station roundabout improvements and the associated September 2013 submission for funding.

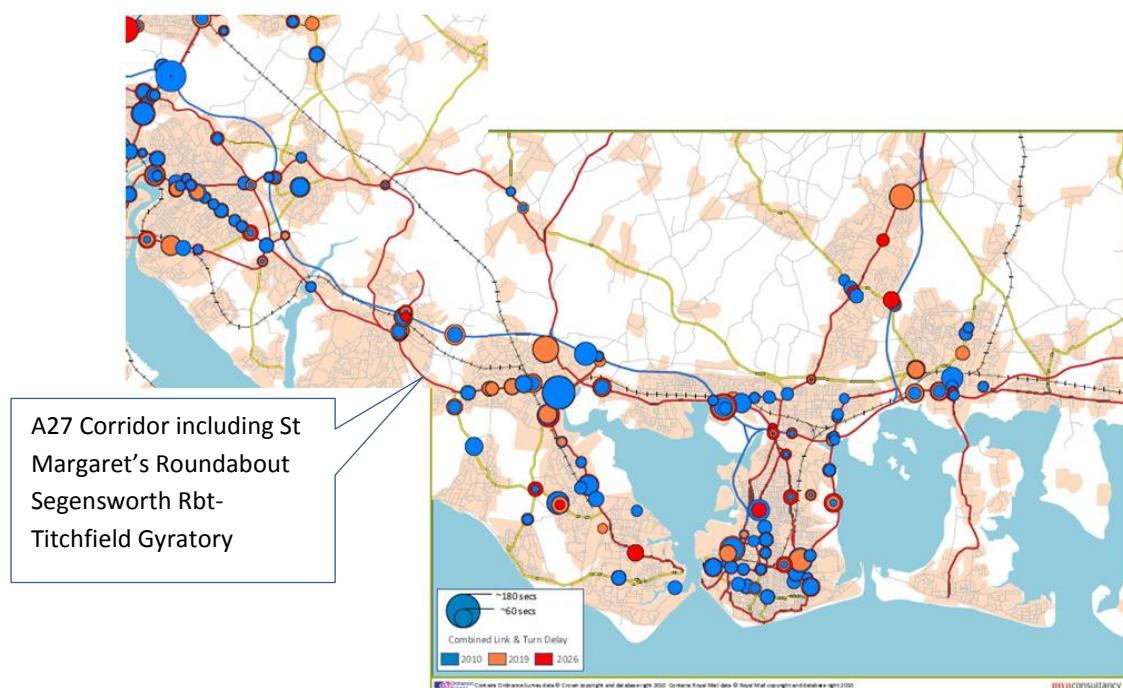
2.2 Problems Identified

Wider Problems

- 2.2.1 Both Fareham town centre and the Gosport peninsula are built up urban areas on the South East Hampshire coastline. The area is dominated by a heavily congested transport network and little scope for improvement due to geographical and urban area constraints. North-south access roads onto and off the peninsula are limited and outbound traffic generally needs to travel along the critical east to west A27 artery through central Fareham.
- 2.2.2 The A27 caters for the majority of non M27 east-west movements for both local and wider south Hampshire journeys. Congestion on the M27 and its associated junctions means that the A27 is heavily used and is performing as a strategic road as well as a local distributor feeding this densely populated residential area. Shorter distance movements are characteristic along the A27.
- 2.2.3 Both the M27 and A27 corridors suffer with peak hour congestion and have limited scope for capacity improvement. In particular, the A27 has a combination of single and dual sections of carriageway, capacity is significantly reduced where the route narrows and at numerous junctions, which causes congestion, delays and slow moving journeys for

commuters. Peak hour blockages and congestion points impact heavily upon the effectiveness of the route as a viable alternative to the motorway.

- 2.2.4 The Transport for South Hampshire (TfSH) Sub Regional Transport Model (SRTM) was developed as a multi-modal assessment tool which could be used to support a wide ranging set of interventions across the TfSH Sub-Region helping to produce the evidence base for strategy documents including the **Transport Delivery Plan (TDP)**. The following extract from Working Paper 8 helps to highlight the issues set out in the previous paragraph by showing the congestion bottlenecks along the A27 through the am peak period for the base (2010) and forecast years of 2019 and 2026.



- 2.2.5 The TDP used the SRTM to evidence the need for the A27 Capacity Improvements (Fareham-Segensworth-Windhover) and accordingly has included an overarching scheme within the Plan in February 2013 which is available to view at :

<http://documents.hants.gov.uk/transport-for-south-hampshire/TransportDeliveryPlan.pdf>.

- 2.2.6 Congested road networks discourage investment and new employment and cause retention difficulties for existing employment with businesses moving out of the area. The peninsula is under-performing economically, with high levels of deprivation linked to the decline of the MOD and high levels of public sector job losses. Significant levels of out commuting from Gosport (2011 Census data Gosport had around 7,000 in commuters and 20,500 out commuters) compound peak hour transport problems in the central Fareham area through which the majority of peninsula traffic passes. Out-commuting exacerbates congestion on the two main north-south accesses onto the peninsula. The north-south access roads all interface with the A27 which acts as a barrier to traffic wishing to exit both the Gosport and

Hamble peninsulas and critically impacts upon the attractiveness of these areas to develop and means that business retention is becoming more problematic as the situation worsens.

- 2.2.7 Congestion on the east to west corridors are a particular concern for substantial existing business parks around Segensworth and Whiteley, and support from the business communities has been expressed for much needed improvements. Accessibility is also of particular concern in relation to the attraction of new business into the area not least in relation to the Solent Enterprise Zone.

Local Problems

- 2.2.8 **Reliability:** The A27 including St Margaret's roundabout suffers with morning and evening peak congestion with key blockage points located around single carriageway sections and existing junctions on the route which performs as both a strategic and locally functioning corridor working in parallel with the M27. Facilities for pedestrians and cyclists are inadequate which combined with frontage access and associated turning traffic movements safety is a growing concern particularly with forecast traffic increases.
- 2.2.9 There is particular congestion at St Margaret's roundabout with peak period capacity and safety concerns at the substandard access and egress to/from an adjacent Shell petrol filling station, where queuing traffic on the A27 causes problems for drivers exiting and accelerating away from the roundabout. There is also a general lack of facilities for pedestrians and cyclists in and around St Margaret's roundabout and the local highway acts as a significant barrier to movement.
- 2.2.10 The proposed improvements involve the reconfiguration of the roundabout to include signalisation and additional lane capacity. The scheme will improve journey time reliability for all road users, particularly in the peak periods, through reduced congestion, improved public transport journey times and dedicated facilities and crossing points for pedestrians and cyclists.
- 2.2.11 There are a number of additional local issues, aside from congestion, that the improvements to St Margaret's roundabout and associated wider A27 complementary schemes seek to address. These include: improved road widths and dedicated provision for cyclists; and reducing the number of recorded accidents involving turning traffic.

2.3 Impact of Not Changing

- 2.3.1 Without improvements to the A27 as well as the overarching package of improvements, congestion and blocking back on the approach to Fareham and Gosport would remain and become exacerbated by future traffic growth serving to further discourage new development and investment.

2.4 Scheme Aims and Objectives

- 2.4.1 The principal objective for the St Margaret's roundabout scheme is to improve capacity and operational efficiency at the junction, through the introduction of traffic signals on all approaches to the roundabout, with the exception of St Margaret's Lane. The introduction of traffic signals will enable traffic flows to be better managed and enable improved time sharing of the increased capacity at the junction. In addition the scheme will address the lack of cycling and pedestrian connectivity at the roundabout and the localised access/egress concerns at the nearby Shell petrol filling station.
- 2.4.2 The objectives of the wider A27 Corridor improvements are to upgrade the single carriageway sections of the route to dual carriageway, to provide further junction improvements to improve operational efficiency and safety and to provide improvements for pedestrians and cyclists.
- 2.4.3 The overarching scheme objectives identified are:
- To reduce congestion on this critical artery and interchanges to help remove the transport barriers which currently discourage investment, growth and retention of existing employment;
 - To provide the opportunity to better manage traffic and prioritise movements at junctions;
 - To provide a safe connection along the A27 and through the junction for cyclists as part of the wider cycling network to link key destinations;
 - To address local perceived safety issues;
 - To provide enabling infrastructure to support Strategic Development Areas at Welborne and Solent Enterprise Zone at HMS Daedalus;
 - To make best use of existing transport infrastructure; and
 - To minimise the impacts on third party land.

2.5 Options

- 2.5.1 Options for the A27 Corridor between Titchfield Gyratory and Segensworth were principally considered in relation to the need to dual the single carriageway sections or not. In view of the existing capacity delays particularly during peak periods alongside forecast growth in traffic and planned new development related traffic, to do nothing was not considered to be a viable option that would assist in delivering the growth agenda in this area. On the basis that dualling was considered necessary option testing was more focused around carriageway widths and the need for central refuges. Improvements at junctions and provision for pedestrians and cyclists also formed a key focus for the scheme.
- 2.5.2 Options for the St Margaret's roundabout were considered in an initial feasibility study which was undertaken in December 2013 to investigate different options to increase the capacity of the roundabout and improve operational efficiency. Six options were considered, including:

- **Do-nothing** – Retain the existing roundabout
 - **Option 1** – All arms signalised
 - **Option 2A** – Four arms signalised (St Margaret's Lane give way entry)
 - **Option 2B** – Four arms signalised (St Margaret's Lane entry closed)
 - **Option 3A** – Two arms signalised (both A27 arms; all other arms give way entries)
 - **Option 3B** - Two arms signalised (both A27 arms; Warsash Road and Cartwright Drive give way entries; St Margaret's Lane entry closed)
- 2.5.3 The various options were modelled in Linsig and compared to the performance of the 'Do-nothing' scenario, where the model confirmed that the roundabout currently operates over capacity in both peak periods.
- 2.5.4 The results of the feasibility study identified that the 'Do-nothing' option presented the worst case option of all those investigated in terms of both capacity and delay.
- 2.5.5 The extent of signalisation employed for Option 1 would generate higher levels of internal congestion, which would adversely affect its operational performance, and was disregarded as a viable design solution.
- 2.5.6 While Option 2A improved on the internal congestion, associated with Option 1, concerns remained that the design generated excessive internal queues in both peak periods and was discounted.
- 2.5.7 Option 2B performs slightly better than Option 2A in terms of total junction delay. However, extensive blocking back on the internal carriageway sections made this option unacceptable in operational terms.
- 2.5.8 With the exception of the 'Do-nothing' scenario, Option 3A performed worst in the AM peak. Although it would operate well in the PM peak, the major capacity issues identified in the AM peak renders this option unviable.
- 2.5.9 Option 3B, while performing just over capacity in both peaks, generated the lowest level of internal queuing and provided the optimum compromise between capacity and operational performance.
- 2.5.10 During the design process a number of land constraints were identified, which restricted the development of a comprehensive solution in the short term, but which could be added later with minimum abortive works. Key areas where third party land acquisition would potentially add value to the design and capacity and which will be progressed as the wider package including Stubbington Bypass comes forward include:
- Warsash Road entry – additional flaring on the approach to provide a third entry lane would reduce queuing on this approach in the AM peak.
 - Cartwright Drive exit – a two lane exit merging into a single lane would reduce queuing on the internal circulatory link in the AM peak.



- A27 Southampton Road westbound exit – improvements to the filling station entrance would assist in removing any stationary queuing from this exit of the roundabout.

2.5.11 The outcomes of the 2013 feasibility study recommended that Option 3B was progressed given the balance of operational performance and capacity improvements compared to the other options subject to the following considerations:

- Option 3B required the closure of the St Margaret's Lane entry to the roundabout. It was recommended that further work is undertaken to examine the impact on the consequences of closing the St Margaret's Lane entry to the roundabout on the surrounding road network.
- No pedestrian or cycle facilities were incorporated into any of the options. It was recommended that the design should be developed to consider the requirements of vulnerable road users.
- It was recommended that consideration is given to securing some parcels of third party land, as listed above, to achieve an optimum design solution.
- The junction sits within the A27 corridor study area which is considering highway link improvements. It was recommended that the Option 3B should be fed into that study and included in any wider network modelling work.

2.5.12 The findings of the initial 2013 Feasibility Study were updated following a review of subsequent feasibility design iterations and the above recommendations, including new Options 2C-2E.

2.5.13 Option 2C updated Option 2B to include controlled pedestrian phases across the A27 north arm of the roundabout. The St Margaret's lane entry was maintained as a give way and assessments demonstrated excessive internal queuing.

2.5.14 Option 2D assessed the impact of closing the St Margaret's Lane entry on to the roundabout. However, the closure of this link presented a major risk to overall scheme delivery and it was agreed that further options were considered.

2.5.15 Option 2E sought to resolve the previous internal queuing problems of 2C specifically on the northern internal section opposing the A27. Option 2E included a 2 lane exit into Cartwright Drive to address the internal queuing mentioned above which occurred during the AM peak period. This required the northern circulatory section to be widened from 2 to 3 lanes. Lanes 1 and 2 of this circulatory section fed into the 2 lane exit into Cartwright Drive. Toucan crossings were also included across the Cartwright Drive arm to meet the aspirations of an off road shared cycle footway on the east side of the A27.

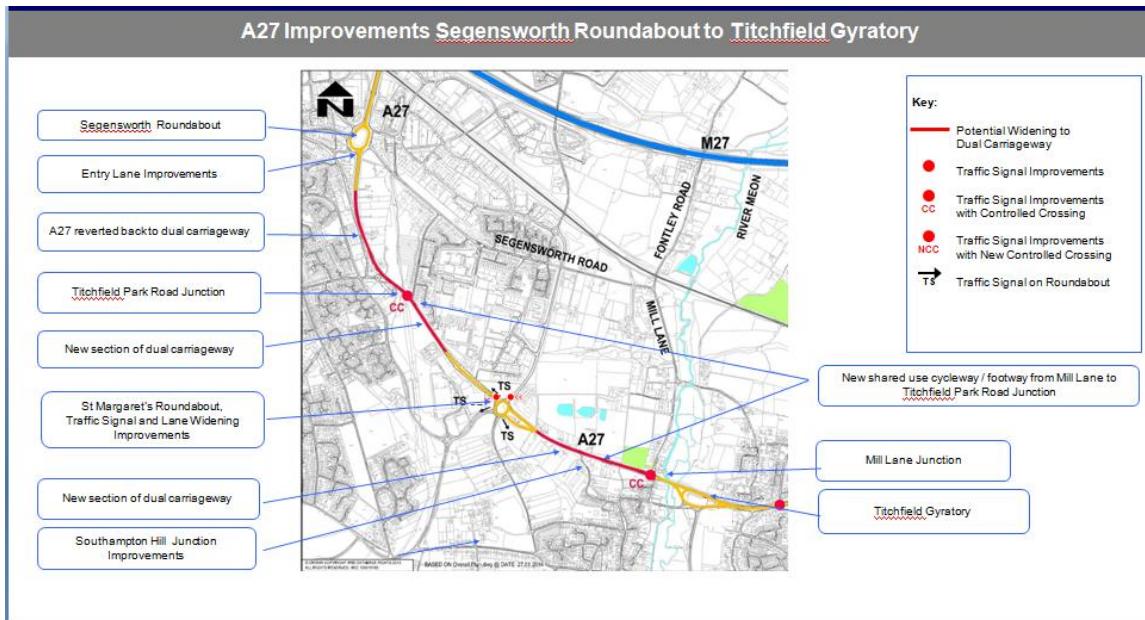
2.5.16 Options 2Ea-2Ec refined option 2E improving signal timings and remodelling the 2012 widening of Warsash Road. The updated feasibility study concluded that full signalisation of St Margaret's Roundabout, including controlled pedestrian and cycle crossing facilities, could accommodate the anticipated level of internal queuing within the physical layout of the junction.

2.5.17 These recommendations for St Margaret's roundabout were taken forward into the detailed design of the 'Preferred Option' and, as set out below, measures have been included to address cyclists and pedestrians and some third party land take has been included to improve the northbound exit onto Cartwright Drive. However, the closure of St Margaret's Road and further widening on Warsash Road has been excluded at this stage, given the level of third party land take required, and will be considered at some point in the future.

2.6 The Scheme

2.6.1 The overarching scheme is split into three separate schemes as defined below and identified on the subsequent plan:

- A27 Segensworth Roundabout to St Margaret's Roundabout
- St Margaret's Roundabout
- A27 St Margaret's Roundabout to Titchfield Gyratory



2.6.2 The improvements cover a distance of approximately 3 km along the A27 in total. Sections of the A27 where it is upgraded to dual carriageway are highlighted in red on the plan. The feasibility design consists of lane widths of 3.65 metres for lane 1 and 3.2 metres for lane 2 with a 1.2 metres hardened central reserve. A shared use cycleway / footway up to 3 metres wide will be provided on the northern verge of the A27 from Titchfield Park Road to Mill Lane. The construction details will be reviewed during the detail design.

A27 Segensworth Roundabout to St Margaret's Roundabout

2.6.3 The A27 route between Segensworth Roundabout and St Margaret's Roundabout is surrounded by a predominantly rural backdrop with some retail facilities at the western end

and industrial development at its most eastward end. There is some residential development lying alongside the road and these properties tend to be well set back.

2.6.4 The details of this element of the scheme are as follows:

- **Junction Approaches** – The proposed scheme would add a 70m third approach lane to the westbound A27 Southampton Road arm to increase capacity and operational efficiency.
- **Highway** – The scheme would dual an existing 1km section of eastbound and westbound A27 Southampton Road single carriageway through local widening and highway realignment. The proposed works are to widen the A27 westbound entry onto Segensworth roundabout from 2 lanes to 3 lanes. This will improve the traffic flow into the roundabout. A section of the A27 from Segensworth Roundabout to Titchfield Park Road will be reverted back to dual carriageway. A new section of dual carriageway will be constructed between Titchfield Park Road and St Margaret's Roundabout. The scheme would ensure the entire section of the A27 Southampton Road between Segensworth Roundabout and St Margaret's Roundabout is upgraded to dual carriageway, increasing capacity, operational efficiency and allowing more convenient access to local retail parks, businesses and housing.
- **Pedestrians/Cyclists** – The scheme would also improve the environment for vulnerable road users with a new 350m east-west shared use footway/cycleway on the northern side of the A27 and immediately to the east of Titchfield Park Road. This route will link with the existing Toucan Crossing on the A27 at Titchfield Park Road and extend the existing traffic and on-road cycle routes leading west along Southampton Road. The route will also link up with the shared use footway/cycleway measures proposed at the principal St Margaret's roundabout scheme, as outlined below.

A27 St Margaret's Roundabout to Titchfield Gyratory

2.6.5 The A27 route between St Margaret's Roundabout and Titchfield Gyratory is surrounded by a predominantly rural backdrop with residential properties between St Margaret's Roundabout and Southampton Hill.

2.6.6 The details of this element of the scheme are as follows:

- **Highway** – The existing A27 has two lanes going westbound and one lane going eastbound between St Margaret's Roundabout and Mill Lane. The scheme will provide two lanes in each direction. The scheme would dual an existing 650m section of eastbound and westbound A27 Southampton Road single carriageway through local widening and highway realignment. The scheme would ensure the entire section of the A27 Southampton Road between St Margaret's Roundabout and Titchfield Gyratory is upgraded to dual carriageway, increasing capacity, operational efficiency and allowing more convenient access to local retail parks, businesses and housing. The Southampton Hill junction will be modified. The existing right hand turning lane for eastbound traffic turning right into Southampton Hill will be retained. Traffic from Southampton Hill will be restricted to only turning left and



westwards towards St Margaret's Roundabout. The section of the A27 from Southampton Road to Mill Lane is mainly rural. Titchfield Primary is located beside the verge of the westbound carriageway and Titchfield Recreational Ground is beside the verge of the eastbound carriageway on Mill Lane.

- **Pedestrians/Cyclists** – A footway /cycleway up to 3 metres wide will be provided on the northern verge of the A27 from St Margaret's Roundabout to Mill Lane. The scheme would provide a new 700m east-west shared use footway/cycleway on the northern side of the A27 to extend the proposed facilities at St Margaret's Roundabout east towards Mill Lane. This link, combined with the footway/cycleway facilities discussed above, would secure a 2km traffic free footway/cycleway linking with existing facilities at Cartwright Drive, Titchfield Park Road and Southampton Road. There is further potential for future schemes at and to the east of Titchfield Gyratory to create further links and a continuous east-west route up to Fareham town centre.
- **Public Transport** – The existing eastbound bus layby, opposite Titchfield Primary School, will be relocated 300m to the east at Mill Lane. While this measure facilitates the widening of the A27, it will also move the bus stop location closer to the controlled pedestrian crossing facilities and the residential areas in and around Mill Lane and Mill Street.

St Margaret's Roundabout

- 2.6.6 Set within the context of the overarching scheme St Margaret's roundabout was identified as a first phase which could be readily delivered in 2015/16 as a primary focus for the first round of local growth funding. St Margaret's Roundabout, is located at the intersection of A27 Southampton Road/St Margaret's Lane and Cartwright Drive, between Fareham and the M27, The scheme would be complemented by further A27 capacity improvements from Segensworth Roundabout, to the west, up to Titchfield Gyratory to the east.
- 2.6.7 The details of this element of the scheme are as follows:
- **Junction Layout** – The proposed scheme would modify the layout involving signalising four of the five junction approaches excluding St Margaret's Lane, and would signalise the circulatory carriageway and introduce an additional circulatory lane to increase capacity and operational efficiency.
 - **Junction Approaches** – In addition to signalising the junction, the eastbound and westbound A27 Southampton arms will be increased from two to three lane approaches for additional capacity. The southbound Cartwright Drive will also be widened to provide additional capacity for vehicles. Warsash Road has recently been flared to a two lane approach in advance of the main scheme coming forward.
 - **Junction Exits** - The northbound Cartwright Drive exit will be widened to a two lane exit merging to one lane. A new dedicated right turn lane will also be added, leading to the Holiday Inn Hotel, to prevent turning traffic blocking the principal exit flow. The A27 Southampton Road eastbound and westbound exits will also be widened to accommodate the increased circulatory carriageway width.



- **Pedestrians** – The scheme would improve the environment for vulnerable road users with the introduction of an east-west shared use footway/cycleway and Toucan Crossing. The scheme would significantly improve the pedestrian environment from the current situation with the proposed new signal operation incorporating controlled crossings on the western A27 Southampton Road and northern Cartwright Drive arms. Uncontrolled crossings with tactile surfacing will also be provided on the southern St Margaret's Lane and Warsash Road arms. Footways will also be upgraded on both the southern and northern side of the junction and its approaches to improve east-west movement.
- **Cyclists** – A 3.5m wide traffic free shared use footway/cycleway will be provided on the northern side of the A27 Southampton Road to the east and west of St Margaret's Roundabout to connect with the complementary proposals up to Segensworth Roundabout and Titchfield Gyratory (discussed below). A footway/cycleway Toucan crossing would be incorporated into the new signal arrangement on Cartwright Drive, connecting with a recently implemented north-south traffic free route.
- **Farm Access** – The scheme would improve two farm access points leading directly from the westbound A27 approach and northbound Cartwright drive exit. This will include the addition of a slip road, to allow slow moving and oversized farm traffic to safely join the A27, and an extended gated farm access off Cartwright Drive, to allow a vehicle and trailer/horsebox to clear the main carriageway and adjacent cycleway. These measures have been developed in consultation with the local farmer requiring access.

Maintenance – The scheme would provide two maintenance vehicle bays, incorporated within the junction on the eastern and western A27 traffic islands, allowing more convenient and safer access for highway maintenance.

2.7 Policy Context

2.7.1 This scheme is entirely consistent with local and sub-regional policy, as set out below.

Local Economic/Housing Growth

2.7.2 **The scheme responds very well to both existing and predicted transport problems** that already do and will continue to constrain planned economic and housing growth in Fareham. Congestion not only constrains and discourages the growth in town centres but also frustrates growth in the surrounding areas. This issue is much more pronounced in central Fareham than elsewhere in the county due to its location at the top of the densely populated Gosport Peninsula and limited road capacity, all of which passes through Fareham via the A27. These constraints cause significant peak period congestion and frustrate existing local and wider transport movements. With two strategic development sites in the local area, as well as other local allocated sites coming forward, anticipated traffic growth will only compound a situation that is already serving as a barrier to investment in the area.



- 2.7.3 Relieving pressure at key bottlenecks and along the A27 corridor, as the second phase in a wider investment programme to assist east-west movements, will help facilitate the redevelopment of sites in the Fareham District and town centre, all of which will benefit from transport improvements that enable more efficient use of existing networks.
- 2.7.4 Improved capacity on the A27 corridor would also serve as enabling infrastructure to support changes in traffic flow resulting from other anticipated schemes coming forward through a Stubbington Bypass, all movement M27 Junction 10 and BRT Eclipse route extensions.
- 2.7.5 **The scheme also responds very well in terms of safeguarding existing employment areas** including the adjacent Segensworth South Industrial Park, Matrix Park and Kites Croft Business Park employment areas immediately to the north and south of the scheme. Furthermore, Fareham town centre, like many others, shows signs of decline. Improvements to the A27 corridor would, not only reduce congestion and delays, but improve interconnectivity with the wider network. This opportunity would encourage employers and businesses to remain in the area to safeguard existing employment, counteract decline and attract new employers.
- 2.7.6 **The scheme responds very well in supporting housing growth** including the proposed new 6,000 home Welborne community, the Solent Enterprise Zone on the Gosport Peninsula and other local housing allocations. The scheme will improve access to these sites, provide additional capacity for future traffic growth and enable extension to the BRT Eclipse service.

Solent LEP Economic Growth Agenda

- 2.7.7 The Solent LEP has set the following strategic objectives: to support enterprise; have a strong focus upon infrastructure including transport; establishing inward investment; skills for growth; and developing strategic sectors. The proposed improvements support these objectives by investing in transport infrastructure to provide an environment which encourages growth and investment.
- 2.7.8 The scheme will contribute to the early delivery of the Solent LEP Growth Agenda. The improvements will improve a key component of the transport network required to connect people to businesses in the region, facilitating sustainable economic growth through the removal of transport barriers, which currently frustrate investment and business retention in the area.
- 2.7.9 Improving accessibility in this area will not only deliver direct economic benefits to the borough and town centre, but also attract new investment and retain existing businesses within the wider Fareham-Gosport peninsula, including the Solent Enterprise Zone as a key component of the LEPs objective to create a growth hub.

- 2.7.10 The scheme will provide a strong positive impact on the transport growth associated with the housing and employment development at Welborne, thus ensuring reliable connections throughout the borough.
- 2.7.11 To have maximum beneficial effect on business confidence and economic growth, it is vital that this investment occurs at this juncture, to ensure reliable and reduced journey times in the area, which is vital for the Fareham-Gosport peninsula, including strategic development sites.
- 2.7.12 By providing confidence through reliable journey times, private sector investment in central urban and surrounding areas will be encouraged. The scheme will help to cater for predicted transport growth associated with the development of planned new housing and employment at Welborne.

Local Transport Plan 3 (LTP3)

- 2.7.13 **LTP3** objectives are focused around a vision for: "A resilient, cost effective, fully-integrated sub-regional transport network, enabling economic growth whilst protecting and enhancing health, quality of life and environment" Ensuring the timely delivery of transport infrastructure to support housing, employment growth and regeneration opportunities. The widening of travel choice to offer people reasonable alternatives to the private car for everyday journeys is a critical objective which is met by the scheme which will help to facilitate re-development and provides for all modes of transport. The managing of the existing transport network to ensure that journey time reliability is maintained and improved to help support economic competitiveness, regeneration, and growth is another fundamental theme which is met through the provision of the scheme, which will enable traffic to be better managed and provide journey time consistency. Twelve out of the 14 LTP3 Policies are achieved through implementation of the scheme, as shown below.

Outcomes that the Joint Strategy for South Hampshire is seeking to achieve

Outcome	Policies that contribute
Reduced dependence on the private car through an increased number of people choosing 'active travel' modes of walking and cycling	H, I, J, K, L
Improved awareness of the different travel options available to people for their journeys, enabling informed choices about whether people travel, and how	H, I, J, L
Improved journey time reliability for all modes	A, B, C, D, F, I
Improved road safety within the sub-region	D, G

Outcome	Policies that contribute
Improved accessibility within and beyond the sub-region	B, I, K, L, M, N
Improved air quality and environment, and reduced greenhouse gas emissions	E, F, H, K
Promoting a higher quality of life	C, D, E, G, H, I, L, M

Transport for South Hampshire (TfSH) Transport Delivery Plan (2012-2026)

- 2.7.14 **The TfSH Transport Delivery Plan (2012 – 2026)** provides a clear statement of the transport scheme priorities to be progressed by TfSH and its member authorities and provides a robust starting point from which to take forward scheme development and funding bid preparation. It also provides partners with a clear view of TfSH scheme priorities. The TDP is a strategic delivery plan and as such includes improvements to the A27 Corridor. The TDP represents the TfSH position at early 2013 on forecast growth.
- 2.7.15 The TDP contains 5 key objectives, 4 of which are met by the scheme and wider schemes, which will: enable higher levels of economic growth by improving local employment opportunities; improve sustainable access linking people to jobs and key facilities; reduce emissions by reducing the need to travel by car; and will reduce unemployment in areas of high deprivation through improved sustainable access to employment centres. The TDP evidences the statement that **there is a need for transport intervention to support sustainable economic growth and states that in the absence of transport intervention, transport will act as a constraint on sustainable economic growth.** Bus Rapid Transit proposals; interchange improvements to Fareham station; and the A27 Corridor capacity improvements and widening between Fareham station and Segensworth Roundabout are included along with strategic cases to justify the delivery of each prior to 2026. Overall there is a high degree of fit between the scheme and the TDP.

Fareham Borough Local Plan

- 2.7.16 The scheme meets Fareham Borough Local Plan Objectives. In particular, the scheme will support Policy CS8 ‘Fareham Town Centre Strategic Development Location’ and CS12 ‘Daedalus Airfield Development Allocation’ through improved east-west transport links.
- 2.7.17 Policy T2 ‘Improvements to the Strategic Network’, supports improvements on the A27. The project will improve the flow of traffic onto and along the A27, reducing congestion within Fareham borough, the town centre and on the strategic road network.

Sustainable Access

- 2.7.18 The scheme would improve sustainable access along the A27 corridor and on to the Gosport Peninsula. Capacity improvements would facilitate improvements to public transport journey time and provide the opportunity for enhancements to the BRT eclipse service between Fareham and Whiteley.
- 2.7.19 The scheme would improve the environment and interconnectivity for pedestrians and cyclists through the provision of a 1.8 mile east-west shared use footway and traffic free cycleway between Segensworth Roundabout and Mill Lane. The introduction of a controlled Toucan crossing on Cartwright Drive, a controlled pedestrian crossing on the western A27 arm and other pedestrian measures at St Margaret's Roundabout would reduce severance and improve safety for non-car users.

Wider Implications

- 2.7.20 The A27 improvements are part of a much wider programme of investment which seeks to improve the management of traffic along the two critical east-west arteries across southern Hampshire namely the M27 and the A27 and a further linked investment programme covering access to the Gosport peninsula and particularly the Solent Enterprise Zone and planned new development at Welborne.
- 2.7.21 Improvements along the A27 comprise the following:
- Improvements to the Station roundabout / interchange improvements and Gudge Heath Lane junction scheme, which are already funded and programmed for delivery in 2016/17. These improvements will unlock congestion west of Fareham town centre, enabling improved access for all to the station along with reduced and more reliable journey times for traffic on leaving the town centre. In isolation the scheme will provide congestion relief at this key bottleneck, in the town centre, along with improved multi-modal enhanced interchange facilities, which along with the A27 route strategy as a whole will help unlock the real benefits for the area.
 - Improvements to St Margaret's roundabout which will provide capacity benefits for all road users, particularly during peak periods and including enhanced provision for pedestrians and cyclists.
 - Improvements to the A27 between Segensworth and Titchfield Gyratory which will involve dualling single carriageway sections and improvements at junctions along with enhanced provision for pedestrians and cyclists. The improvements are inherently linked to the wider strategy to improve access to the Gosport peninsula from the west and will assist north south movements on and off the Peninsula for longer distance movements. Elements of this part of the package form part of a Local Growth Deal Round 2 bid.

2.8 Inter-Dependencies

- 2.8.1 Improvements to the A27 are critical to the successful delivery of the overall programme as the operational effectiveness of the east west link will inform how successful other overall package components can be. There is no likelihood of other sources of funding being identified in the foreseeable future and at the necessary scale to deliver the scheme. Without the overall scheme development, investment in the area will continue to be discouraged due to inaccessibility.
- 2.8.2 Stubbington Bypass provides a new route from the peninsula to the west towards the M27 Junction 9. In order to maximise the advantage of the new bypass capacity, improvements will be essential along Titchfield Road heading north towards the Titchfield gyratory. Single carriageway sections of the A27 will require upgrading to dual carriageway to provide a direct connection with the strategic motorway network at Segensworth and M27 Junction 9. Improvements to St Margaret's roundabout are a critical first step in this overall package of work.
- 2.8.3 An overarching package is key to improving accessibility on the Peninsula and to underpin the transport objectives of the Strategic Economic Plan through the removal of critical congestion hotspots on strategic routes, town centres and employment areas and in order to encourage investment into the area not least at planned strategic sites.

2.9 Internal and External Drivers of Change

- 2.9.1 The commencement of development at the Solent Enterprise Zone and planned forthcoming new development at Welborne in North Fareham, have provided external drivers relating to the need for and timing of mitigation to improve accessibility on the Fareham and Gosport peninsula in order to help maximise opportunity and investment in relation to both of these strategic sites. The need to deliver the growth agenda has risen in profile over recent years and the need for investment in infrastructure to facilitate this is now critical.

2.10 Partnership Bodies and Stakeholder Working

- 2.10.1 The Business Community and Borough Councils are key stakeholders who are fully supportive of the proposed improvements as set out below: Segensworth Business Forum, representing the interests of businesses on the Segensworth Industrial Estates, fully supports HCC's proposed programme of transport improvements to improve access to Fareham and Gosport, with particular emphasis on the A27 between M27 Junction 9 and St Margaret's roundabout.
- 2.10.2 Gosport Borough Council is fully supportive of the package of improvements proposed for the A27, stating '*Your proposals for complimentary improvements to the Titchfield Gyratory and the A27 to Segensworth, including improvements to the St Margaret's roundabout and dualling of single carriageway sections, are also welcomed. They will improve western*

access, particularly to employment in Segensworth and Whiteley, and to the motorway (M27 junction 9).'

- 2.10.3 Fareham Borough Council are also fully supportive of improvements to the transport infrastructure improvements stating '*Fareham Borough Council supports the comprehensive programme approach adopted by Hampshire County Council in developing proposals for four major highway improvement schemes in the Borough, in addition to supporting delivery of the individual schemes in the County's programme.*'
- 2.10.4 Caroline Dinenage, the Member of Parliament for Gosport, Stubbington, Lee On Solent and Hill Head, states: '*I firmly believe these investments would act as a catalyst for economic growth that would have far-reaching benefits for both the local area and the wider region.*'
- 2.10.5 There have been two rounds of public consultation which have gauged a raft of public support for both the wider improvements for the A27 and also the more focused improvements at St Margaret's roundabout. The second extensive public consultation exercise was undertaken, between 9 June and 4 August in 2014, to assess the level of support for the package of A27 transport improvements. In terms of the overall approach, 78% of respondents supported the measures proposed to improve access to Fareham and Gosport. With regard to the scheme 87% of respondents supported the proposed improvements to St Margaret's roundabout and 88% supported the dualling of the A27 between Segensworth Roundabout and Titchfield Gyratory, representing a significant level of public support.

3 Economic Case

3.1 Introduction

3.1.1 This Chapter presents the Economic Case for the A27 Segensworth to Titchfield Gyrotary scheme and provides an assessment of the various impacts of the scheme and value for money. The analysis has been undertaken in accordance with the DfT Transport Appraisal Guidance (TAG), adopting a proportionate approach in line with the scale of the scheme.

3.2 Summary

3.2.1 As defined by the DfT's Value for money Assessment, our economic assessment shows that in isolation improvements at St Margaret's roundabout have a relatively low cost benefit ratio (BCR) of 0.09, and a cost benefit ratio of 0.55 if assessed in combination with the wider improvements for the A27 corridor. However, the scheme needs to be considered within the context of its enabling role for the wider package of measures which in combination improve access to the peninsula and will all help to facilitate significant planned new development at strategic sites. Interdependent schemes, including the Stubbington By-pass, are reliant on the implementation of improvements at St Margaret's and associated dualling of the A27 to enable scheme specific benefits to be released. The A27 improvements need to be undertaken as a first step providing a complementary package of measures, which will help as part of the overarching package.

3.2.2 The scheme does offer the following small levels of benefit:

- Reduced journey times through this section by up to 61 seconds per vehicle for car and bus users;
- Improved safety for all road users through the junction layout improvements and proposed A27 dualling;
- Small positive benefits in relation to air quality by smoothing traffic flow at the junctions
- Improved journey quality and ambience, particularly for non-motorised users, through investment in the urban realm which is consistent with nearby improvements that Fareham BC have already made in that area

3.3 Modelling Approach and Assumptions

- 3.3.1 Modelling for A27 scheme was undertaken by the Sub Regional Transport Model (SRTM) developed for Transport for South Hampshire now Solent Transport in 2010. Forecast years were developed for 2019 and 2036 in order to provide the benefit profile results required for cost benefit appraisal.
- 3.3.2 The SRTM forecasts weekday transport movements, assessing morning, inter-peak and evening peak conditions and applying changes to journey mode choice and trip distribution based on changes in relative travel costs. The model has a Base year of 2010 with forecasts years possible for 2014/19/26/31 and 2036.

3.3.3 Solent Transport's SRTM has been used to analyse the benefits of the A27 improvement scheme in advance of the additional traffic which would ultimately use the road following the construction of the Stubbington Bypass and also the planned new development at the Strategic sites, hence benefits are limited to the evaluation of the first phase of the overarching package and should be viewed in isolation from the added value which would be accrued from the additional works. .

Do Minimum

3.3.4 The starting point for all of the model runs was the development of an appropriate Do Minimum (DM) scenario against which the scheme proposals forming various component of the overarching package (Do Something scenarios) would be compared. Included within the Do Minimum model run are the known significant committed highway and PT schemes in the full SRTM model area and more locally the following schemes:

- Station roundabout
- Gudge Heath Lane/Redlands Lane/A27 Junction
- Newgate Lane North

3.3.5 The improvements to the A27 junction with Gudge Heath Lane have been developed by HCC and include an additional westbound lane on the approach from the Station roundabout. The signal timings at this junction have been optimised within the SRTM traffic model. The optimisation reduces delay at the junction as a whole but without manual intervention does not include for local traffic management strategies (e.g. restricting green time on side arms to reduce rat-running).

3.3.6 At Station roundabout, the improvements include an additional westbound lane on the A27 Western Way (increasing the number of general traffic lanes from 1 to 2) and narrowing of the exit from two to one lane from Station roundabout to Western Way eastbound.

3.3.7 Saturation flows on the A27 were reviewed in the DM to ensure that these represented the current situation.

3.3.8 For the DM, a full land use / economic model (LEIM) run was undertaken from 2019 to 2036. This provided the land use to use in the Do Something scenarios to ensure valid comparative cost benefit (TUBA) exercises could be run.

Do Something

3.3.9 In remaining consistent with the Strategic Case the dualling of the A27 between Segensworth Roundabout and Titchfield gyratory have been assessed, alongside the Do Something (DS) assessment for the St Margaret's roundabout improvements. Two Do Something tests were undertaken; including:

- DS1a = St Margaret's roundabout improvements

- DS1b = DS2 plus A27 dualling between St Margaret's roundabout and Segensworth roundabout
- 3.3.10 All scheme details were taken from diagrams and specific traffic signal modelling software (TRANSYT/LINSIG) outputs provided by HCC. However, the signal timings on St Margaret's roundabout were further refined for both DS1a and DS1b due to the redistribution of traffic within the SRTM runs.
- 3.3.11 For DS1a, the changes to St Margaret's roundabout include:
- All arms except St Margaret's Lane signalised
 - Capacity increases on both of the A27 approaches, from 2 lanes to 3
 - Capacity increases on the circulating carriageway to 3 lanes
 - Increasing the exit to Cartwright Drive from 1 to 2 lanes with a downstream merge to 1 lane
- 3.3.12 The DS1b scheme consists of dualling all remaining sections of the A27 between Titchfield Gyratory and St Margaret's roundabout and dualling all remaining sections of the A27 in between St Margaret's roundabout and Segensworth roundabout. The original designs indicated that the speed limit on the A27 would be 30mph; however following discussions with HCC, this was amended back to 40mph. A 3 lane approach was also modelled on the A27 towards Segensworth roundabout.
- 3.3.13 All DS tests were run for model years 2019 and 2036, using the land use from the DM, but run through the demand model to ensure any mode shift was captured.

Appraisal assumptions

- 3.3.14 Standard input (scheme file) assumptions were used for the application of TUBA to assess the impact of demand and cost changes in matrices produced by SRTM. TUBA version 1.9.5 was used with a standard (TAG recommended) set of discount rates, value of time inflators etc. All costs and benefits are reported in 2010 prices and values with scheme construction assumed to be in 2016, opening in 2017 and evaluation period running for the 60 years 2015-2074. A breakdown of scheme costs and the application of optimism bias is discussed in more detail in Chapter 4.

3.4 Economic Impacts – DS1a St Margaret's Roundabout

- 3.4.1 A cost benefit analysis of the scheme has been undertaken in accordance with WebTAG guidance using the SRTM.
- 3.4.2 The latest economic analyses for the St Margaret's roundabout improvements (DS1a), using the latest version of TUBA to assess the scheme, are summarised below:

BCR	NPV	PVC	PVB
0.09	-£3.7m	£4.06m	£0.35m

- 3.4.3 This scheme has a BCR of 0.09, which shows that in isolation this improvement has a relatively low benefit to cost ratio. However, the scheme should be considered within the context of its enabling role for the wider package of measures which in combination improve access to the peninsula and will all help to facilitate significant planned new development at strategic sites. The part it plays in the overarching business case and strategy needs to be considered
- 3.4.4 The total benefits of the scheme are generated for both business and non-business users. Business user benefits total £0.86m and there are some benefits to non-business commuters totalling £0.84m. However, there is an overall dis-benefits to all non-business users amounting to -£1.01m given additional delay introduced during the inter-peak periods.
- 3.4.5 The majority of benefits from the scheme accrue from journey time savings, which are felt by both private road users and public transport passengers. The provision of two lanes and junction improvements will help reduce queuing and tailbacks along the A27 particularly during the traditional peak periods. The majority of dis-benefits accrue from increased vehicle operating costs and inter-peak delays to private road users resulting from the introduction of signals on an uncongested road network at these times.
- 3.4.6 Outputs from the SRTM forecast that the scheme will contribute to up to a 61 second reduction in journey time per vehicle for bus and car users for individual turning movements compared to the Do Minimum. The largest benefits are for those using the westbound A27 and northbound Warsash Road approaches in the AM peak, as shown in the following table. There are also some benefits for those approaching from the west and south, benefiting from improved junction capacity and operation at certain times of day.

	AM Time Difference (s)	IP Time Difference (s)	PM Time Difference (s)
A27 Southampton Road Eastbound	7	4	4
Cartwright Drive Southbound	15	13	4
A27 Southampton Road Westbound	-61	-14	-36
St Margaret's Lane Northbound	-21	-5	-5
Warsash Road Northbound	-58	6	10

- 3.4.7 Further network changes and changes in traffic flows relating to the development of Welborne and progression of Stubbington Bypass and Newgate Lane Improvements will further enhance these benefits as work on these related schemes progresses.

- 3.4.8 Improvements in travel time for non-business commuting users account for £0.96m of the total benefits, of which £0.72m is generated by private road users and £0.24m public transport users benefitting from improved BRT Eclipse service journey times. Business users accumulate a £0.33m benefit from travel time reductions. The greatest part of this benefit is to road vehicles, worth £0.19m, with public transport business passengers gaining £0.14m in benefits from journey time savings. Cost savings will be accrued over time if congestion is reduced, traffic is better managed across the network and traffic flows are more constant rather than stop /start conditions.
- 3.4.9 As stated previously, there will also be dis-benefits to other non-business users resulting from the introduction of incremental signal delay during the previously uncongested inter-peak. The dis-benefit is accrued from private vehicles with a value of -£1.08m.
- 3.4.10 The project will improve overall journey time reliability for all transport modes during the peak period including: general traffic will be assisted through the reduction of congestion and delays at the three interchanges and as the wider A27 Corridor Improvement strategy is progressed then further benefits and journey time reliability will be achieved; cyclists and pedestrians will also be assisted through the provision of dedicated facilities and crossing points helping to reduce delays currently experienced through conflict with other modes.

3.5 Economic Impacts – DS1b St Margaret’s Roundabout + A27 Dualling

An initial cost benefit analysis of the DS1b scheme has been undertaken in accordance with TAG guidance using the SRTM. The latest economic analyses, at 2010 prices, for the St Margaret’s roundabout and the A27 capacity improvements (DS1b), are:

BCR	NPV	PVC	PVB
0.55	-£5.9m	£13.0m	£7.1m

- 3.5.1 The addition of the dual A27 sections to the St Margaret’s scheme increases the BCR to 0.55, again this outcome should be considered within the context of the wider package of measures and the part each scheme plays in the overarching business case which will release the full benefits.
- 3.5.2 The total benefits of the scheme are generated for both business and non-business users. Business user benefits total £3.7m and benefits for non-business users totalling £2.45m.
- 3.5.3 The majority of benefits from the scheme accrue from journey time savings, which will be experienced by all users. The provision of dual lanes and junction improvements will help reduce queuing and tailbacks along the A27 particularly during the traditional peak periods. The majority of dis-benefits accrue from increased vehicle operating costs.
- 3.5.4 Outputs from the SRTM forecast that the scheme will contribute to up to a 47 second reduction in journey time per vehicle for bus and car users from the Do Minimum. The

largest benefits are for those using the westbound A27 and northbound Warsash Road approaches in the AM peak.

Regeneration

- 3.5.1 TAG Unit A2.2 states that '*if accessibility is not currently a constraint, or a scheme does provide a significant change in journey times, journey costs, or journey reliability for trips to, from, and/or within a regeneration area, then a statement to that effect should be provided in the Appraisal Specification Report.*'
- 3.5.2 The package of A27 improvements, aim to unlock the potential for regeneration on the Gosport Peninsula including the Solent Enterprise Zone. The A27 Improvements will provide enhanced accessibility for residents of the Gosport Peninsula and by removing blockages and junction constraints to improve journey time and reliability as a pre-cursor to the implementation of other measures in the overarching package including the implementation of a bypass for Stubbington. A full regeneration analysis is not required. However, given the potential of the scheme to complement the wider access improvements and act as a gateway to Fareham and the Enterprise Zone, the assessment shows that the impact on overall area wide regeneration will be **beneficial with the more substantial benefits disproportionately being accrued by the later stages of the overarching package**. An analysis of the development potential indirectly unlocked by the scheme, and the potential uplift to jobs and GVA resulting in the Fareham area is provided below.

Housing, Employment and GVA impacts

- 3.5.3 The employment, housing and GVA impacts have been assessed using anticipated growth projections from Fareham Borough Council (FBC) and Solent LEP updated Fareham and Gosport Business Case. As part of the wider package of A27 measures, the scheme is expected to contribute towards improved journey time reliability, reduced congestion and improved overall accessibility to the Gosport Peninsula in the peak periods. As a result, the scheme is expected to generate a range of direct and indirect employment opportunities across different sectors and unlock the potential for future housing delivery.
- 3.5.4 The scheme will indirectly facilitate a total of 5,735 jobs by 2041 are planned at Welborne including:
- 3,335 in employment (B Class) uses;
 - 500 in retail;
 - 750 in civic and residential care; and
 - 1,150 working at home.
- 3.5.5 The LEIM element of SRTM forecasts that Welborne could generate 1,480 jobs by 2026.



3.5.6 Furthermore, improved access to Fareham and Gosport would maximise development at the Solent Enterprise Zone (EZ) where 3,700 jobs could also be indirectly delivered. Up to 356 jobs could be generated in the rest of Fareham and 834 jobs in Gosport.

3.5.7 The total development floor space that will be indirectly facilitated by the scheme includes:

Type	Forecast Indirect Development
Welborne:	
Residential	6,000 units by 2041
Employment	105,000m ² GEA: <ul style="list-style-type: none">• 30,000m² B1a• 35,000m² B1c/B2• 40,000m² B8
Retail	7,000m ² Gross External Area
Other (education, civic, residential care)	14,000m ² Gross External Area
Solent EZ:	
Housing	350 units
Employment/Education/Retail	137,621m ² GEA

3.5.8 The scheme will also help facilitate 10,150 square metres of primarily B1 employment uses and 821 homes in and around Fareham town centre through enhanced accessibility for all modes and relief of congestion.

3.5.9 The **Direct Employment** outputs are taken to be those created during the construction process of the St Margaret's roundabout scheme and have been estimated at **58** temporary construction jobs based on 12.5 FTE/£million of the total scheme spend (**£4.6m**). A further **130** temporary construction jobs would therefore be created through the implementation of the wider A27 schemes (**£10.35m**). At this stage it is not possible to predict whether, if this level of employment is achieved, the jobs will be 'new' to Fareham's economy. A conservative view that only 20% will be net additional jobs estimates that a total of **37** new jobs will be directly generated by the A27 schemes. It should be noted that this is a notional estimate and it is anticipated that any net additionality could be as high as 40% as suggested by HM Treasury Guidance.

Wider Impacts

3.5.10 The 2011 Annual Business Survey, produced by the Office of National Statistics suggests that 37% of construction spend in the UK relates to the sector's GVA contribution nationally. The impact of the construction investment (**£4.6m** for St Margaret's Roundabout and a further

£10.35m for the wider A27 improvement) is therefore approximately **£5.5m** based on the ratio of total turnover to GVA. The 2011 Annual Business Survey also provides relevant benchmarks to calculate GVA per employee for different sectors of economic activity.

- 3.5.11 The Solent LEP calculate that the expected growth delivered by new development and job creation, particularly in advanced manufacturing, will generate a 3% increase in GVA equating to an additional contribution of £55.8m per annum and £52,000 GVA per capita.
- 3.5.12 As an initial phase of the wider overarching package of improvements for Fareham and Gosport the A27 improvements will trigger significant wider economic benefits for the surrounding area. The economic benefits will be widespread helping to accommodate transport movements from key strategic sites at Welborne and the Solent Enterprise Zone as well as the benefits for the town centre and centres of employment at key business parks at Segensworth and Whiteley. The reduction of congestion black spots and better management of traffic brought about by this scheme will help ensure this area remains an attractive proposition for businesses and will help to safeguard jobs. Without this investment, the current employment in the immediate area is more vulnerable as infrastructure is not improved and businesses may seek to site their offices elsewhere.

3.6 Environmental Impacts

- 3.6.1 The assessment of the environmental impacts of this scheme is based on TAG Unit A3 (Environmental Impact Appraisal).

Air Quality and Noise

- 3.6.2 There will be a modest increase in vehicle km as a result of the DS1a scheme (in the region of 3,304 additional vkm in Fareham borough over a 12hr period) and there may be changes in terms of traffic flow patterns and speed which could have a bearing on both noise and emissions. The DS1b schemes will generate an additional 8,360 vehicle kilometres travelled across Fareham Borough with additional traffic being attracted to the improved A27 corridor.
- 3.6.3 At St Margaret's roundabout a reduction in congestion in peak periods and stop/start conditions could result in changes to traffic flow and speed which could have a positive impact on both noise and emission levels. However, the increase in vehicle kilometres travelled could offset any benefit gained.
- 3.6.4 The SRTM has an inbuilt Emissions Assessment Tool (EAT) application, which provides outputs for carbon and other greenhouse gas emissions. The SRTM-EAT uses the same underlying methodology as used in the DEFRA Emissions Factor Toolkit. The results from EAT shows a minor increase in emissions as a result of the scheme, including a forecast increase

of 182kg of carbon per 12hr period across Fareham Borough in 2036. This equates to approximately **84** tonnes per annum¹.

- 3.6.5 Since November 2011, TAG guidance has measured greenhouse gas impacts in terms of tonnes of carbon dioxide equivalents, prior to this it was measured in tonnes of carbon equivalent. Therefore, in order to convert the SRTM-EAT outputs to the latest unit of measures it has been multiplied it by the conversion factor of 44/12 based on the relative molecular mass of carbon dioxide to carbon². This gives a forecast carbon increase of **308** tonnes of carbon dioxide equivalents per annum. Therefore we assess the overall impact of the scheme on air quality to be a **Slight Adverse**.
- 3.6.6 The EAT tool calculates that the additional travel demand, associated with the DS1b schemes, would generate an additional 346kg of carbon per 12 hr period across Fareham Borough equating to **158** tonnes per annum³. This gives a forecast carbon increase of **579** tonnes of carbon dioxide equivalents per annum. Therefore the assessment of the overall impact of the schemes on air quality is assessed as being **Slight Adverse**.
- 3.6.7 Alterations to the A27 St Margaret's junction and wider A27 Corridor and changes in traffic flows and speed could result in changes to road traffic noise levels in relation to adjacent properties.
- 3.6.8 DfT guidance (TAG Unit A3) recommends conducting a noise assessment if a road project either: alters the line or level of a carriageway; causes a change in traffic flow/speed; or where there are dwellings within one kilometre; a noise assessment must be carried out. Given that it is not clearly evident that the project will result in a change in road traffic noise level of 1db LA10, 18hr or more, we have assessed that the scheme will have a mostly **neutral impact** upon disturbance from noise, with slight dis-benefits likely to be offset by slight benefits.
- 3.6.9 As the scheme progresses a more detailed road traffic noise assessment will be undertaken to determine whether any properties would be eligible for the provision of noise mitigation measures under the Noise Insulation Regulations.

¹ Assuming a factor of 1.265 for the 12hr period between 1900 – 0700 based on variation in highway demand observed in the SRTM

³ Assuming a factor of 1.265 for the 12hr period between 1900 – 0700 based on variation in highway demand observed in the SRTM

Landscape, Townscape and Historic Resource

- 3.6.10 The scheme seeks to utilise existing highway land, with minimal 3rd party land take, to incorporate the proposed improvements. The overall impact on Landscape, Townscape and Historic Resource is assessed to be **neutral** with design generally in keeping with the existing form and slight or adverse impacts addressed by environmental mitigation measures.

Biodiversity and Water Environment

- 3.6.11 The overall impact on the natural environment is assessed to be **neutral** with any slight or adverse impacts overcome through mitigation measures.

Social and Distributional Impacts

- 3.6.12 An analysis of the Social and Distributional Impacts of the scheme has been undertaken following the principals laid out in TAG units A4.1 (Social Impact Appraisal) and A4.2 (Distributional Impact Appraisal).
- 3.6.13 In line with this guidance, an approach that is proportionate to the size of the investment and nature of the scheme has been taken.
- 3.6.14 The following table summarises the indicators included within the Social and Distributional Impacts analysis, and the analytical approach we have taken for this scheme. Blank cells indicate that no analysis is required by the guidance. Note that there is a screening stage for Distributional impacts to determine whether a detail appraisal is required. In several cases below only the screening stage has been undertaken as this has indicated that no further analysis is required.

Area	Proposed Social Assessment	Proposed Distributional Assessment
User Benefits		Qualitative Only. Scheme not linked to particular residential areas, therefore DI assessment not required.
Physical Activity	Analysed using HEAT.	
Noise		Screening stage only. Changes in traffic flows are not significant enough to require an assessment. Also no schools or other children's facilities which would require an assessment.
Air Quality		Screening stage only. Changes in traffic flows are not significant enough to require an assessment. Also no schools or other children's facilities which would require an assessment.
Accidents	Quantitative assessment using COBALT drawing on SRTM output and STATS19 data	Detailed analysis not required as no significant changes in traffic flows.
Security	Qualitative assessment only using	Screening stage only.

Area	Proposed Social Assessment	Proposed Distributional Assessment
	criteria set out Table 4.1 of TAG unit A4.1.	
Severance	Qualitative assessment only.	Strictly a DI analysis is required as crossing etc. improved. But limited local catchment affected no amenities important to vulnerable groups in area.
Journey Quality	Qualitative assessment only.	
Option and Non-Use Values	No impacts. Scheme does not “substantially change the availability of transport services within the study area.”	
Accessibility	Undertaken as a Distributional Impact.	No case for strategic accessibility assessment or accessibility audit as scheme will not substantially affect accessibility.
Personal Affordability	Undertaken as a Distributional Impact.	No impact. Scheme will not affect affordability.

3.6.15 The following sections describe the approach and results of these analyses for each indicator.

User Benefits

- 3.6.16 The User Benefits are calculated as part of the Economic Impacts and the results are described in that section of the document.
- 3.6.17 A Distributional Impacts analysis is required where the impacts of a scheme can be ascribed to specific residential areas, as an analysis against the income profile of those areas can be made. However, as the A27 is a key route serving the Gosport Peninsula and wider south Hampshire area, its catchment cannot be readily identified and Unit A4.2 of TAG therefore recommends a more qualitative approach.
- 3.6.18 While it is not possible to link those impacted by the scheme to specific residential areas, some indication of the income profile of those benefitting from the scheme can be inferred from the modes of transport affected. The Users who will experience a change in the generalised cost of travel due to the scheme are primarily those making walk, cycle and bus trips for access. These users will experience some reductions in actual journey times and perceived journey and wait times arising from the improved quality of environment and overall journey reliability resulting from the scheme.
- 3.6.19 In general, the users of these modes – bus in particular – have lower incomes than car users and rail users who use car as an access mode. It therefore seems unlikely that the scheme will disproportionately dis-benefit those on lower incomes: on the contrary, the benefits are most likely to be weighted towards these groups.

Physical Activity

- 3.6.20 The SRTM incorporates the World Health Organisation's Health Economic Assessment Tool (HEAT). HEAT calculates the number of preventable deaths per person as a result of changes in walking and cycling. It includes using the DfT's statistical value of lives and mortality rates and therefore giving values to the changes in mortality. In addition to preventable deaths the HEAT tool also calculates the benefits of reduced absenteeism as a result of extra active mode trips (over 30 minutes in duration). The mode shift to active modes given the improved environment for pedestrians and cyclists will provide beneficial outcomes. However, HEAT results suggest extremely marginal change in mortality and absenteeism benefits as a result of the scheme.
- 3.6.21 Nevertheless, the SRTM HEAT calculations cover the whole of Hampshire, and not just Fareham. Therefore, benefits of the scheme may be diluted by the scale of the area considered compared to the scheme impacts. Given the anticipated benefits to active modes, we assess the impact of the scheme on physical activity to be **Slight Beneficial**.

Noise

- 3.6.22 The screening criteria require that a Noise DI distributional assessment impact is undertaken if the intervention causes:
- Significant changes in traffic flow, speed or %HDV content ($>+25\%$ or $<-20\%$)
 - A change in the separation between people and traffic
 - There are schools or other places where children spend significant time outside in the vicinity.
- 3.6.23 None of the above applies for this scheme. Therefore no DI assessment has been made, and as the changes in traffic flows resulting from the scheme are minimal, the DI is assessed as **Neutral**.

Air Quality

- 3.6.24 The same screening criteria used for Noise also apply to Air Quality, so on the same basis the SI assessment for this indicator is **Neutral**, and no DI analysis is required.

Accidents

- 3.6.25 An analysis of STAT19 data on the accidents at St Margaret's roundabout shows there have been 22 incidents recorded in the 5 years between September 2009 and August 2014 with 18 recorded as 'slight' and 4 recorded as 'serious'. No fatal accidents have been recorded.
- 3.6.26 The analysis shows that there is a relatively low accident rate at the junction with recorded causes typical of those associated with a busy roundabout. However, almost half of the accidents, including all 'serious', involved either cyclists or motorcyclists. The introduction of signals and cycle crossing facilities are expected to improve overall safety for all road users.

- 3.6.27 However, these benefits may be offset by the slight increase in vehicle kilometres the scheme is forecast to generate. Given less than 50 accidents occurred over the 5 year period, only a basic COBALT assessment (version 2013.02) has been undertaken to gauge the level of impact on accidents to support any qualitative statements. The assessment demonstrates that the improvements could save a total of 88 accidents over the 60 year assessment period, including 6 ‘serious’ and 104 ‘slight’, equating to approximately £4.05m of benefits at 2010 prices. The overall impact of the scheme on accident rates would therefore be **Slight Beneficial**.
- 3.6.28 Recent analysis for the A27 to the east and west of St Margaret’s roundabout also show a relatively low accident rate. Upgrading the entire route to dual carriageway would improve on the existing accident rate and the DS1b scheme is assessed to also have a **Slight Beneficial** impact on safety.

Security

- 3.6.29 The scheme objective is to generally improve capacity and operational effectiveness at St Margaret’s roundabout and along the A27 corridor. The scheme does not seek to significantly alter key security indicators other than formal surveillance through increased CCTV and improved street lighting to support signalising St Margaret’s roundabout.
- 3.6.30 Based on the above assessment, the overall SI assessment for Security is **Slight Beneficial**.

Severance

- 3.6.31 The scheme will upgrade the existing pedestrian footway along the northern side of the A27 to incorporate a shared pedestrian/cycle route on the approaches to St Margaret’s Roundabout and upgrade the existing controlled crossing on Cartwright Drive to a Toucan to reduce severance for cyclists and link with future schemes to create an east/west off traffic free cycle route. Key desire lines will also direct pedestrians and cyclists towards the more secure controlled crossing points with better lighting, safety and CCTV.
- 3.6.32 A new controlled pedestrian crossing will also be included across the western A27 arm of St Margaret’s roundabout reducing severance for north/south pedestrian movement.
- 3.6.33 The existing conditions represent moderate severance to pedestrian and cycling movement. An assessment of the change in severance of the proposed scheme demonstrates **slight** severance, given the increase in vehicle flows and lack of controlled crossings on the southern and eastern junction arms, and therefore represents a **slight beneficial impact** in accordance with Table 5.1 of TAG Unit A4.1.
- 3.6.34 The wider A27 will provide an upgraded shared use cycleway/footway between the Titchfield gyratory and Segensworth roundabout. The route will utilise the proposed Toucan crossing at St Margaret’s roundabout and the existing Toucan Crossing at Titchfield Park

Road to provide a continuous traffic free route. The scheme will also relocate an existing bus lay by closer to the pedestrian facilities at Mill Lane.

3.6.35 With the exception of new controlled pedestrian facilities at St Margaret's roundabout, the dualling of the A27 and resulting increase in traffic flows would not improve severance for north-south pedestrian movement and would potentially have a **moderate adverse impact**. However, the scheme would also have **Significant Benefits** removing severance for east-west cycling trips. The scheme would therefore represent an overall **slight beneficial impact** on severance.

Journey Quality

3.6.36 A qualitative assessment of journey quality considers the three key elements set out in Table 6.1 of TAG Unit A4.1:

- Traveller care: aspects such as cleanliness, level of facilities, information and the transport environment;
- Travellers' views: the view and pleasantness of the external surroundings in the duration of the journeys; and
- Traveller stress: frustration, fear of accidents and route uncertainty.

3.6.37 The principal aim of the improvements is to provide an improved highway solution to address congestion issues and pedestrian/cycle provision.

3.6.38 The improvements to **Traveller Care** will include a higher quality pedestrian and cycle environment. **Traveller's views** will be addressed through the creation of defined pedestrian desire lines. Overall **Traveller Stress** will be reduced with moderate journey time savings for vehicles during the peak periods, accident reduction and improved routing and crossing facilities for both cyclists and pedestrians. It is anticipated that the improvements will have a **slight beneficial** impact on overall journey quality.

Option and Non-Use Values

3.6.39 In line with the guidance given in TAG Unit A4.1 (Social Impacts), this scheme is judged to have a **Neutral** impact as it does not "substantially change the availability of transport services within the study area."

Accessibility

3.6.40 Two levels of Accessibility appraisal are set out in the TAG Guidance (A4.2). These are:

- A Strategic Accessibility Assessment
- An Accessibility Audit

3.6.41 These two methods of appraisal principally focus on public transport accessibility. While the scheme demonstrates some synergy with the assessment criteria, it primarily addresses

wider accessibility issues including pedestrian/cycling movement. The benefits of the scheme relating to these impacts are discussed in more detail in the preceding severance, security and journey quality. However, it is anticipated that the scheme will result in **slight beneficial impact** for non-car accessibility through improved crossing facilities, traffic free cycle routes and increased security.

Better Use of Transport Infrastructure

- 3.6.42 The improvements make better use of highway infrastructure through the enhancement of an existing junction with traffic signals to improve access for all road users. The improvements will complement improved journey times for public transport and further schemes proposed along the A27 corridor including an east/west cycle route. The scheme will also help facilitate expected increases in vehicle flow when the wider overarching package of improvements come forward including the Stubbington Bypass and Newgate Lane south improvements..

Personal Affordability

- 3.6.43 The scheme will have little or no impact on the price of travel, or in the availability of low cost travel to vulnerable groups. It is therefore assessed to be **Neutral**.

4 Financial Case

4.1 Introduction

- 4.1.1 The financial case sets out the profile of the scheme costs and provides justification of the affordability and details of funding responsibilities. The scheme costs for St Margaret's roundabout are provided below with outline costs also provided for the proposed complementary wider A27 Capacity Improvements to the east and west of St Margaret's roundabout.

4.2 A27 St Margaret's Roundabout Scheme Costs

- 4.2.1 The total scheme costs are **£4.6m**. The scheme costs, including allowances for inflation and risk, are summarised in the Table below. Hampshire County Council Quantity Surveyors have used their estimating and pricing database as the base for the unit rates. The rates are based on competitively tendered rates for the SE7 Regional Highways Framework. This Framework will be used to procure the works. Also, in some cases, rates have been used for specific items of work from recent similar projects.
- 4.2.2 The rates are commensurate with Q3 2014/15 prices. An allowance for inflation of 3% increase has been assumed up to 2015/16 and 7% up to 2016/17. The risks have been valued at 20% which reflects the stage in the design process and also the nature of the scheme being on line widening where many of the risks are known. As the project progresses a Quantified Risk Assessment will be undertaken in order to further evaluate and reduce unknown risks and as detailed under the Management Case of this document.

4.3 Outline Scheme Costs

- 4.3.1 The overall scheme cost for the A27 St Margaret's Roundabout is **£4.6m**. Of the total scheme cost, **£1.6m** (35%) will be part funded by third party contributions and Hampshire County Council capital. The remaining **£3,000,000** (65%) is being sought from this Solent LEP Local Growth Fund award.

4.4 Spend Profile

- 4.4.1 A high-level cost breakdown for 2015/16 is summarised in the table below.

Spend (£)	15/16 (Total)
Design	£216,715
Works Costs	£2,260,384
Works Risk Contingency (10%)	£226,038
Supervision	£117,115

Spend (£)	15/16 (Total)
Stats Diversions	£893,680
Third Party Land	£18,000
Inflation to 2015/16 (3%)	£101.403
Total	£3,833,335
Risk Allowance (20%)	£766,667
Total with Risk Allowance (20%)	£4,600,002
Funding Sought (£)	
LTB Capital Funding Sought	£3,000,000
HCC Capital/S106	£1,600,000
Total	£4,600,000

4.5 Hampshire County Council Funding

- 4.5.1 Hampshire County Council will invest **£1.6m** being 35% of the total scheme cost from its capital resources and any relevant Section 106 receipts in order to help bring this scheme forward. This shows a local commitment to the scheme and underlines the belief that investment in access to the Gosport Peninsula will help remove the transport barriers to growth and will encourage investment at key sites including the Solent Enterprise Zone, and will also help to reduce journey times in congested urban areas.

4.6 Local Growth Funding Required

- 4.6.1 The GAP funding required to deliver this scheme is in the order of **£3,000,000 which equates to 65% of the total cost** and this funding is being sought from the Solent LEP Local Growth Fund award.

4.7 Risk allowances

- 4.7.1 A 10% contingency for variations to the Contract during the construction period has been included in the Works Cost estimate. A value of £220,000 is included in the overall scheme cost and spend profile.
- 4.7.2 At the initial stages of the project the risks have been assessed using an Optimism Bias of 20%. The design and contract team considered this was an appropriate level of risk based on their experience of similar projects delivered by HCC. A figure of **£766,667** is included in the overall scheme cost and spend profile.

- 4.7.3 A detailed and quantified risk assessment (QRA) will be undertaken as the scheme develops by senior members of HCC staff. The approach to risk management and an explanation of how HCC will mitigate financial risks and the risk appraisal and register is fully reported later on in the Management Section of this Business Case.
- 4.7.4 Cost overruns, if required will be funded through Hampshire County Council Capital resources.

4.8 A27 Corridor Improvements Segensworth to Titchfield Gyratory (Wider scheme) Outline Costs

- 4.8.1 The wider A27 Improvement scheme is broken down into two complementary schemes, to be constructed in 2016/17 directly after the improvement of St Margaret's roundabout. The costs for these schemes have been derived from the same methodology as St Margaret's roundabout and are summarised below for information purposes.

A27 St Margaret's Roundabout to Titchfield Gyratory

- 4.8.2 The estimated total scheme costs for the A27 Segensworth roundabout up to St Margaret's roundabout are **£5,650,000** including allowances for inflation, Part 1 Claims and risk.
- 4.8.3 It is estimated that the GAP funding required to deliver this scheme is in the order of £3,900,000 which equates to 69% of the total cost and this is being sought from the Solent LEP as part of the Local Growth Deal. £1,750,000 is being funded from Hampshire local capital Resources.

A27 Segensworth Roundabout to St Margaret's Roundabout

- 4.8.4 The estimated scheme cost for the A27 Segensworth roundabout up to St Margaret's roundabout are **£4,700,000** including allowances for inflation, Part 1 Claims and risk.
- 4.8.5 It is estimated that the GAP funding required to deliver this scheme is in the order of £3,700,000 which equates to 78% of the total cost, and this is being sought from the Solent LEP Local Growth fund (subject to Mini-Bid Approval.)

Combined Schemes Cost

- 4.8.6 The estimated total scheme cost for all the proposed A27 improvements between Segensworth roundabout and Titchfield Gyratory is **£14.95m**.
- 4.8.7 It is estimated that the total GAP funding required to deliver the application scheme and complementary future schemes is in the order of **£10,600,000** which equates to **70%** of the total cost, with the remaining £4.6m or 30% being secured from Hampshire Capital resource

5 Commercial Case

5.1 Introduction

- 5.1.1 Hampshire County Council has a proven track-record for delivery and is therefore confident that this project can be completed within the stated timescales and milestones. The scale and types of works are familiar to those delivering them.

5.2 Specification

- 5.2.1 The scheme has been developed with regular meetings with Hampshire County Council and Fareham Borough Council Officers. Hampshire County Council has a standard specification that it uses on all of its highway projects.
- 5.2.2 The SE7 Regional Highways Framework Model Contract Specification will be used for the proposed works. If required additional items will be added to the standard specification.

5.3 Sourcing Options and Payment Mechanisms

- 5.3.1 The SE7 Regional Highways Framework will be used to procure the works. Framework Contractors performance is monitored, quarterly, using key performance indicators. The KPI scoring is used as an incentive enhancement mechanism for Tender Assessments. Depending on a contractors performance their Tender Assessment Value used for the purpose of Tender Analysis can vary by plus or minus 10%. This mechanism provides an incentive for the Framework Contractors to maintain a high quality of work and standard of service whilst working for HCC.
- 5.3.2 In addition the Contract will be let with a Quality/Price bid. This will enable HCC to ask and score the Tenderers on specific questions relating to managing the highway network, public safety, and other key issues whilst constructing the works.

5.4 Pricing Framework

- 5.4.1 The pricing framework is based on measuring the works in accordance with the priced bill of quantities.
- 5.4.2 The Framework Contractors performance is monitored, quarterly, using key performance indicators. The KPI scoring is used as an incentive enhancement mechanism for Tender Assessments. Depending on a contractors performance their Tender Assessment Value used for the purpose of Tender Analysis can vary by plus or minus 10%. This mechanism provides an incentive for the framework contractors to maintain a high quality of work and standard of service whilst working for HCC.

5.5 Procurement Strategy

5.5.1 The preferred procurement strategy is for a single Contract to be established for all the works. The Contract will be procured under the terms and conditions of the NEC 3 Engineering and Construction Contract using Option B: Priced contract with Bill of Quantities and will be let under the Regional Framework Contract. This Contract is applicable to both the value and the timescales required for the scheme and is used for contracts up to £5m.

5.6 Certainty of Delivery

5.6.1 Work at the A27 St Margaret roundabout is a key component in delivering an overarching package of improvements, including the adjacent dualling of the A27, which seeks to improve overall access to Fareham and Gosport. Improvements on the A27 are required prior to the provision of Stubbington Bypass and associated works which are planned for 2016/17 and 2017/18. A phased delivery programme has been defined based upon the assumption that the A27 St Margaret's roundabout and associated works will be implemented by 2015/16, with improvements to the A27 Corridor following on directly, hence the intention is that this scheme will be delivered according to programme.

5.7 Commercial Risks to Delivery

5.7.1 Some of the risks to delivery will be mitigated by transferring them to the identified Contractor to manage. This will be achieved by the inclusion of risks as part of their contractual duty to manage, or by ensuring specific additional clauses are written into the Contract to allow the Contractor to price as part of the scheme costs.

5.7.2 The main areas of risk associated with the delivery of the project are:

- Third party Land acquisition would be required immediately to the north west of St Margaret's roundabout, to the north of the A27 and west of Cartwright Drive.

5.7.3 In mitigating this risk, Hampshire County Council is in advanced negotiations with HCC County Farms, HCC estates and a tenant farmer, as the local land owners to acquire the land. Both parties are in agreement with the detail design and with the details of an advance works contract which provides new boundary fencing, a new ditch, with an outfall linked to the drainage network. This provides potential additional benefit in reducing the risk of flooding in the future.

5.8 Human Resource Issues

5.8.1 There are no HR issues associated with the contracting for this scheme.

5.9 Contract Management

- 5.9.1 Engineering Consultancy will prepare the Contract documents in-house. The contract will be tendered using the electronic tendering system In-Tend. This facility enables Tenderers to receive and submit Tender documents electronically. It also manages Tender queries and their responses.
- 5.9.2 During construction the site will be managed by an experienced Resident Engineer. The Resident Engineer will be responsible for the day to day management of the Contract. Site engineers, Clerk of Works and Quantity Surveyors will also assist the Resident Engineer.
- 5.9.3 Regular progress meetings will be held to monitor progress on site. The Project Manager will also attend these meetings and if need be will provide technical support and assistance to the Site Team.
- 5.9.4 Separate Risk Reduction meetings will also be held on a regular basis by the Site Team and the Contractor.
- 5.9.5 If needs be the Project Manager will inform the Client Manager of any significant events which can then be considered by the senior management teams.

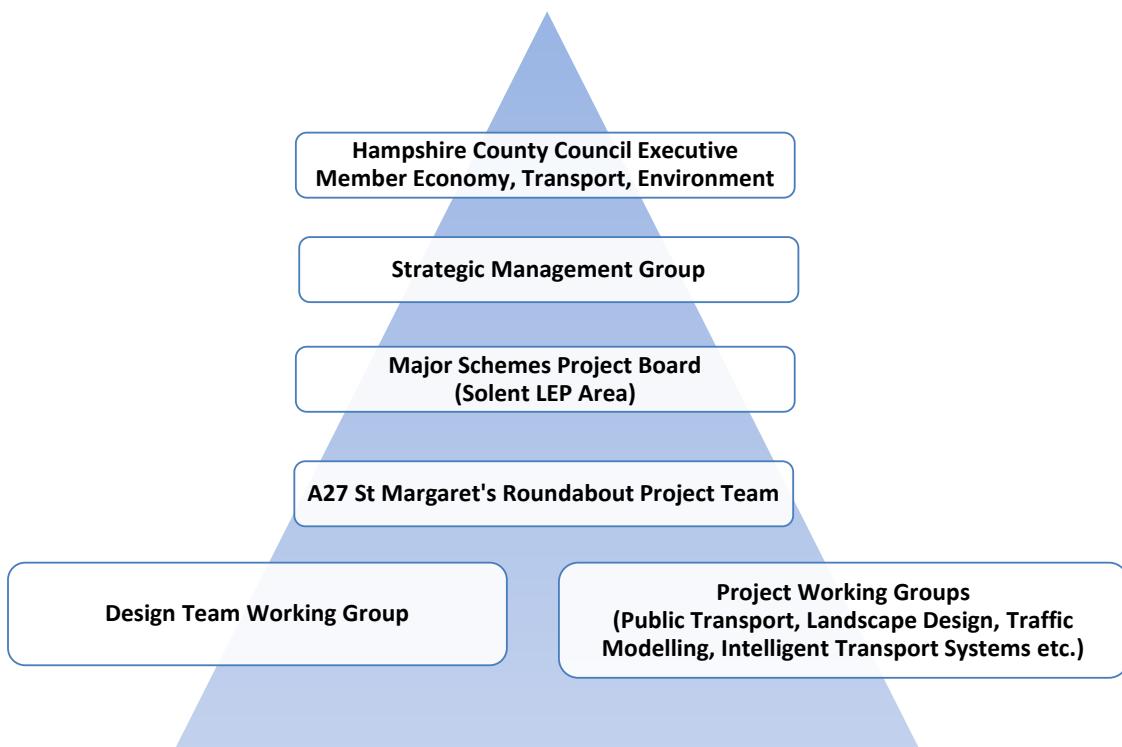
6 Management Case

6.1 Introduction

- 6.1.1 The management case sets out the delivery strategy for the scheme and provides a coherent plan for managing the project, governance, risk and communication through to monitoring and evaluating benefit realisation.
- 6.1.2 The project lifecycle will be underpinned by Hampshire County Council through a Gateway Review Process (GRP) to ensure each stage is critically assessed, by personnel with the relevant skills and experience, prior to commencing the next stage.

6.2 Governance Structure

- 6.2.1 The Governance Structure, shown below, sets out the working arrangements for Hampshire County Council and other partnership bodies, including Fareham BC, to successfully deliver the scheme.



- 6.2.2 The project will be delivered by **Hampshire County Council**. The **Senior Responsible Officer** for the project delivery is: **Chris Peake – Head of Engineering Consultancy**. The **Client Manager** for the project is: **Jonathan Ryder Principal Transport Engineer, Strategic Transport**. Hampshire County Council, as Highway Authority, are committed to maintain roads on the adopted highway network, excluding those falling under the remit of the Highways Agency.

6.3 Partnership Arrangements

6.3.1 There are no formal partnership arrangements in relation to the scheme however there will be close working with Fareham Borough Council throughout the scheme development and delivery.

6.4 Programme & Project Management

6.4.1 The scheme construction dates are programmed for two years from May 2015 to April 2017, commencing with initial works at St Margaret's roundabout with the section of dualling on the A27 to the east of St Margaret's following on and then followed by the section of dualling and associated improvements to the west of St Margaret's roundabout.

6.5 Project Plan

6.5.1 A detailed Project Plan for the scheme delivery activities outlines the works, resources and timescales required for the design, implementation and construction phases of the project. The project plan describes key milestones and start/finish dates for each task. The key work streams for executing the works are provided in the Project Plan and include:

- Engineering Consultancy (EC) to liaise with key stakeholders and complete feasibility design and prepare summary report;
- EC to arrange further investigations, topographical, geotechnical, drainage, Statutory Undertakers, environmental, ecological, arboriculture, archaeologists etc.;
- EC to prepare Preliminary and Detail Design;
- A Strategic Partner or EC will undertake the design of structures;
- Design for Lighting will undertake the lighting design;
- HCC's Integrated transport Systems will undertake the traffic signal design;
- Statutory Undertakers will provide cost estimates and details for diversions of their equipment;
- Value Engineering exercises will be carried out by EC;
- Quantified Risk Assessments will be reviewed and amended by key members of the EC team;
- Traffic Regulation Orders will either, be prepared by HCC or by Fareham Borough Council;
- Land Meetings will be held between EC the Client and HCC legal team;
- EC's Quantity Surveyors will prepare cost estimates and a priced bill of quantities.
- EC will prepare the Specification and Contract Documents
- EC and the Client Manager will prepare the Project Appraisal for the contract.
- EC will process the Tender and award the Contract
- EC Contracts Team will provide staff for supervising and administrating the Contract

6.6 Evidence of Major Scheme Delivery

- 6.6.1 Hampshire County Council has successfully delivered Phase 1A of the Fareham to Gosport BRT (Redlands Lane to Tichborne Way) dedicated busway within the last 5 years. Phase 1A, costing £25m was delivered to budget within an extremely rapid timescale (see timescales in the table below) given the nature of scheme complexities and legal opposition. This demonstrates the ability of the County Council to work to programme and deliver complex major schemes. The project faced legal opposition on environmental grounds and was ultimately taken to the Supreme Court where the final Appeal was dismissed and Objections overturned. In addition the County Council faced two separate Village Green Applications one of which was rejected the other partly accommodated. The culmination of the legal challenges resulted in a 9 month delay to construction programme, disruption and heavy legal costs.



6.7 Statutory Powers and Consents

- 6.7.1 The majority of the scheme will be delivered on land owned by Hampshire County Council as the Highways Authority. A strip of third party land is required immediately to the north west of St Margaret's roundabout. This land is also owned by Hampshire County Council and is managed by Hampshire County Council's County Farms. Consultation and negotiation with County Farms and their Tenant farmer are already at an advanced stage and all parties have agreed to an advanced works contract and accommodation works for the farmer.
- 6.7.2 The existing hedge on the western side of Cartwright Drive will need to be removed and a new hedge planted as mitigation. A dormouse licence is being prepared for this work which will be carried out in Spring 2015.
- 6.7.3 The traffic management team at Fareham Borough Council will be engaged at an early stage

6.8 Stakeholder Management

- 6.8.1 Highways Agency - The A27 forms part of the Strategic Road Network in southern Hampshire forming a critical east to west artery running parallel with the M27 catering for both local traffic and traffic wishing to access the motorway for longer distance journeys. As Highway Authority for the A27 Hampshire County Council are fully supportive of the scheme and the delivery timescale and will liaise directly with the Highways Agency to ensure all parties are aware of programme, delivery and impacts on the transport system.
- 6.8.2 **Delivery:** Hampshire County Council's Engineering Consultancy will Project Manage the design and implementation of the project. If need be additional resources can be procured via either a Technical Resources Framework, or via the Strategic Partnership with Atkins.

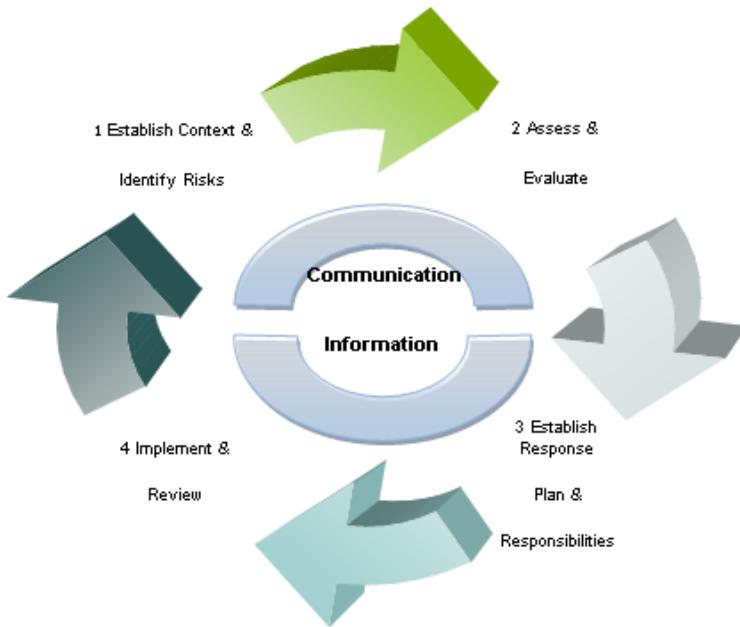
- 6.8.3 **Consultation:** High level consultation has taken place on schemes included within the Transport Delivery Plan during several rounds of consultation which resulted in 3 related schemes being included for implementation: BRT further network development; the station interchange enhancements; and also the A27 corridor capacity and widening scheme. No adverse comments were received in relation to these elements. There have been two rounds of public consultation which have gauged a raft of public support for both the wider improvements for the A27 and also the more focused improvements at St Margaret's roundabout. The second extensive public consultation exercise was undertaken, between 9 June and 4 August in 2014, to assess the level of support for the package of A27 transport improvements. In terms of the overall approach, 78% of respondents supported the measures proposed to improve access to Fareham and Gosport. With regard to the scheme 87% of respondents supported the proposed improvements to St Margaret's roundabout and 88% supported the dualling of the A27 between Segensworth Roundabout and Titchfield Gyratory, representing a significant level of public support. The scheme is therefore likely to be supported by the majority of the wider local population in Fareham but there may be some objections from those living adjacent to the scheme.
- 6.8.4 As scheme details are now more specific meetings are being held with directly affected land owners. In addition an overarching public consultation strategy and communication plan has been prepared by Hampshire County Council setting out the engagement policy for consultation on the scheme and wider strategy for the A27 improvements for access to Fareham and Gosport. This process will be governed by the Stakeholder Management Plan for this scheme, which is currently being prepared.

6.9 Risk Management

- 6.9.1 In line with the Transport Business Cases guidance the Management Case considers the following:
- The risk management process and strategy
 - The Risk Register, Risk Management Strategy and Quantified Risk Assessment (QRA)
- 6.9.2 **Purpose of Risk Analysis:** The risk management process for the scheme has been undertaken in line with the Department for Transport's Estimation and Treatment of Scheme Costs TAG Unit 3.5.9.
- 6.9.3 Risk management is seen as a key process underpinning good scheme governance and achievement of scheme objectives in a cost effective manner. Accordingly an appropriate framework (comprising managing reporting, process and responsibilities) has been implemented as part of scheme management arrangements as set out below.
- 6.9.4 In the context of the scheme, risk has been defined as the potential for future events which have a negative impact on the achievement of scheme objectives. Events which provide a potential opportunity to impact positively on objectives have not been addressed. It should be noted also that risks relating to the operational management of the scheme have been

excluded although technical performance risks shall be addressed through compliance with appropriate design standards and codes of practice.

- 6.9.5 **Risk Management Process:** The risk management modelling approach adopts the following four primary processes as shown below.



- 6.9.6 These processes are broadly cyclical (plan-do-review), requiring ongoing review and update to ensure effective controls are put in place and operated during scheme development and delivery. The process is underpinned by appropriate communication and reporting arrangements to ensure visibility at the relevant management level. The process will be reviewed on a regular basis to ensure proper operation and it remains effective in supporting achievement of the scheme objectives. The evaluation process for ensuring the benefits of the scheme is outlined later in this report. The primary risk management processes are outlined below.
- 6.9.7 **Identifying Risks:** The identification process has been informed through meetings held with relevant scheme team technical specialists, along with the Project Manager and Client Manager. Risks have been identified in view of known causes and the source of these at three levels:
- Strategic (external to the scheme)
 - Project management activities
 - Technical (design and construction activities)
- 6.9.8 The initial risk review will be updated on a regular basis and as a minimum at key review points. Each risk has been described in view of its impact on project performance, cost, time, objectives and compliance with health and safety and environmental regulatory requirements.

- 6.9.9 The risk description, causes and consequences have been established in order to allow assessment of the likelihood of occurrence and direct and indirect impacts. It should be noted that catastrophic risks, which arise from extraordinary events and result in exceptional consequences to the achievement of scheme outcomes and objectives, have not been included.
- 6.9.10 **Assessment of Risks:** The initial cost estimate for the scheme allowed for an Optimism Bias of 20% which was used to give an initial indication of the potential worst case of the costs of risks to the project. As the detailed design progresses and risks become reduced by knowns rather than unknowns, through the preparation of a quantified risk assessment (QRA) the level of optimism bias will be reduced and replaced with actual costs in accordance with guidance. The purpose of this step is to establish and evaluate the net effect of the identified risks. Five point scales have been used to assess both probability of occurrence during the scheme lifecycle and impact. Subsequently, a systematic approach will be used to estimate the probability of occurrence and cost (direct and indirect e.g. associated with delays and clean up) impact in order to determine the risk cost (in line with TAG Unit A1.2 Scheme Costs). At this stage, the cost range associated with the consequences of each risk will be estimated, where the mean is the most likely value. The estimates will be derived following consultation with the Project Manager, scheme team technical specialists and quantity surveyor, to ensure estimates of probability and cost are complete and accurate, and consistent with the basis of the base cost estimate.
- 6.9.11 It will be assumed when estimating risk costs that all risk events are independent and therefore no correlation exists between the occurrence of one event and another. The mean value of all risk costs will be calculated and will be added to the scheme base cost to provide a total risk adjusted baseline investment cost. The total investment cost excludes operating costs and risks following completion of construction and commissioning.
- 6.9.12 No adjustment is proposed for optimism bias at this stage of the cost estimation on the basis that base costs reflect most likely values and risk costs have been added to reflect possible additional costs associated with provisional works and risk events. The estimate excludes potential savings associated with events which result in a cost reduction.
- 6.9.13 **Response Planning:** Following assessment and evaluation of risks a systematic approach will be adopted to respond to risks and allocate responsibility to the most appropriate party in line with the governance arrangements set out previously.
- 6.9.14 One of four strategies will be adopted in developing a suitable response plan:
- Accept or tolerate the consequences in the event that the risk occurs
 - Manage the risk through improvements in controls for management or technical processes
 - Transfer or escalate the risk
 - Terminate the activity giving rise to the risk.

- 6.9.15 The development of response plans to manage risk will be undertaken only where the likelihood of occurrence and impact can be reduced in a cost effective manner. A combined strategy will be considered where a mix of the above options would be the most appropriate option.
- 6.9.16 Risks should be transferred to a third party e.g. insurer or escalated to HCC for consideration only where they can be more cost effectively controlled. If this is not possible then either the activity giving rise to the risk should be terminated or the potential consequences accepted by the Project Director and scheme sponsor.
- 6.9.17 The initial assessment of risk probability and consequences was reviewed in line with proposed strategies and response plans.
- 6.9.18 **Implementation and Review:** As stated above, the response plans shall be proportional to the risks they are to manage. Furthermore, their effectiveness is dependent on proper implementation and review of the residual risk (including any secondary risks associated with implementation). Reviews of the status of scheme risk assessments and their related response plans (as part of project reporting) will be an integral part of monthly progress meetings during progression of detailed design and the construction period. All key risks will be formally reviewed and costed at gateways and key decision points in the scheme lifecycle.
- 6.9.19 **Risk Reporting:** Risk reporting is key to providing visibility of threats to the scheme at the appropriate level and to ensure controls are being properly operated to provide governance and protect achievement of scheme objectives.
- 6.9.20 A risk register has been established to record all risk information relevant to the risk management processes outlined above. This will provide the data required for analysis and management reporting/review. The reports will set out the current risk profile and how this has changed during the reporting period. It will also set out the status of response plans and highlight plans for near term risks where response plans have not been properly implemented or residual risk exposure remains high.
- 6.9.21 The scheme Project Manager will be responsible for maintaining the risk register and ensuring the information is up-to-date, accurate and complete. Line of reporting shall be in line with the governance arrangements set out earlier. This process will enable senior managers to consider budget requirements in a timely manner to deal with any cost overruns.
- 6.9.22 **Risk Review, Risk Register and Cost Results:** As part of developing the Business Case and the scheme costs, a full review of scheme risks was undertaken in October 2014. This will be developed and then reviewed and amended during December 2014 by members of the Project Team, including a Senior Quantity Surveyor and engineers with detailed knowledge of the scheme.

6.9.23 The probability and impact scales used for the QRA is summarised in the tables following.

The register contains risk information, analysis and risk costs estimates. The headline risks include:

Risk	Likelihood (RAG)	Impact (RAG)	Comment / Mitigation
Diversion of Oil Filled power line on Cartwright Drive	M	L	Low impact on programme as diversion should be able to be carried out away from critical path works – Liaise with SSE.
Diversion of Water main on Cartwright Drive	M	L	Low impact on programme as diversion should be able to be carried out away from critical path works – Liaise with Southern Water
Other diversions	M	M	Advance planning of diversions in close liaison with SUs
Laying HRA during November to April may affect pavement quality	M	L	Review programme to undertake surfacing during desirable periods or consider alternative product
Congestion during construction	M	L	Review construction strategy, liaise with Area Office and NRSWA Co-ordinator and consider works outside peak periods
Protected species	M	L	Ecological surveys have been undertaken and works will be undertaken with ecological supervision. A Dormice licence is required for the advance works contract.
Land Acquisition	L	L	Regular meetings have been held with the Tenant Farmer and HCC County Farms. Additional accommodation works have been agreed with the Tenant Farmer. Tenant Farmer and HCC County Farms approve of the works.
Confirmation of funding at critical stages in the project	M	H	HCC management will have to consider if they want to proceed with the Tender / Award of Contract if confirmation of funding has not be received at critical stages in the project.

Probability and Impact Scales Used for the Quantified Risk Assessment



Description	Probability	Commercial Impact		Product/ Service Delivery Impact Performance	Regulatory Impact	
		Financial (£)	Time		Environmental	Health & Safety
Very High	>70%	>£1m	>4 mths delay	Major product/ scheme non-conformance with key stakeholder requirements resulting in severe disruption and damage to stakeholder confidence. Long term local/ industry media coverage, legal action.	Extreme environmental incident resulting in irreversible or extensive damage. National media coverage, public inquiry.	Death. National media coverage, public enquiry, prosecution.
High	50-70%	£500k-1m	1-4 mths	Moderate product/ service non-conformance with stakeholder requirements resulting in local disruption and damage to stakeholder confidence. Medium term local/industry media coverage, legal action.	Major environmental incident resulting in severe impact requiring response by external authorities. Long term local/ industry media coverage, prosecution.	Irreversible health effect/ major injury. Medium term local/industry media coverage, legal action.
Medium	30-50%	£200-500k	2wks-1 mth	Minor product/ service non-conformance with stakeholder requirements resulting in local disruption and damage to stakeholder confidence. Significant short term Council/ DfT correspondence.	Moderate environmental impact requiring management response to aid recovery. Medium term local/industry media coverage, legal action.	Reversible health effect/ minor injury. Significant short term Council/ DfT correspondence, warning from authorities.
Low	10-30%	£50k-200k	1wk-2wks	Slight deviation from stakeholder requirements resulting in negligible impact on stakeholder confidence. Limited short term correspondence.	Minor environmental impact requiring response but natural recovery. Significant short term Council/ DfT correspondence, warning from authorities.	Mild health effect. Limited short term correspondence, recommendations from authorities.
Very Low	<10%	<£50k	<1 wk	Negligible performance impact	Negligible environmental impact.	Negligible health and safety impact.

Risk Probability and Impact Grid (Used in the 2nd step for assisting produce the Qualified Risk Assessment)

		Impact				
		Very Low		Low	Medium	High
		1	2	3	4	5
Probability	Very High	5	5	10	15	20
	High	4	4	8	12	16
	Medium	3	3	6	9	12
	Low	2	2	4	6	8
	Very Low	1	1	2	3	4
						5

6.9.24 Response Plans: Tasks to be undertaken as part of Response Plans to address and mitigate the identified risks are identified in the Risk Register. The key response tasks involve:

- Making the Project Director and legal team aware of the proposed works so they can pre-empt and mitigate against any potential legal actions.
- There is a low risk that negotiations with third party landowners could delay the delivery of the project. To mitigate for this, respective parties have been engaged at an early stage with the design process.
- Early and effective communication and liaison with the Client, Statutory Undertakers and other key stakeholders including public
- Early more detailed site investigations as part of detailed design
- Clear methods for addressing statutory processes
- Adequate construction supervision and management

6.9.25 Risk Analysis: Analysis of all scheme risk costs has been undertaken in compliance with TAG Unit A1.2. The risk register provides the mean risk cost. The mean risk cost is used for reporting risk costs to the Project Board.

6.10 Evaluation/Monitoring Plan



- 6.10.1 **Evaluation during Construction and Implementation:** In line with the Projects in Controlled Environments (PRINCE2) Project Management methodology lessons learned from the implementation of the scheme will be documented at the end of key stages. The evaluation team, identified to carry out Post Project Evaluation (PPE), will audit performance against aims and objectives in relation to activity performance, financial projections, construction and commissioning. Project managers will oversee the maintenance of a Lessons Learned Log from which will derive a Lessons Learned Report at project closure. This information will be shared with stakeholders and other authorities as appropriate.
- 6.10.2 **Scheme Evaluation:** Before and after scheme monitoring will be undertaken to evaluate the schemes effectiveness against stated objectives. Traffic and cycle count data will be collected and collated, and journey time data evaluated. The facilitation of development is not so easy to monitor specifically in relation to transport elements due to commercial sensitivities and the many and varied complex economic factors at play.
- 6.10.3 Existing traffic count data as well as updated survey data will be used to establish the baseline for the scheme prior to its construction. Monitoring (data collection) will also take place at regular intervals before and after the scheme has opened at one year and five years after opening. This will allow a full before and after comparison to be made and allow judgment of whether the scheme has met its objectives. The following key post-opening objectives, outcomes and indicators will be considered:

Objectives	Outcomes	Indicator
Improved journey times and reliability	Reduced journey times and provide congestion relief	Vehicle journey times Queue lengths Travel demand
Better manage traffic and movement at junctions	Reduced delays and journey times through junction	Vehicle journey times Queue lengths Travel demand
Improve the transport environment	Reduced Air and Noise Pollution	Road traffic Noise levels Nitrogen Dioxide Levels
Remove transport barriers	Reduction in Severance Increase in cycling and walking	Number of cyclists and pedestrian trips
Provide safe connection along A27 for all road users	Reduction in accidents	Number of injury accidents
Provide enabling infrastructure to support	Delivery of housing and	Quantity of floor space and

Objectives	Outcomes	Indicator
development	employment floor space	units delivered

6.10.4 After a period of one and two years post opening to establish initial travel patterns, The Monitoring and Evaluation plan will assess the performance of the proposal against the scheme objectives, as set out in Chapter2, and Fareham BC local evaluation. This assessment will also enable evaluation in terms of delivering the key benefits and minimising the possible dis-benefits.

6.11 Assurance

6.11.1 The National Procurement Strategy for Local Government (NPSLG) recommends a Gateway Review Process (GRP) is adopted for all new procurement projects. Hampshire County Council has a Gateway process set up as a mechanism to enable projects to be assessed at critical stages in its lifecycle prior to commencing the next stage.

6.11.2 The use of the Gateway process enables:

- Realistic and achievable targets
- Deployment of relevant skills and competencies to a project
- Stakeholders understanding of a project and issues involved
- Less chance of a project failing
- Identification of issues within a project and lessons learnt
- Compliance and governance of standing orders and best practice
- Visibility of the procurement process
- Provision of a comprehensive audit trail

6.11.3 Project Appraisals will be produced as part of the Gateway process.