

Stubbington Bypass

Transport Business Case

April 2016

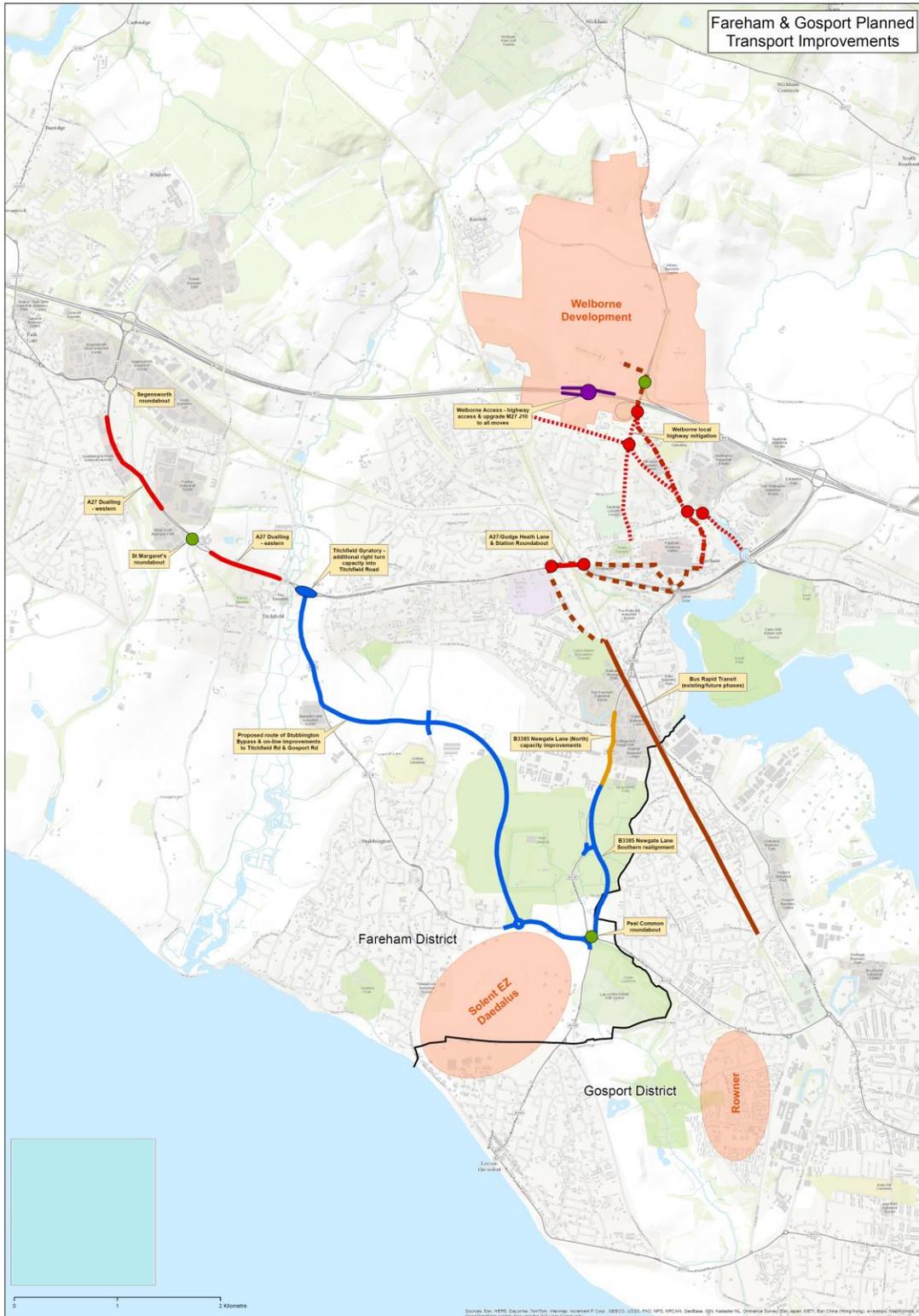
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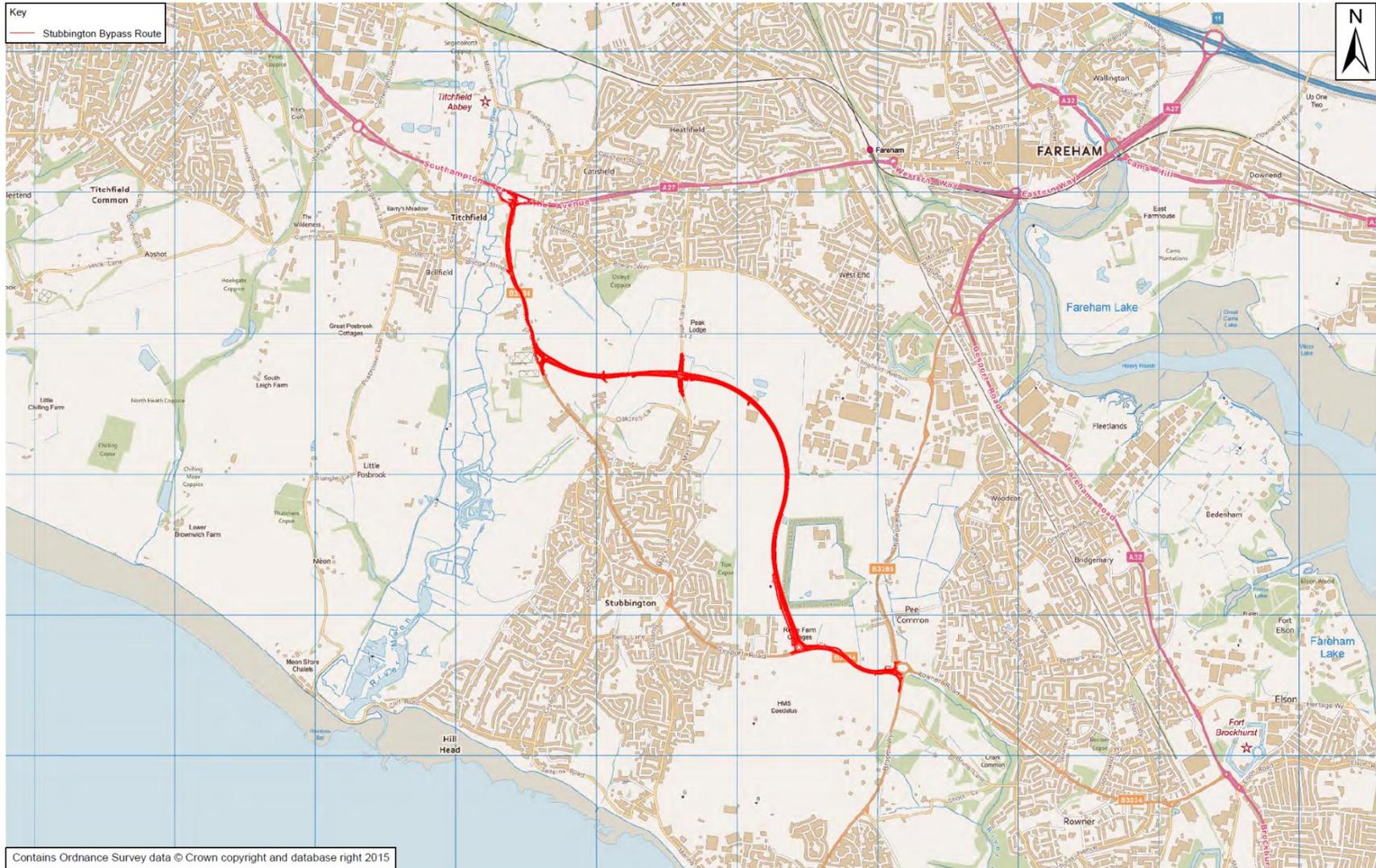
Appendix A

Supporting Plans

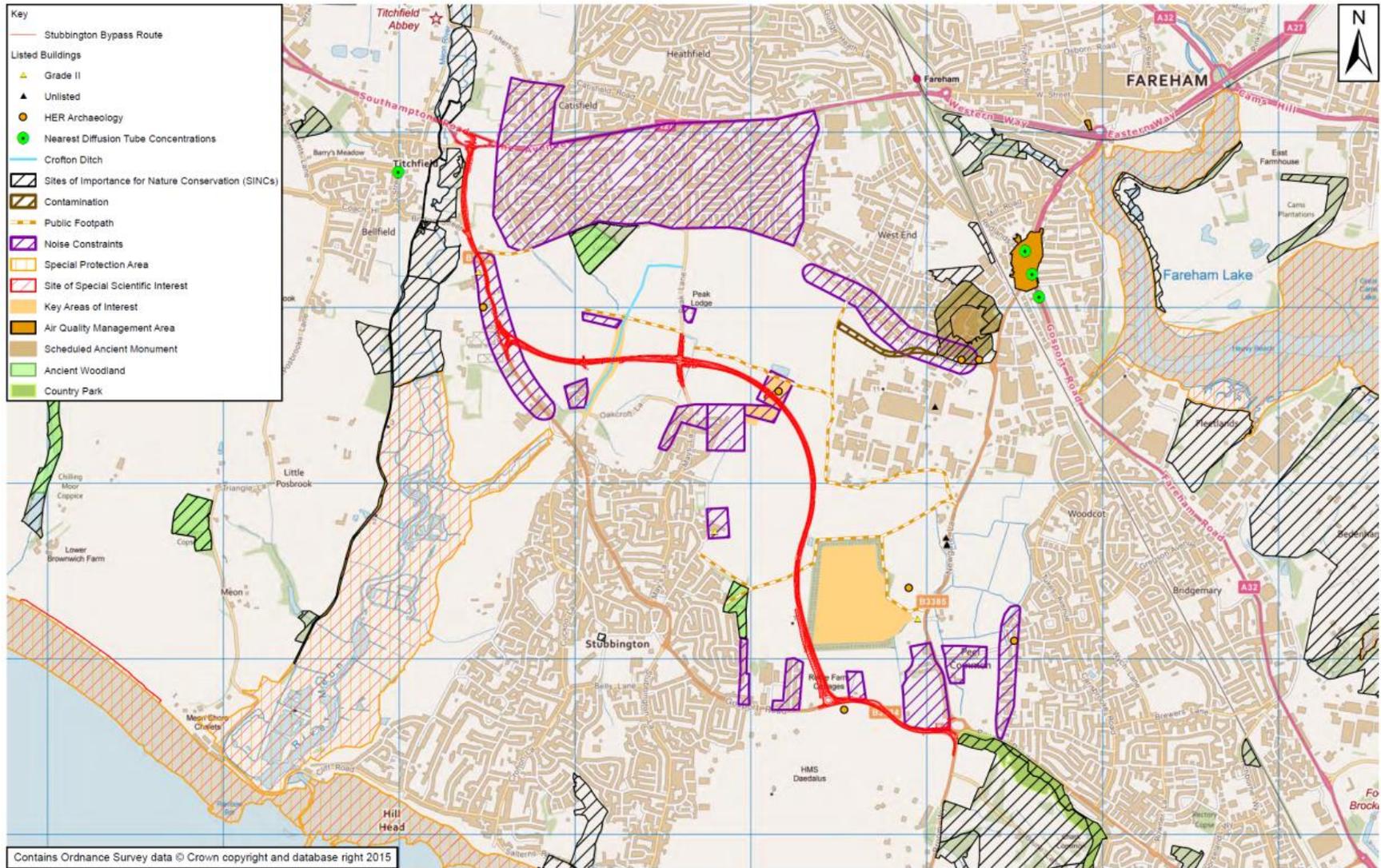
Improving Access to Fareham and Gosport Package



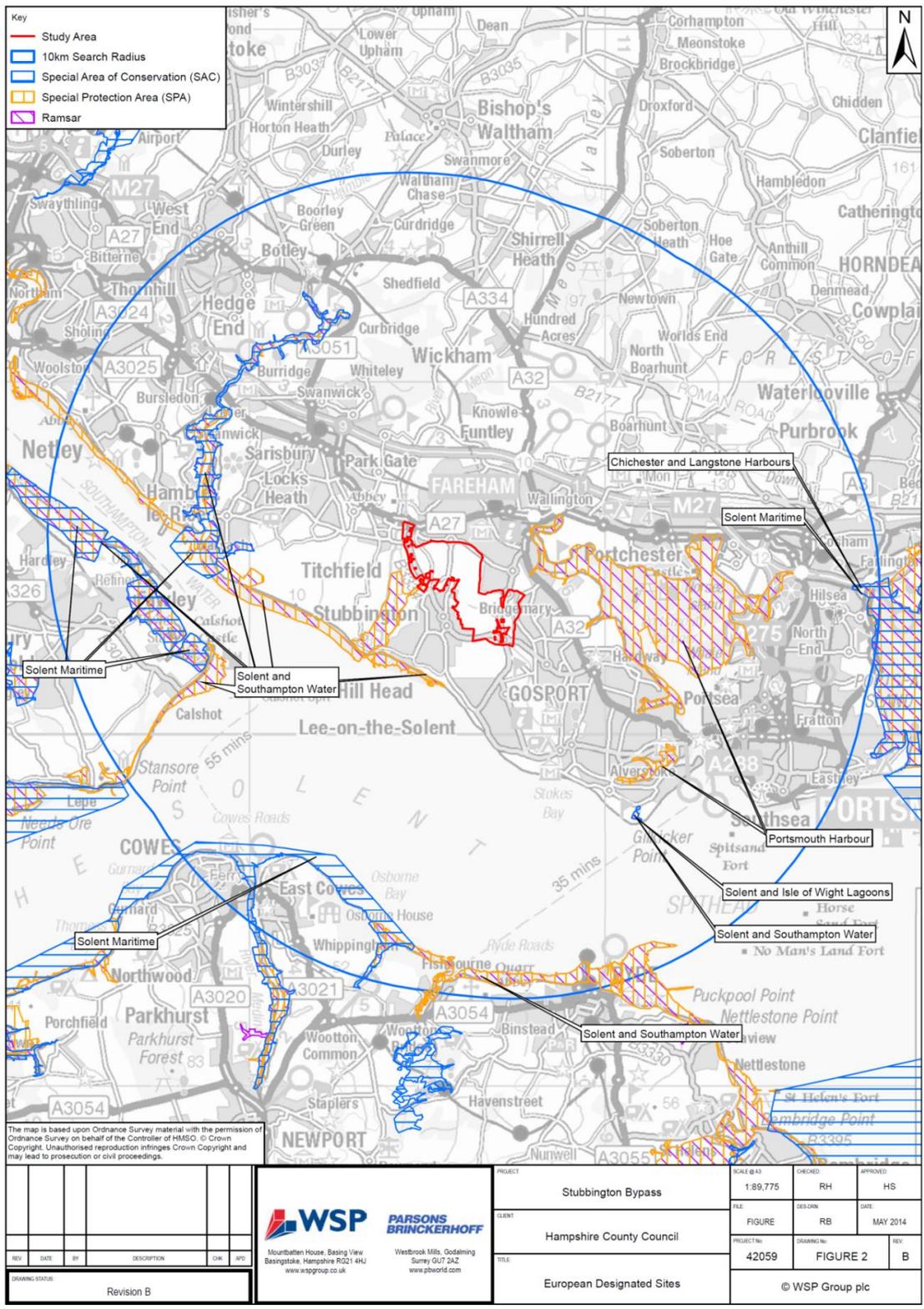
Stubbington Bypass Scheme Location Plan



Environmental Constraints Plan

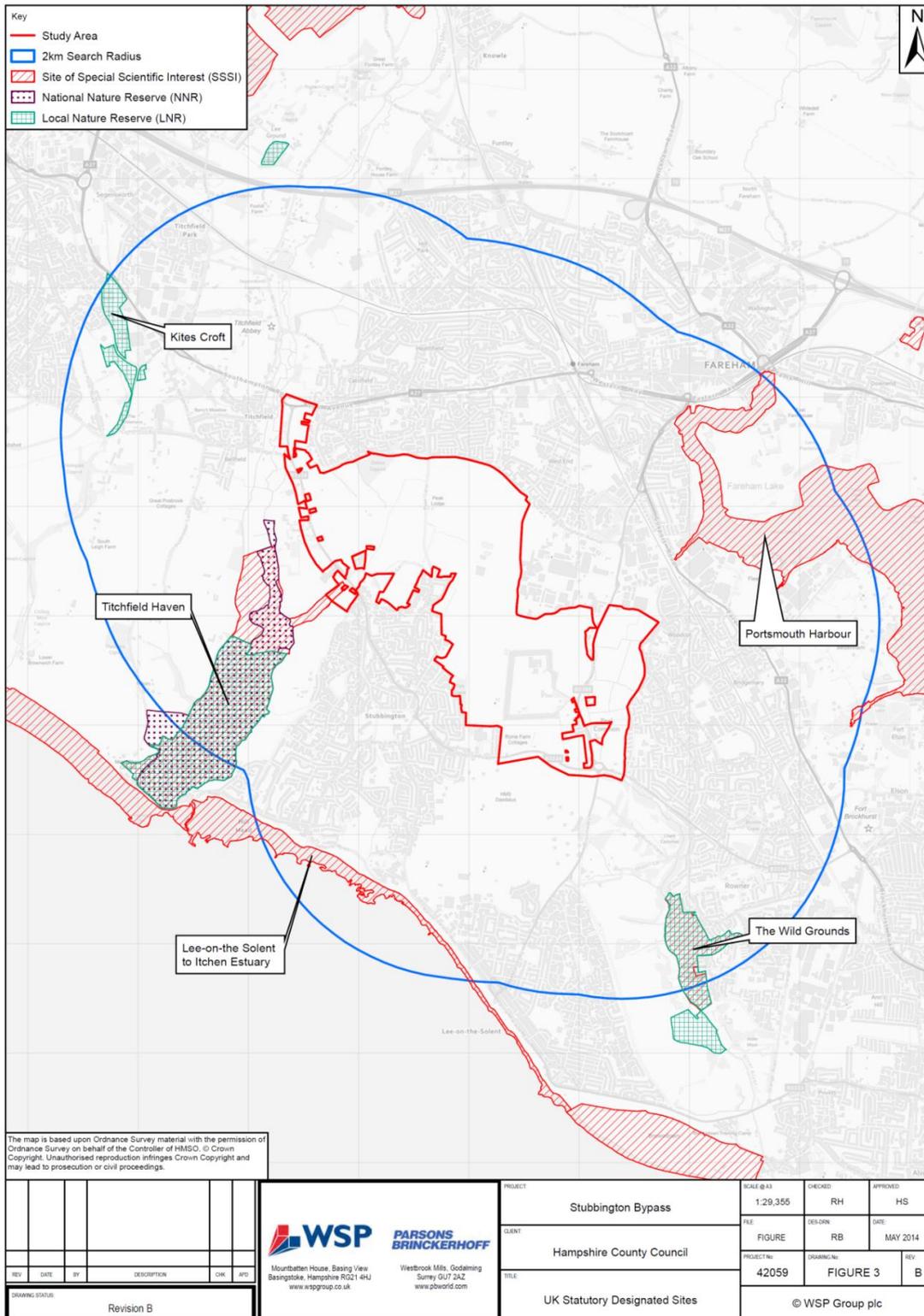


European Designated Sites



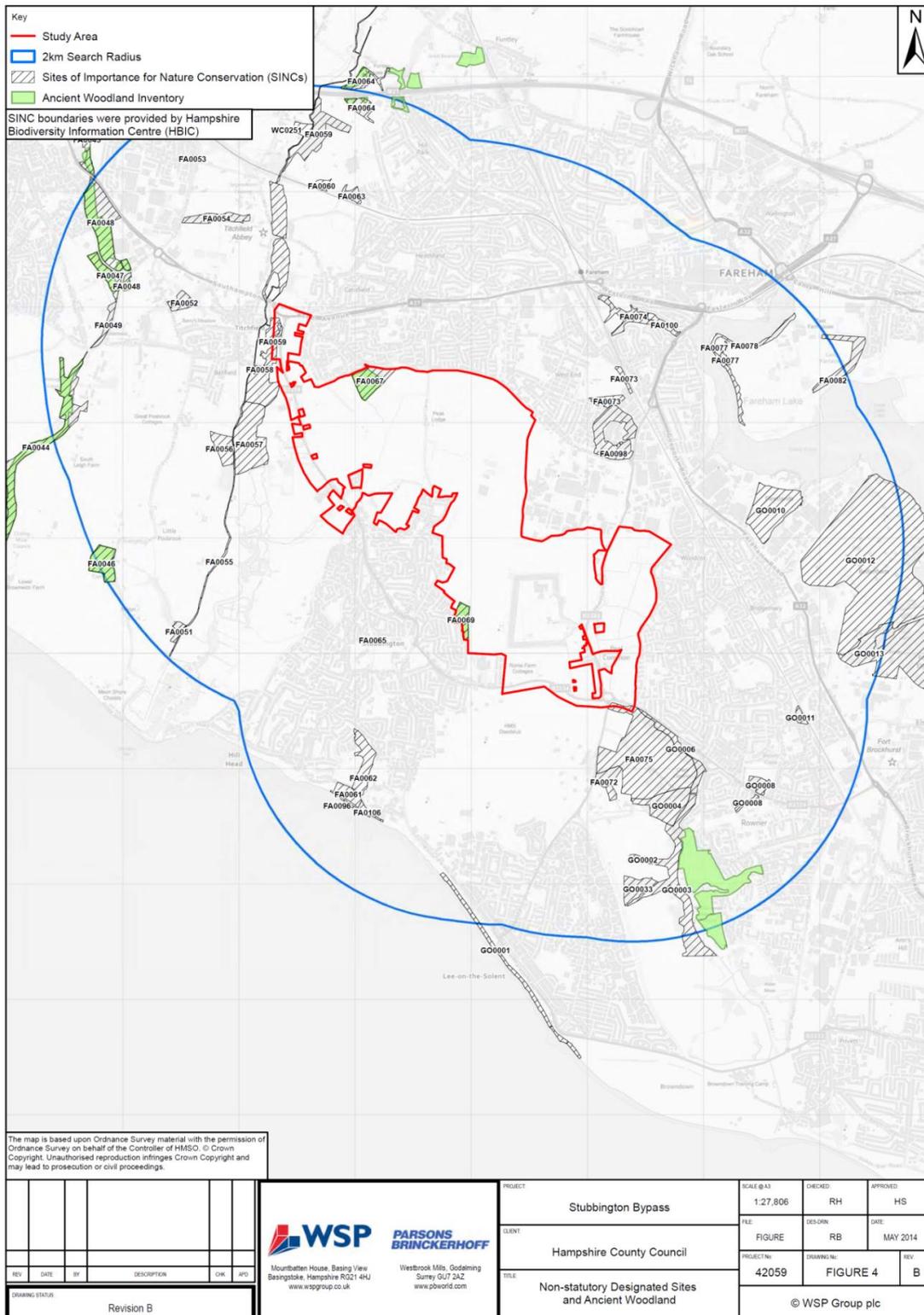
Source: Stubbington Bypass Environmental Statement (WSP / PB, June 2015)

UK Designated Sites



Source: Stubbington Bypass Environmental Statement (WSP / PB, June 2015)

Non-statutory Designated Sites



Source: Stubbington Bypass Environmental Statement (WSP / PB, June 2015)

Appendix B

Detailed Scheme Description

The following provides an overview of the scheme details cross referenced to the general arrangement drawings and identifying proposed works running from north to south.

To view General Arrangement drawings click on the link below, or copy and paste the web address into a web browser:

[General Arrangement Drawings](#)

http://www.fareham.gov.uk/downloadfiles/BPMS_PublicDocument_137452_23_20150603_112234.pdf

There are 3 GA drawings:

- GA Section 1 (EC/RJ504603/02/022)
- GA Section 2 (EC/RJ504603/02/023)
- GA Section 3 (EC/RJ504603/02/024)

General Arrangement Section 1

On Line Improvements to B3334 Titchfield Road / B3334 Titchfield Road junction with Proposed Bypass / Western section of Proposed Bypass to Ranvilles Lane (Shown on overview drawing EC/RJ504603/02/022)

This plan shows the following elements of the scheme:

1. *A27 / B3334 Titchfield Gyratory:* will be redesigned to provide a new right-turn signalised junction from the A27 eastbound into the B3334 Titchfield Road, heading south through the centre of the existing gyratory. Two lanes will be provided for southbound traffic and a third lane will be provided for turning movements towards the A27 Titchfield Hill.
2. *B3334 Titchfield Road:* will be widened to provide two lanes in each direction by construction of a new southbound carriageway to the east of the existing road. This four-lane section will continue to the signalised junction with Bridge Street, which will be improved. South of Bridge Street, the lanes will merge to an improved single carriageway, allowing for right turn lane provision into properties and businesses and based on the current alignment.
3. A new shared use footway/cycleway will be constructed on the eastern side of Titchfield Road. Crossing facilities will be incorporated into the signal upgrade at Bridge Street.
4. *B3334 Titchfield Road / Proposed Bypass Junction:* a new traffic signal controlled junction will be constructed to connect Titchfield Road to the proposed bypass at a

location to the east of Titchfield Road, opposite the 'Titchfield Nursery' glasshouses. Here, the Bypass route will diverge from the current alignment of Titchfield Road, heading south-east then east. The existing Titchfield Road will be stopped up at the diverge point and a short spur of new road will be constructed to link to a new signalised T-junction with the bypass. A right turn flare lane will be provided for vehicles turning onto Titchfield Road to head south into Stubbington village.

5. Between the new junction and Ranvilles Lane, the Bypass will be constructed as a 7.3m wide single carriageway road with a 2.5m wide shared footway/cycleway on the northern side.
6. *Ranvilles Lane Junction*: Ranvilles Lane is currently closed to through traffic and will remain so with access to properties continuing to be via the A27/ Hollam Drive / Harcourt Road or B3334 Titchfield Road. Access will be provided from the bypass to land on the northern section of Ranvilles Lane (north of the bypass). There will be no vehicular access to the southern section of Ranvilles Lane (south of the bypass). An uncontrolled crossing with island refuge will be provided where the bypass crosses Ranvilles Lane to facilitate pedestrian and cycle crossing movements. There will also be a horse corral located on the southern side of the road, to facilitate equestrian crossing at this location.

General Arrangement Section 2

Central Section of Proposed Bypass - Ranvilles Lane to Solar Panel Farm (Shown on overview drawing EC/RJ504603/02/023)

This plan shows the following elements of the scheme:

1. Along this section the Bypass will generally be constructed as 7.3m wide single carriageway new road with a 2.5m wide shared footway/cycleway on the southwest side of the road (between Ranvilles Lane and Peak Lane the shared path will be on the northern side of the road). A grass verge strip on the eastern side will be suitable for use by equestrians between HMS Collingwood and the Sewage Works.
2. *Tributary to Crofton Stream / Crofton ditch Culvert*: Between Ranvilles Lane and Peak Lane, the bypass alignment requires the construction of a new box culvert to take the road over the ditch. This structure will be wide to accommodate stepped sloping banks required for ecological reasons.
3. *Peak Lane / Proposed Bypass Junction*: This will be a signalised junction with right turn flare lanes for turning movements in each direction. A pedestrian/ cycle phase will be incorporated into the signals to enable crossing as the shared footway/ cycleway changes from being on the north side of the road west of the junction to the south side east of the junction.

4. Three new uncontrolled crossings with island refuges will be provided along this section of the bypass at Newlands Farm, near the south west corner of HMS Collingwood and to the west of the sewage works, to cater for pedestrian and cycle movements.

General Arrangement Section 3

Southern section of Proposed Bypass between Solar panel Farm and Gosport Road / on-line improvements to Gosport Road from new Bypass junction to Peel Common Roundabout

(Shown on overview drawing EC/RJ504603/02/024)

This plan shows the following improvement measures:

1. Along this section the Bypass will in the main be constructed as 7.3m wide single carriageway new road with a 2.5m wide shared footway/ cycleway on the southwest side of the road. A grass verge strip on the eastern side will be suitable for use by equestrians between HMS Collingwood and the Sewage Works.
2. *Gosport Road / Proposed Bypass junction:* A new roundabout will be constructed at the southern end of the new bypass to connect into B3334 Gosport Road between Marks Road and Rome Farm Cottages. The roundabout will be built incorporating a segregated left-turn lane linking the southern end of the bypass with Gosport Road eastbound. The eastbound carriageway will merge back into a single lane near to Rome Farm cottages. There will be a two lane flared approach on the westbound Gosport Road to the new roundabout.
3. New uncontrolled crossings will be provided on the western arm of the new roundabout to link in the 2.5m wide shared footway/ cycleway on the western side of the bypass with the existing shared footway/ cycleway on the southern side of Gosport Road.
4. The Gosport Road approach to Peel Common roundabout will be signalised and the flare on approach widened.
5. *Peel Common Roundabout:* Between the southern and western arms of the roundabout (from Broom Way northbound onto Gosport Way westbound), a new section of two-lane road will be constructed to enable this traffic to bypass the main roundabout improve the overall operation of the junction. The westbound carriageway will merge from two lanes down to single carriageway to the west of where the new section of road connects.

New Junctions

Three significant new junctions would be provided as part of the Bypass, in order to connect it to the existing highway network and a further two new priority junctions would also be provided along the route. The new junctions are described below:

1. Bypass / Titchfield Road: A new all-moves signalised junction at the western end of the Bypass at the intersection with the B3334 Titchfield Road. This has been designed in order to give priority to Bypass traffic and encourage through traffic to use the Bypass instead of routing via Stubbington. There are two lanes on both the Bypass approaches and exits, with separate right-turn and left-turn flare lanes to access Titchfield Road. Titchfield Road has a single lane approach which flares to two lanes approaching the stop-line and a single lane exit.

Signal-controlled crossing facilities are provided on the Bypass eastern approach and exit, to enable pedestrians to route to/from the shared use path on the northern side of the Bypass. These crossings are demand dependent and would only be called as required and the majority are 'walk with traffic' to maximise capacity for vehicles. The signals operate in three main stages, with the two Bypass ahead movements running in Stage 1, the right-turn from the Bypass and the left-turn from Titchfield Road run in Stage 2, and Titchfield Road all-moves running in Stage 3. A fourth on-demand stage would allow pedestrians to cross the Bypass eastbound exit. The preliminary design for this junction is shown in the general arrangement overview drawings provided at Appendix E, with full details on Plan and Profile drawings EC/RJ504603/01/155 and 156;

2. Bypass / Peak Lane: A new all-moves signalised junction at the intersection with Peak Lane. There are two ahead lanes on both the Bypass approaches and exits, with separate left and right turn flare lanes for traffic accessing Peak Lane. Peak Lane itself has single ahead lanes on both the approaches and exits, with separate left and right turn flare lanes for traffic accessing the Bypass. Signal-controlled crossing facilities are provided on the northern Peak Lane approach and the eastern Bypass approach to facilitate continuation of the shared-use paths on the eastern side of Peak Lane and the northern side of the Bypass. These crossings are demand dependent and would only be called as required and all are 'walk with traffic' to maximise capacity for vehicles.

The signals operate in four stages, with the two Bypass ahead and left movements running in Stage 1; right-turns from the Bypass running in Stage 2, all moves from Peak Lane (north) running in Stage 3 and all moves from Peak Lane (south) running in Stage 3. The preliminary design for this junction is shown in the general arrangement overview drawings provided at Appendix E, with full details on Plan and Profile drawings EC/RJ504603/01/159 and 160;

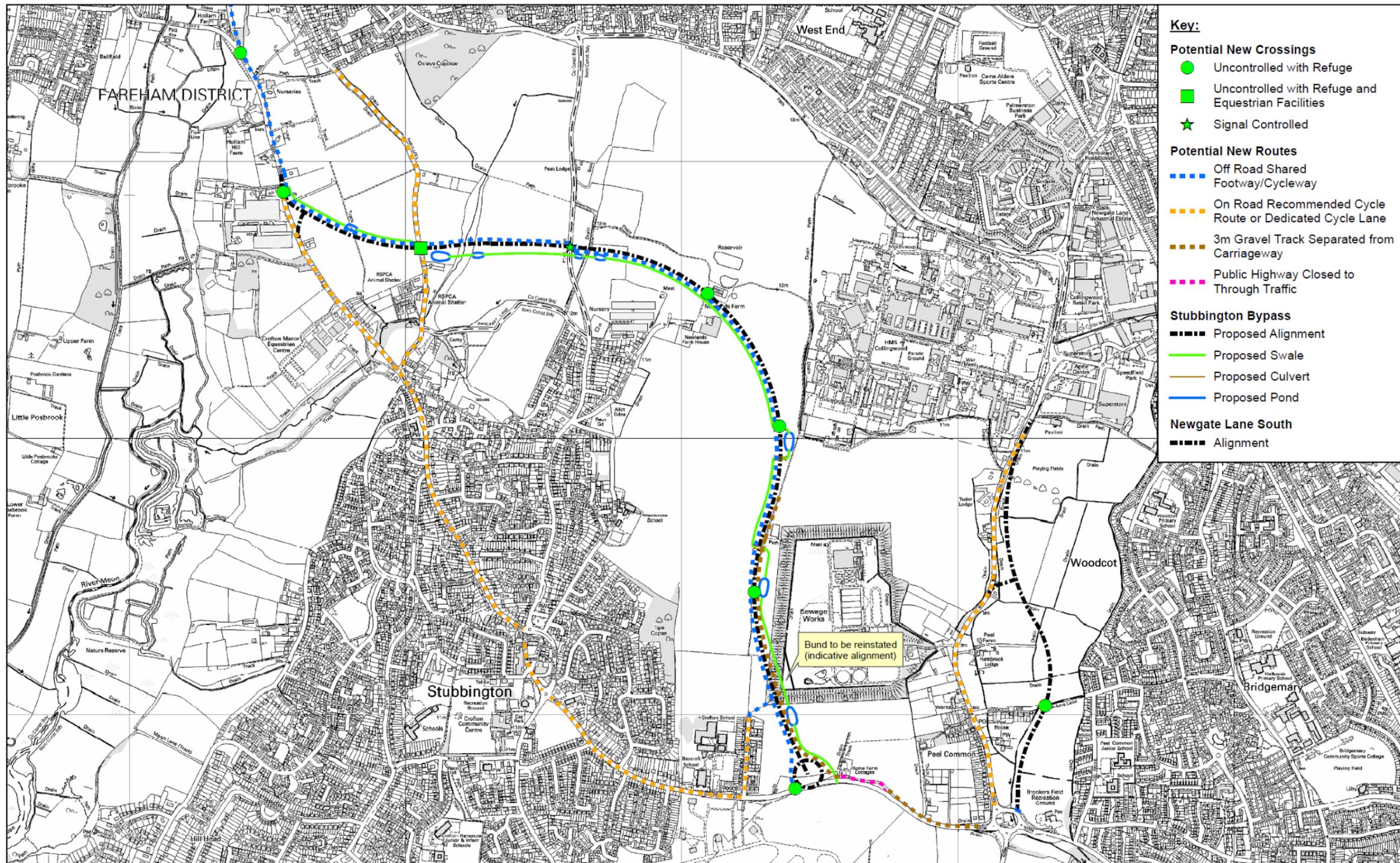
3. Bypass / Gosport Road: A new roundabout with a 50m ICD at the intersection with the B3334 Gosport Road. On the northern Bypass approach there is a segregated left-turn bypass lane to Gosport Road eastbound and a standard single lane approach to the roundabout. On the Gosport Road eastern approach there is a single lane with a two lane flare approximately 100m long and on the Gosport Road western approach there is a single lane with a two lane flare approximately 20m long. There are formal but uncontrolled crossing facilities provided on the two Gosport Road approaches and exits, which use

the roundabout splitter islands as central refuges. The preliminary design for this junction is shown in the general arrangement overview drawings provided at Appendix E, with full details on Plan and Profile drawing EC/RJ504603/01/168;

4. Bypass / Ranvilles Lane: A new ghost island priority junction at the intersection with Ranvilles Lane to provide local farm access only to Ranvilles Lane to the north of the Bypass. There is a right-turn bay approximately 60m long and an uncontrolled crossing with central refuge to the west of the junction
5. Bypass / Stroud Green Lane: A new ghost island priority junction at the intersection with the Newlands Farm access road (Stroud Green Lane), to provide local access to Newlands Farm only to the south of the Bypass. There is a right-turn bay approximately 60m long and an uncontrolled crossing with central refuge to the west of the junction. To the north of the junction there is also a field access gate and associated waiting area; and
6. New ghost island right-turn bays are also provided at two locations immediately to the east of the Bypass / Titchfield road junction, in order to facilitate access to field access gates on both sides of the Bypass.

Appendix B(i)

Facilities for Non-motorised Users



DIRECTOR OF ECONOMY, TRANSPORT AND ENVIRONMENT

Date: 16/12/2014

Drawn by: Jason Tipler

Stubbington Bypass and Newgate Lane South
Non-Motorised Users - Potential New Routes and Crossings

Drawing No. ST/RJ504603/006

Scale: 1:12,500



FS21845



Hampshire
County Council

Economy, Transport and Environment

NMU facilities consist of:

- **A new 2.5m wide shared-use path for pedestrians and cyclists that will route alongside the Bypass**, separated from the carriageway by a grass verge. Between the junctions with Gosport Road and Peak Lane this will be located on the western/southern side of the road, while between the junctions with Peak Lane and Titchfield Road it will be located on the northern side of the road. The route will cross the Bypass and Peak Lane at the new signal-controlled junction with Peak Lane via signalised toucan crossing facilities, which will also provide for the existing cycle route along the eastern side of Peak Lane;
- **A new 2.5m wide footway/cycleway will run along the eastern side of Titchfield Road**, from the western end of the Bypass, to the junction with the A27. At the A27 the intention is to connect in to a potential new footway/cycleway along the A27 that would provide a continuous link between Fareham and Segensworth;
- Uncontrolled pedestrian crossings will be provided at all locations where an existing public right of way or public highway crosses the route of the Bypass and an additional new crossing will be provided on Titchfield Road between the Bypass and Bridge Street junctions. These crossings will have a central refuge island, dropped kerbs and tactile paving and will be provided at the following locations:
 - Crossing of Ranvilles Lane;
 - Crossing of PRow 69, adjacent to Newlands Farm;
 - Crossing of PRow 70, adjacent to the south-east corner of HMS Collingwood;
 - Crossing of PRow 71a, to the west of the Sewage Works; and
 - To the south of Hollam Nurseries on Titchfield Road in between the junctions with the Bypass and Bridge Street.
- The uncontrolled crossing at Ranvilles Lane will have a corral (grassed holding area) on the southern side of the Bypass to enable horses to wait prior to crossing the road, and associated signs to warn vehicles of the possible presence of horses;
- A 3.5m wide gravel track, separated from the carriageway by a grass verge and drainage ditch/swale, will be provided on the eastern side of the Bypass between the Gosport Road junction and a point adjacent to the north-west corner of the Sewage Works. This track will also be provided on the northern side of Gosport Road between the Bypass junction and a point just west of the Peel Common roundabout. The track will be part of the adopted public highway and could potentially be used by equestrians;
- At the Bypass / Gosport Road junction there will be uncontrolled crossing facilities provided on the two Gosport Road approaches and exits, which use the roundabout splitter islands as central refuges and

will have dropped kerbs and tactile paving. The crossing of the Gosport Road (west) arm will connect the new shared-use path alongside the Bypass to the existing shared-use path in the southern side of Gosport Road;

- At the Titchfield Road / Bypass junction there will be staggered signal-controlled crossings of the Bypass eastern approach and exit arms, in order to connect the shared-use path to the footway on the eastern side of Titchfield Road. The crossings will use the central islands as refuges and will have dropped kerbs and tactile paving;
- At the Bridge Street / Titchfield signal junction the revised layout will incorporate a new staggered signal-controlled crossing of the Titchfield Road (south) approach and exit arms, which will connect the new shared-use path to Bridge Street and enable cyclists to access the Titchfield area via a more direct route;
- At the A27 Titchfield Gyratory the revised signal junction layout will incorporate new signal controlled crossings of the Titchfield Road approach and exit arms, with dropped kerbs and tactile paving; and
- Ranvilles Lane and the B3334 Gosport Road / Titchfield Road through Stubbington will be designated as advisory on-road cycle routes, with new cycle destination signs provided.

Appendix C

Overview of Modelling Tools

Overview of the Modelling Tools

This note provides a summary of the model used to support the Economic Case. Full details are included in the Model Validation Report which is available from:

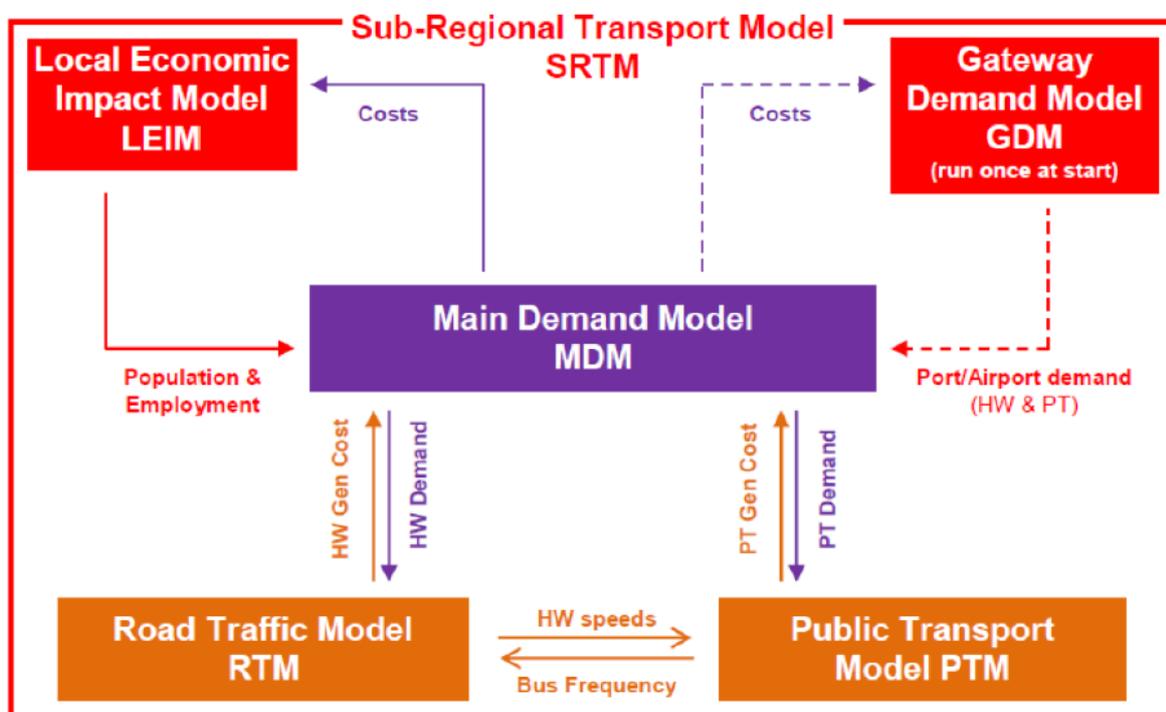
<http://www3.hants.gov.uk/tfsh/tfsh-what-tfsh-does/tfsh-projects-evidence-base.htm>.

The Transport for South Hampshire Sub-regional Transport Model (SRTM) modelling suite is an evidence-based land-use and transport interaction model developed to provide a strong analytical basis for the development of coherent, objective-led implementation plans to enable the changes in transport provision required to deliver prosperity to the area.

This is a fully WebTAG compliant multi-modal strategic transport model for the South Hampshire area, covering the part of the Solent LEP area within Hampshire. The modelling suite includes a Demand Model, Road Traffic Model (SATURN) and Public Transport Model (CUBE VOYAGER). The model is based on an extensive programme of traffic and public transport data collection, including Road Side Interviews and bus and rail passenger interviews. The model is fully calibrated and validated.

The integrated forecasting approach contains a suite of transport models and an associated Local Economic Impact Model (LEIM). The toolkit has been developed to assist in the ongoing investigation, appraisal and assessment of different: policies; strategies; and infrastructure, management and operational interventions on land-use policies and transport provision.

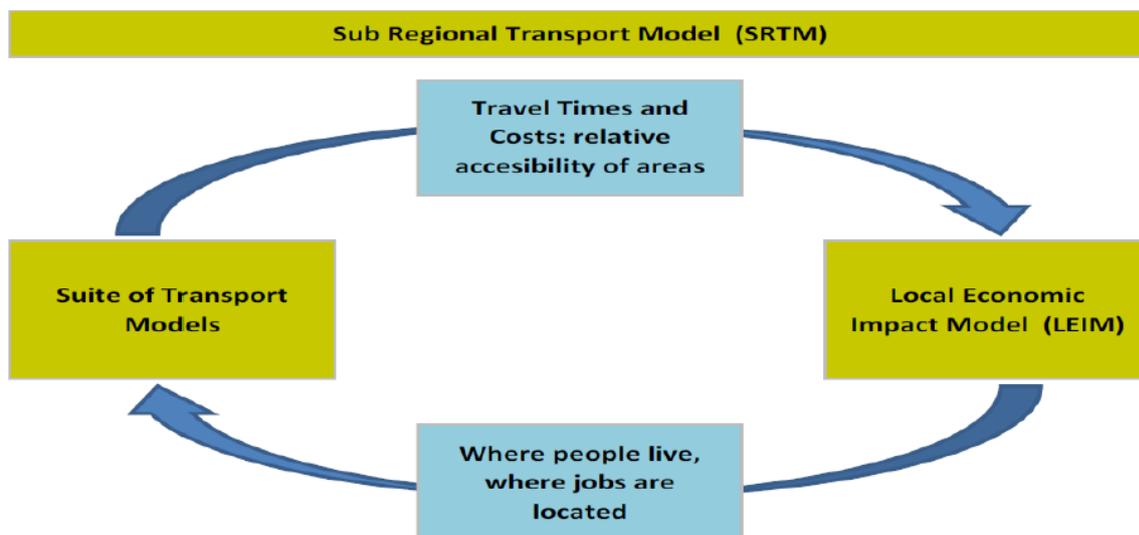
The suite of transport models comprises the Main Demand Model (MDM), the Gateway Demand Model (GDM), Road Traffic Model (RTM) and Public Transport Model (PTM). The diagram below shows the interaction of the various models within the SRTM.



The Local Economic Impact Model forecasts:

- The supply of housing
- The number of households by type
- The population by person types
- The number of jobs by sector
- The amount of commercial floorspace

The forecasts are produced for each year of the forecast period (2011 – 2041), and are affected by a range of factors, including, importantly, the performance of the transport network which is input for the years 2014, 2019, 20126 and 2036.



The changes in the supply of housing and employment floorspace are controlled in line with local planning policies and national figures in TEMPRO 6.2. Planning assumptions on permissible development were collected from the relevant local planning authorities and they cover the period up to 2026. For the period beyond 2026 LEIM assumes a greater intensification of use at existing sites only.

The overall growth of South Hampshire can be allowed to vary within constraints set by the TEMPRO data at a sector level, to test the impact of transport and planning policies, or it can be fixed to test the consequences of higher or lower levels of growth.

The outputs of the LEIM are used by the transport models to predict the demand for travel to and from areas within South Hampshire and these can be compared to assess the land-use/economic impacts of different planning and transport policies. The models are set up for a base year of 2010 with forecast scenarios for 2014, 2019, 2026 & 2036. The transport models represent travel conditions for the morning and evening peak periods and the inter-peak period. They estimate the changing patterns of travel separately for travellers undertaking journeys for different purposes (e.g. for commuting or for education-related journeys) and for light and heavy goods vehicles).

Other Relevant Supporting Documents

<http://www3.hants.gov.uk/tfsh/tfsh-what-tfsh-does/tfsh-projects-evidence-base.htm>

Data and traffic Survey Report

This report describes the transport surveys including Road Side Interviews, Automatic Traffic Counts and bus passenger surveys carried out in the data collection stage of the project, between May and July 2010.

<http://www3.hants.gov.uk/110209-tfsh-evidence-base-report-on-surveys.pdf>

Local Model Validation Report (LMVR)

These reports detail the calibration and validation of the SRTM the Road Traffic Model (RTM) which determines the routes taken by vehicles through the road network and journey times, accounting for congestion and the Public Transport Model (PTM) which determines routes and services chosen by public transport passengers.

<http://www3.hants.gov.uk/2011-tfsh-road-traffic-model-calibration-and-validation-report-4.pdf>

<http://www3.hants.gov.uk/2011-tfsh-ptm-calibration-validation-report-5.pdf>

Demand Model Report

The report covers the calibration and validation of the main demand model, including the standard realism tests, gateway demand model, local economic impact model and Fitness for Purpose of all three SRTM components

<http://www3.hants.gov.uk/2011-tfsh-model-development-report-version-2.pdf>

Forecasting Report

This report provides an important step by detailing the current and future transport related problems identified through the Evidence Base.

<http://documents.hants.gov.uk/transport-for-south-hampshire/tfsh-case-for-intervention-options-r6.pdf>

Appendix D (i)

Supporting Modelling / Appraisal Information

Documents to be provided separately

Appendix D (ii)

Summary Assessment of Distributional Impacts

Summary Assessment of Distributional Impacts

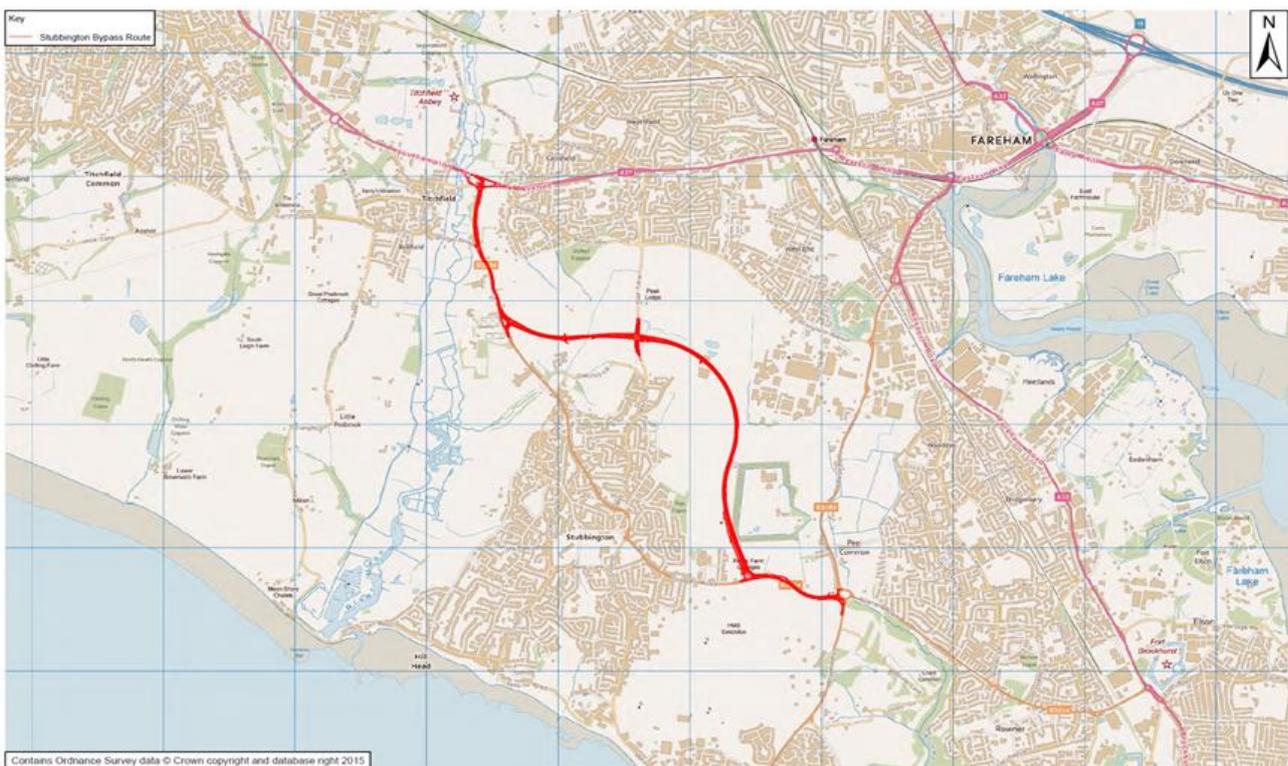
Stubbington Bypass

Introduction

This note presents a summary assessment of the Distributional Impacts of the Stubbington Bypass scheme, in support of the Appraisal Summary Table. A proportionate approach has been taken, in line with the value, scale and extent of impacts expected of the scheme proposed. It is not intended to be a fully comprehensive Distributional Impact appraisal, although key principles from TAG Unit A4.2 have been applied. The main purpose of this note is to summarise the initial consideration of how the scheme impacts may be expected to vary across different social groups.

Scheme Location / Context

The scheme is located in Fareham and close to the boundary with Gosport, within south Hampshire – see diagram below. The Solent Enterprise Zone is located to the south of the eastern end of the bypass. The bypass provides an alternative route to the existing B3334 which runs through Stubbington village and provides a main connection between Gosport / Lee-on-Solent and the A27 /M27 (J9).



Overview of the Scheme

The scheme comprises a new 3.5km long single carriageway road through an area of predominantly arable farmland. The bypass will be a 7.3m wide single carriageway road with a 2.5m wide shared footway/ cycleway, and verges that will run to the south of Fareham and to the north and east of the village of Stubbington (between B3334 Titchfield Rd to the west and Gosport Rd to the east). The

scheme includes associated enabling works on B3334 Titchfield Rd and Gosport Rd and junction improvements within Stubbington Village.

The key overall objectives of the scheme are as follows:

Scheme Objectives	Key Outcomes Sought
To provide a viable alternative route for traffic wishing to travel from the Gosport Peninsula westwards towards the M27 Junction 9, whilst avoiding heavily congested parts of the transport network	<ul style="list-style-type: none"> • Reduced congestion and delays on the local highway network • More reliable / improved journey times for western access to / from the Gosport Peninsula • Traffic relief to Stubbington village –reduced severance • Support housing / jobs growth • Support inward investment at strategic growth sites, in particular the Solent Enterprise Zone
To help encourage regeneration, investment and growth in the area	
To help remove the transport barriers to growth	
To help unblock critical bottlenecks and congestion hotspots on strategic routes, in town centre areas and in areas of employment	
To provide new and improved existing infrastructure to help better manage traffic flows, particularly during peak periods	

Socio-demographics (vulnerable groups)

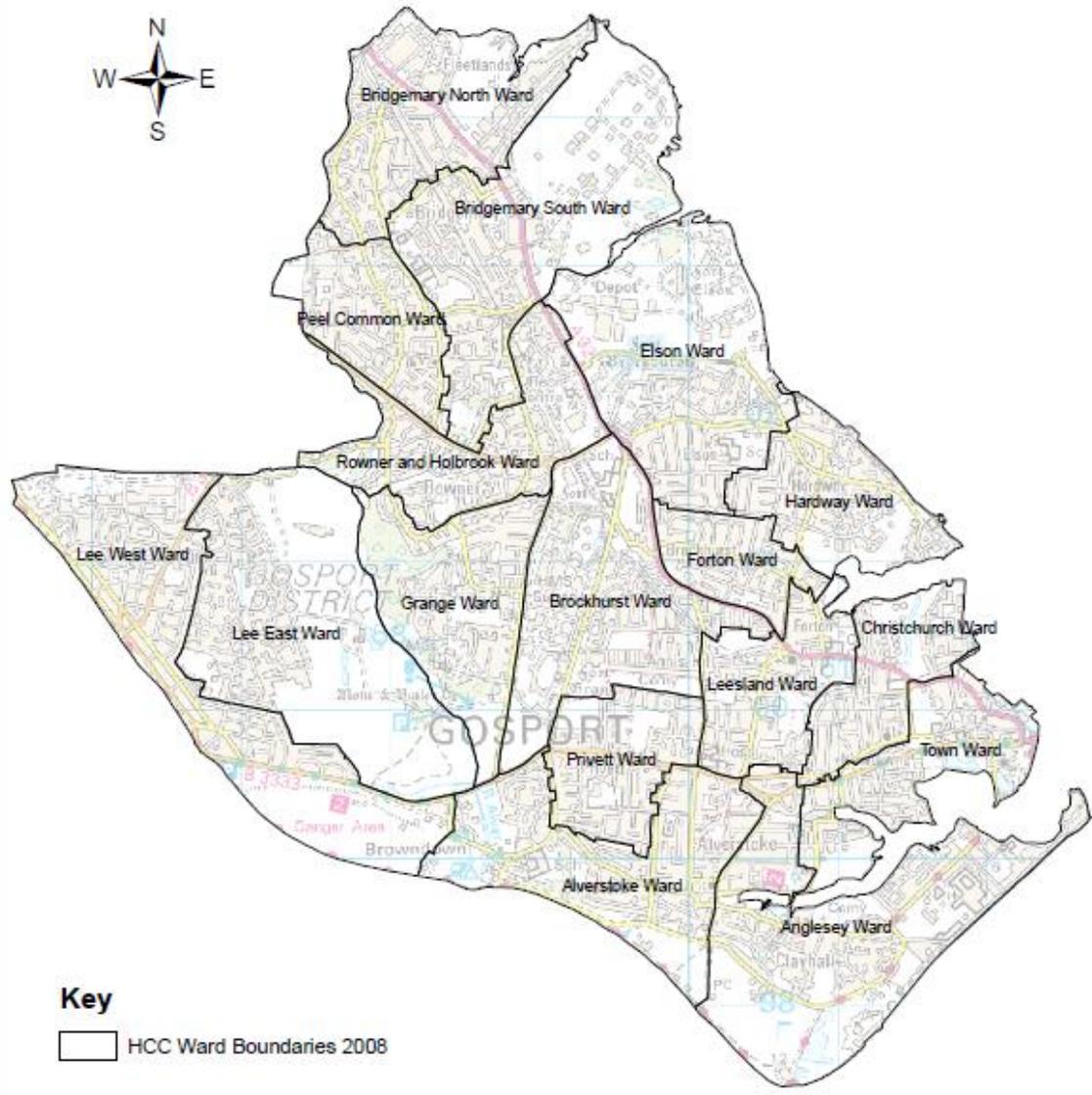
The different socio-demographic groups likely to be affected by the scheme have been investigated, with a particular focus on the vulnerable groups defined in TAG Unit A4.2.

Those affected by the scheme will include:

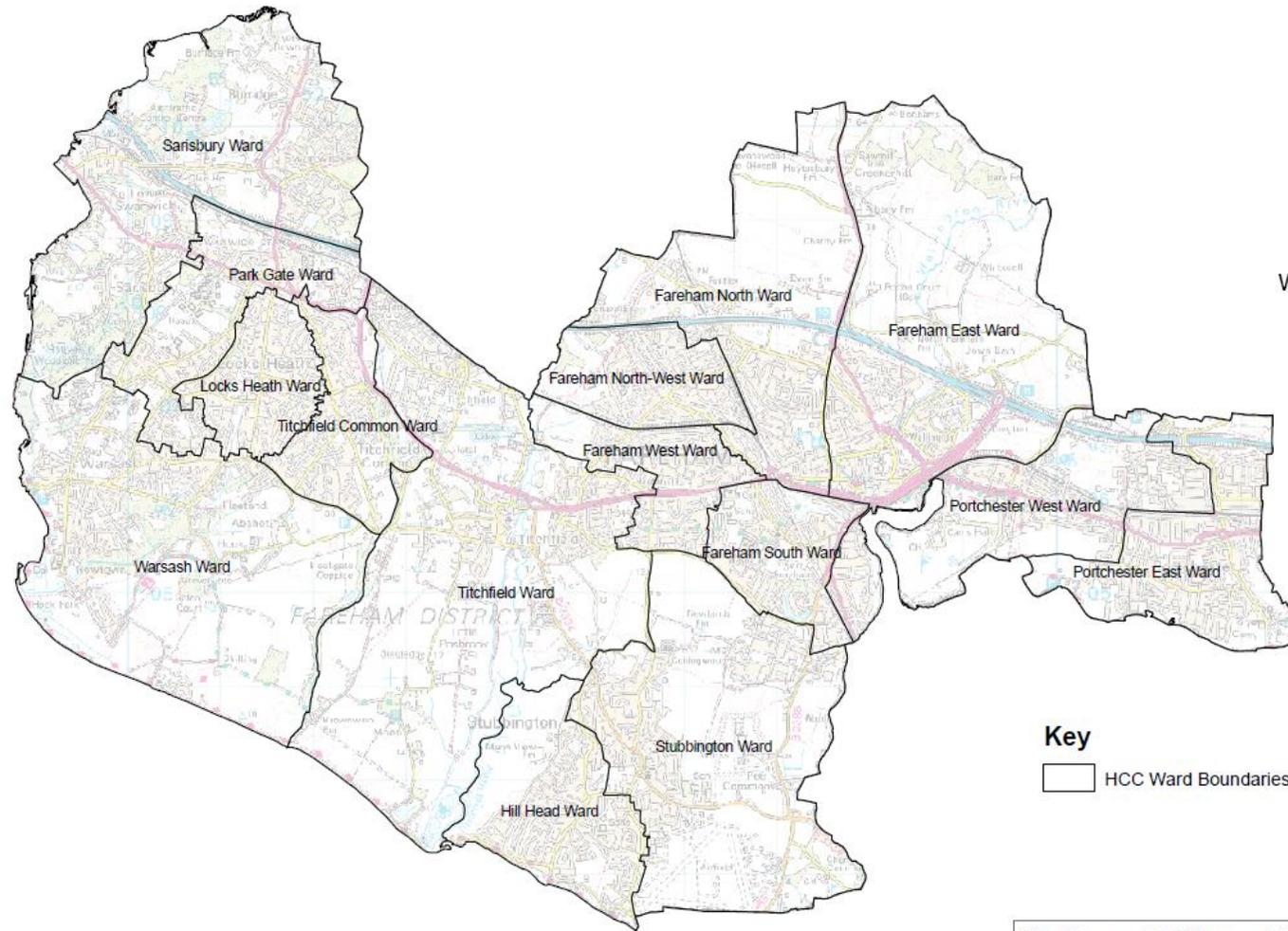
- The **transport users** that will be affected by the scheme (this would include car / bus / goods vehicles travelling to / from the Gosport peninsula; and users making more local trips, including those residents within Stubbington village;
- The **people living in areas** who may experience impacts of the intervention even if they are not users (e.g. within Stubbington, on Titchfield Road, Gosport Road and potentially others affected by wider impacts; and
- The **people travelling in areas** identified as likely to be affected by the intervention.

Socio-demographic data at a local level has been reviewed for the likely impact area. This has been compared against the average for the Fareham Borough and Gosport Borough authority areas and any significant differences identified in order to highlight particular concentrations.

Ward Boundaries for Gosport



Ward Boundaries for Fareham



Older People (65+)

2011 Census data has been investigated. There are greater proportions of older people (defined as over 65) in areas such as Lee West and Alverstoke in Gosport (approx. 40% and 35% respectively), which are located to the south west of the proposed Stubbington Bypass. These figures are higher than the average of 20% for Fareham district and 17% for Gosport district. One of the areas most local to the proposed Bypass is Stubbington which has above average levels of older people (28%). Some of the areas to the north of Stubbington, close to the proposed bypass route, also have notably higher concentrations of older people (c. 40%).

Young adults (16 to 25)

2011 Census data has been investigated. There are greater proportions of young adults in areas such as Town and Grange (Gosport), although the difference from the district average is not particularly marked (in the region of 14%, compared to 10%) – these areas are not within particularly close proximity to the scheme. Across the Gosport and Fareham districts, there is not a significant variation from the district average in general. Lee West has a lower proportion of young adults (6%) than the Gosport average and Alverstoke has lower proportion (7%) than the Fareham average (10%). The more localised areas to the scheme such as Stubbington have average levels of young adults.

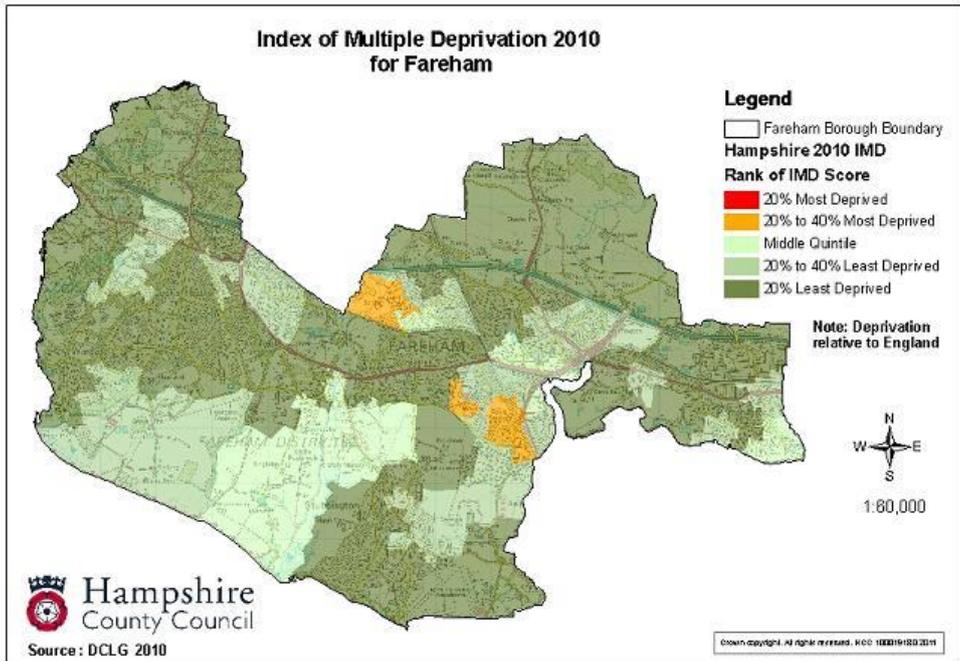
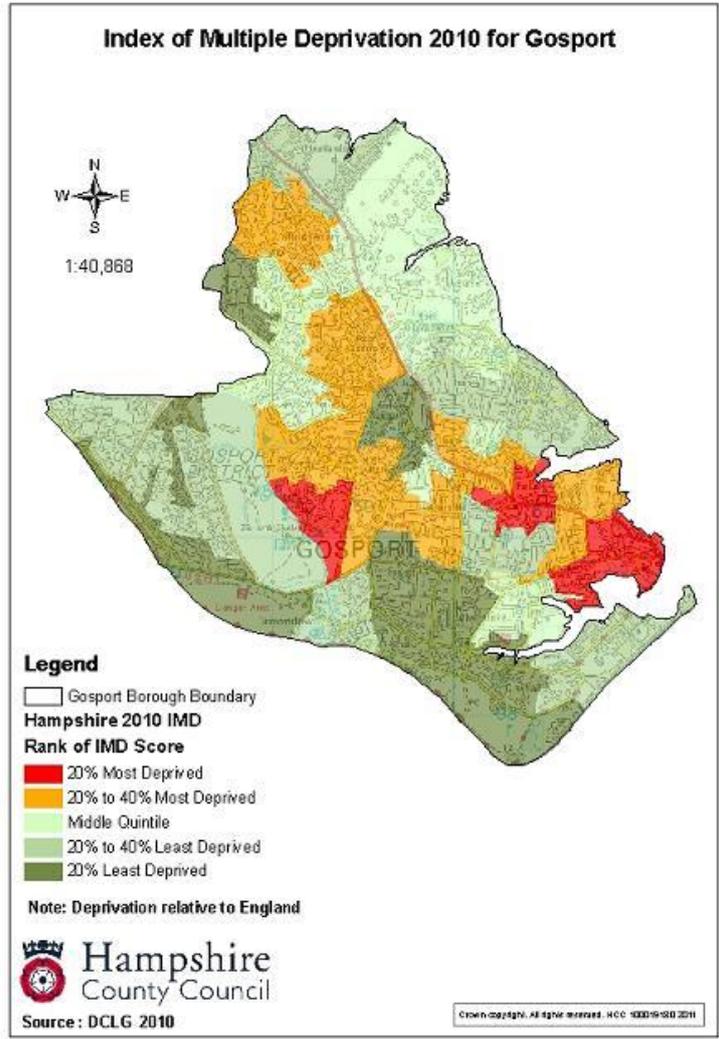
Children (<16)

2011 Census data has been investigated. The respective district averages of Gosport and Fareham are 20% and 17% respectively. There are greater proportions of children in areas such as Grange (32%) and Rowner and Holbrook (25%), which are both to the east of the scheme. Areas in close proximity to the scheme generally have levels of young children in line with district averages.

Low income groups

Index of Multiple Deprivation (2010) data (income domain) has been investigated to identify areas with higher proportions of low income households (i.e. those living in areas ranked highest in terms of income deprivation) – see diagrams overleaf.

There are higher proportions of low income households particularly in Grange, Town and Leesland (Gosport) and Fareham North West. Some areas within the vicinity of the scheme such as Peel Common and Rowner and Holbrook have slightly higher than average proportions of low income households. However, other nearby areas such as Stubbington and Titchfield have lower proportions of low income households. Additionally, the areas Locks Heath, Sarisbury, and Titchfield in Fareham have lower proportions of low income households.



Households without a car

2011 Census data has been investigated. The proportion of households without access to a car differs quite significantly between Fareham and Gosport, at 13% and 23% respectively. There are higher proportions of households without access to a car in Town, Leesland and Christchurch (Gosport). Stubbington and Peel Common, in the vicinity of the scheme, have broadly average levels of households without access to a car, whilst Titchfield, also nearby, has a much lower than average level. Similarly, the areas of Sarisbury and Titchfield Common have a much lower than average proportion of households without a car (<10%) when compared with the study area.

Disability

2011 Census data has been investigated. Areas with higher proportions of people with a long term health problem or disability include Alverstoke, Anglesey, Lee West and Town. There are also areas in the vicinity of the scheme with higher proportions of people with a long term health problem or disability, including Stubbington and Peel Common. Titchfield and Sarisbury are areas with much lower than average proportions of people with a long term health problem or disability.

Trip attractors / Amenities

It is not only resident population that may be affected by the scheme and trip attractors / local amenities can influence the concentration of certain groups within the impact area.

The key trip attractors within the vicinity of the scheme include:

- Lee-on-the-Solent Golf club (approx. 300m to the south of Peel Common Roundabout)
- Peel Common Infant School (approx. 300m to the north east of Peel Common Roundabout)
- Brookers Field Recreation Ground (approx. 100m to the north east of Peel Common Roundabout)
- Crofton Secondary School (approx. 500m to the west of Peel Common Roundabout)
- Crofton Junior and Hammond Infant Schools (In Stubbington. Approx 1110m south west of bypass)
- Crofton Community Centre (In Stubbington. Approx. 900m south west of the bypass)
- Baycroft School (approx. 500m to the west of Peel Common Roundabout)
- Meoncross School (In Stubbington. Approx 500m west of bypass)
- Crofton Anne Dale Junior and Infant School (In Stubbington. Approx. 1000m south west of the bypass)
- HMS Collingwood (approx. 50m east of bypass)
- Crofton Manor Equestrian Centre (In Stubbington. Approx 500m south west of bypass)
- Heathfield School (approx. 900m east of Titchfield Gyratory)
- Fareham College (approx. 1900m east of Titchfield Gyratory)
- St Francis Special School (approx. 900m east of Titchfield Gyratory)
- Ranvilles Infant and Junior School (approx. 900m east of Titchfield Gyratory)
- Titchfield Primary School (approx. 400m west of Titchfield Gyratory)

Major new employment development is also planned at the Solent Enterprise Zone (Daedalus), located to the south of the bypass.

Distributional Impacts – Summary assessment

The table that follows provides an initial summary assessment of potential distributional impacts. This draws upon the socio-demographic information described above, in addition to the expected scheme impacts (see the Appraisal Summary Tables).

The table includes the initial screening criteria set out in TAG Unit A4.2. If the expected impact does not meet the relevant minimum criteria then the impact has been screened out on this basis and no further consideration has been given to it.

Distributional Impacts – Summary assessment

Stubbington Bypass

Indicator	(a) Appraisal output criteria	Is the indicator (positive or negative) relevant?	Are there vulnerable and/ or low income groups and any sensitive receptors that may be affected?	What is the potential extent / nature of the impact on these groups / receptors?	Summary assessment
User benefits	The TUBA user benefit analysis software or an equivalent process has been used in the appraisal; and/or the value of user benefits Transport Economic Efficiency (TEE) table is non-zero.	Yes – the nature of the scheme means it will produce differing levels of benefit (and disbenefit) across different geographical sectors.	There are middle quintile / 20% least deprived areas within vicinity of the scheme. Higher proportions of low income households particularly in Grange, Town and Leesland (Gosport) and Fareham North West.	Greatest benefits fall predominantly within areas of Gosport (inc Lee-on-the-Solent and north Fareham). Slight disbenefits in the Stubbington village area.	Widespread distribution of benefits / disbenefits. Not possible to fully assess distribution across income groups at this level of assessment. Benefits fall to Gosport and north Fareham, where there is relatively high proportion of low income households.
Noise	Any change in alignment of transport corridor or any links with significant changes (>25% or <-20%) in vehicle flow, speed or %HDV content. Also note comment in TAG Unit A3.	Yes – the nature of the scheme means it will produce differing levels of benefit (and disbenefit) across different geographical sections.	Areas to the north east of Stubbington, including Meoncross school. Crofton and Baycroft Schools are located in the vicinity of the B3334. Greater proportions of children in areas such as Rowner and Holbrook which is to the east of the scheme. Average levels in the vicinity of the scheme. The areas impacted in Stubbington	The scheme includes a new alignment which will re-locate the principal traffic noise source. Increase in noise levels in the area around the new bypass – affecting properties in the north east of Stubbington, and on Titchfield Road at the western end. Decreases in noise on the B3334 through	Localised increases / decreases in noise expected. Preliminary analysis suggests potential increases in noise are unlikely to disproportionately affect vulnerable group (children) or low income groups. Beneficial and adverse noise impacts may be expected in relation to

Indicator	(a) Appraisal output criteria	Is the indicator (positive or negative) relevant?	Are there vulnerable and/ or low income groups and any sensitive receptors that may be affected?	What is the potential extent / nature of the impact on these groups / receptors?	Summary assessment
			are generally below average in the Index of Multiple Deprivation.	Stubbington.	some sensitive receptors (e.g. schools).
Air quality	Any change in alignment of transport corridor or any links with significant changes in vehicle flow, speed or %HDV content: <ul style="list-style-type: none"> • Change in 24 hour AADT of 1000 vehicles or more • Change in 24 hour AADT of HDV of 200 HDV vehicles or more • Change in daily average speed of 10kph or more • Change in peak hour speed of 20kph or more • Change in road alignment of 5m or more 	Yes – The construction of a new bypass will alter the road layout and change vehicle flows and traffic conditions in the area.	Greater proportions of children in areas such as Rowner and Holbrook which is to the east of the scheme and may experience a small increase in emissions. Several schools in vicinity of Titchfield Gyratory. Peel common and Rowner and Holbrook also have slightly higher levels of deprivation. Stubbington has a higher than average proportion of older people and will see a large decrease along the B3334.	Rowner and Holbrook and Peel Common to the east, and parts of Titchfield to the west are identified as experiencing a slight disbenefit (increase in vehicle emissions), while Stubbington / Hill Head are predicted to experience more significant benefits. In terms of regional air quality, NOX emissions are predicted to increase 0.1% and PM10 emissions are predicted to decrease 0.2 – 0.4%.	Potential beneficial impact on air quality for older people due to higher than average levels in Stubbington area. Potential to adversely affect vulnerable group (children) or low income groups, due to higher concentrations of these groups in areas predicted to experience an increase in vehicle emissions.
Accidents	Any change in alignment of transport corridor (or road layout) that may have positive or negative safety impacts, or any links with significant changes in vehicle flow, speed, %HGV content or any significant change (>10%) in the number of pedestrians, cyclists or motorcyclists using road network.	Yes – The construction of a new bypass will alter the road layout change vehicle flows in the area. Scheme also includes new / amended pedestrian	Greater proportions of children in areas such as Rowner and Holbrook which is to the east of the scheme. Average levels in the vicinity of the scheme. Meoncross School within	Reduced traffic flow on the B3334 through Stubbington expected to have a positive impact in relation to accidents. The overall increase in vehicle kilometres may slightly	Potential beneficial safety impacts expected on vulnerable group (older people), with higher concentrations in vicinity of the scheme in

Indicator	(a) Appraisal output criteria	Is the indicator (positive or negative) relevant?	Are there vulnerable and/ or low income groups and any sensitive receptors that may be affected?	What is the potential extent / nature of the impact on these groups / receptors?	Summary assessment
		and cyclist facilities.	Stubbington and Crofton school. Concentrations of older people present in the vicinity of the scheme. Middle quintile / 20% least deprived areas within vicinity of scheme.	offset some of the positive impacts on the B3334.	Stubbington. Overall the impact of the scheme on accidents has been assessed as slight beneficial.
Security	Any change in public transport waiting/interchange facilities including pedestrian access expected to affect user perceptions of personal security.	No – the scheme does not have any material impact on the criteria specified for security.			
Severance	Introduction or removal of barriers to pedestrian movement, either through changes to road crossing provision, or through introduction of new public transport or road corridors. Any areas with significant changes (>10%) in vehicle flow, speed, %HGV content.	Yes – The bypass will physically impact on some pedestrian / cyclist rights of way, however informal crossing facilities will be provided on all. Redistribution of traffic will result in localised increases and decreases in traffic flow.	Higher proportion of older people in Stubbington. Higher proportion of people with a disability in Stubbington and Peel Common. Areas with high proportions of children such as Rowner and Holbrook.	Significant reduction of traffic flows on B3334 through Stubbington expected to have a beneficial impact on severance. Improved crossing facilities at Peel Common Roundabout and Titchfield gyratory contributes to reducing severance.	Slight beneficial impact expected through removal of barriers to pedestrian movement in areas with higher concentrations of vulnerable groups.
Accessibility	Changes in routings or timings of current public transport services, any changes to public transport provision, including routing, frequencies, waiting facilities (bus stops / rail stations) and rolling stock, or any indirect impacts on accessibility to services (e.g. demolition & re-location of a school).	Yes – Bus routes are not expected be altered. Potential impacts on journey times / reliability which could affect	Higher proportions of households without access to a car in Town, Leesland and Christchurch (Gosport). Concentrations of older	The reduction of traffic though Stubbington is expected to improve bus service reliability and punctuality (service 21 /21A),	No particular disproportionate impacts identified based on preliminary assessment.

Indicator	(a) Appraisal output criteria	Is the indicator (positive or negative) relevant?	Are there vulnerable and/ or low income groups and any sensitive receptors that may be affected?	What is the potential extent / nature of the impact on these groups / receptors?	Summary assessment
		frequencies.	people present in the vicinity of the scheme. Middle quintile / 20% least deprived areas within vicinity of scheme.	without necessarily reducing journey time. Bus route X5 could experience additional delays due to new signals on the route along Peak Lane.	
Affordability	In cases where the following charges would occur; Parking charges (including where changes in the allocation of free or reduced fee spaces may occur); Car fuel and non-fuel operating costs (where, for example, rerouting or changes in journey speeds and congestion occur resulting in changes in costs); Road user charges (including discounts and exemptions for different groups of travellers); Public transport fare changes (where, for example premium fares are set on new or existing modes or where multi-modal discounted travel tickets become available due to new ticketing technologies); or Public transport concession availability (where, for example concession arrangements vary as a result of a move in service provision from bus to light rail or heavy rail, where such concession entitlement is not maintained by the local authority[1]).	No – the scheme itself is not expected to change costs of travel materially. The TUBA analysis indicates some increases in vehicle operating costs (likely to be a result of distance travelled on the new bypass)s, but these are not considered to be significant in terms of personal affordability. Overall impact assessed as neutral.			

Appendix E

Appraisal Summary Table

Appraisal Summary Table		Date produced:	21	9	2015	Contact:																												
Name of scheme:		Stubbington Bypass				Name		H. Walmsley																										
Description of scheme:		A new 3.5km long single carriageway road through an area of predominantly arable farmland. The bypass will be a 7.3m wide single carriageway road with a 2.5m wide shared footway/ cycleway, and verges that will run to the south of Fareham and to the north and east of the village of Stubbington (between B3334 Titchfield Rd to the west and Gosport Rd to the east). The scheme includes associated enabling works on B3334 Titchfield Rd and Gosport Rd.				Organisation		HCC																										
						Role		Promoter																										
Impacts	Summary of key impacts	Assessment																																
		Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp																											
Economy	Business users & transport providers	Benefits from journey time savings for business users due to reduction in delays on the network. Reduction in travel times in peak periods on the B3334 route to / from Gosport. Approx 2 to 3 min journey time saving in AM peak, and 3 to 3.5 min saving in the PM peak. Further benefits arise from reduced vehicle operating costs associated with less congested conditions. Estimate of benefits are in 2010 prices, discounted to 2010.			Value of journey time changes (£)		£28.8m	£32.1m	See Summary DI Assessment (Appendix D)																									
		Net journey time changes (£)																																
		0 to 2min	2 to 5min	> 5min																														
		Reliability impact on Business users	The bypass will attract a significant volume of traffic from the existing B3334 route, which suffers from congestion, particularly during peak periods. Furthermore, the nature of the existing route means that it is more susceptible to unpredictable and / or intermittent delays. The bypass will provide a free-flowing alternative to the existing route, providing improved journey time reliability, particularly benefiting through traffic, which will include HGVs / LGVs and those travelling for business related purposes.			Moderate Beneficial																												
	Regeneration	As a key phase of the wider overarching package of improvements for Fareham and Gosport, the scheme 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 the Solent Enterprise Zone and Welborne as well as the benefits for Gosport peninsula and centres of employment at key business parks. The improvement of a key route between the SEZ / Gosport peninsula and the strategic network will 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			Moderate Beneficial																													
	Wider Impacts	By reducing congestion and enhancing connectivity on a key route between Gosport and the strategic network businesses will have greater access to a larger pool of employees, suppliers and customers, resulting in agglomeration benefits. Increased productivity to businesses and increased tax revenues to government from facilitating higher value, more productive jobs.			Moderate Beneficial																													
Environmental	Noise	Localised positive and negative impacts due to the traffic re-distribution resulting from the scheme. With mitigation in place (e.g. noise barriers) impacts of noise during operation will be reduced, but some homes are still likely to experience a significant increase in noise levels. Three different assessment approaches have been undertaken, producing net change in annoyance within a range of -90 people to +22 people. Worst case scenario has been assumed for appraisal purposes.			Net change in annoyance (DMRB methodology) = +22 people		-£1.1m	See Summary DI Assessment (Appendix D)																										
	Air Quality	Overall, the scheme is predicted to have a positive effect on local air quality (notably NO2 and PM10 concentrations) with more properties predicted to experience an improvement in local air quality than a deterioration. The proposed scheme is predicted to result in an increase in regional NOX emissions, however the predicted increases (in tonnes/year) in both 2019 (the anticipated opening year) and 2036 (the forecast year) are less than 1% and, therefore, the effect of the proposed scheme on regional air quality is unlikely to be significant.			<table border="1"> <thead> <tr> <th rowspan="2">Year</th> <th rowspan="2">Pollutant</th> <th colspan="3">Predicted Change (Number of Properties)</th> </tr> <tr> <th>Improvement</th> <th>No Change</th> <th>Deterioration</th> </tr> </thead> <tbody> <tr> <td rowspan="2">2019</td> <td>NO₂</td> <td>14359</td> <td>3507</td> <td>9392</td> </tr> <tr> <td>PM₁₀</td> <td>12473</td> <td>7398</td> <td>7387</td> </tr> <tr> <td rowspan="2">2036</td> <td>NO₂</td> <td>13944</td> <td>1715</td> <td>11599</td> </tr> <tr> <td>PM₁₀</td> <td>13217</td> <td>6546</td> <td>8495</td> </tr> </tbody> </table>		Year	Pollutant	Predicted Change (Number of Properties)			Improvement	No Change	Deterioration	2019	NO ₂	14359	3507	9392	PM ₁₀	12473	7398	7387	2036	NO ₂	13944	1715	11599	PM ₁₀	13217	6546	8495	£4.4m	See Summary DI Assessment (Appendix D)
	Year	Pollutant	Predicted Change (Number of Properties)																															
Improvement			No Change	Deterioration																														
2019	NO ₂	14359	3507	9392																														
	PM ₁₀	12473	7398	7387																														
2036	NO ₂	13944	1715	11599																														
	PM ₁₀	13217	6546	8495																														
	Greenhouse gases	The scheme is forecast to result in an increase in vehicle kilometres travelled, which will have a direct impact on fuel based emissions. However, fuel efficiency is also a factor in emissions generated and reduced congestion and delays resulting from the scheme is likely to have a small benefit to fuel efficiency, and thus a slight off-setting effect on total emissions.			Change in non-traded carbon over 60y (CO ₂ e)		-£1.3m																											
					Change in traded carbon over 60y (CO ₂ e)																													

	Landscape	The impact of the scheme on landscape is considered to be larger during the construction works, due to the additional noise and visual intrusion of working machinery, plant and vegetation removal. The change in the overall character and setting of the location will result in a likely negative impact. It will take time to achieve the long term objective of the mitigation to reduce the visual and landscape character impacts. By twelve to fifteen years after planting it will have significantly grown and will be screening cars and the lower sections of lorries, total screening of all vehicles will take up to 20 years. After eight to ten years the planting will have blended into the surrounding landscape and the road will no longer be an alien feature.		Slight Adverse			
	Townscape	The area within the vicinity of the scheme is predominantly semi-rural with few defining townscape features. The scheme is therefore not expected to have a significant impact upon the existing townscape character of the area.		Neutral			
	Historic Environment	During construction and operation of the scheme a number of heritage assets will be directly impacted. The setting of a number of designated and non-designated heritage assets would be directly affected, including Foxbury Cottages, Foxbury Farmhouse Grade II Listed Building and locally listed Barn at Foxbury Farmhouse and Foxbury Farmhouse, Carriston Cottage Grade II Listed Building, Hollam House Grade II Listed Building and West Meon Girls School Grade II Listed Building. Further pre-construction investigations will be undertaken as appropriate and mitigation developed if necessary.		Slight Adverse			
	Biodiversity	Land will be lost to the scheme which will result in a permanent negative impact particularly during the construction works and until the new landscaping is operational. The scheme does not require land take from any statutory or non-statutory designated sites and effects on these are anticipated to be negligible. Temporary negative impacts will occur on a number of species including: amphibians, badgers, bats, reptiles, invertebrates, hedgehog, harvest mouse, breeding birds and water vole. The creation of new habitats along the road verge and the replacement of important habitat such as the woodland on the Peel Common Sewage Works bund will help to reconnect the habitat and allow ecological movements. Overall a positive effect will occur once the recommended actions have been put in place; however it is likely that a negative impact will occur on breeding birds due to the loss of farmland. With mitigation there is expected to be no impact on conservation sites in the area.		Neutral			
	Water Environment	It is considered that the scheme (and drainage strategy of the scheme) will not have a large negative impact on the floodplain areas or properties, and will not increase flood risk. With various protection measures in place the scheme is therefore not expected to cause an environmental or ecological risk to the sensitive receiving waters, nearby designated areas or other water courses in the area.		Neutral			
Social	Commuting and Other users	Benefits from journey time savings for commuter and other users due to reduction in delays on the network. Reduction in travel times in peak periods on the B3334 route to / from Gosport. Approx 2 to 3 min journey time saving in AM peak, and 3 to 3.5 min saving in the PM peak. Slight increase in vehicle operating costs. Estimate of benefits are in 2010 prices, discounted to 2010.	Value of journey time changes(£)		£30.2m	See Summary D1 Assessment (Appendix D)	
			Net journey time changes (£)				£26.0m
			0 to 2min	2 to 5min	> 5min		
Reliability impact on Commuting and Other users	The bypass will attract a significant volume of traffic from the existing B3334 route, which suffers from congestion, particularly during peak periods. Furthermore, the nature of the existing route means that it is more susceptible to unpredictable and / or intermittent delays. The bypass will provide a free-flowing alternative to the existing route, providing improved journey time reliability, particularly benefiting through traffic.		Moderate beneficial				
Physical activity	The scheme does not directly promote increased walking / cycling activity. The improved cyclist / pedestrian facilities to be provided as part of the scheme, together with the removal of a significant volume of traffic from the centre of Stubbington village, are expected to contribute towards a safer, more welcoming environment. This could encourage more people to cycle / walk, or those that already cycle/ walk to do so more often. This would be expected to have a positive impact in terms of reduced mortality and absenteeism. However, the improved traffic conditions as a result of the scheme are also likely to contribute to more people being attracted to drive (as suggested by the forecast changes in vehicle kilometres from the SRTM).		Neutral				

	Journey quality	Positive impacts on traveller stress. Small negative impact on view from the road, due to it being constructed on land that is predominately flat, open fields that are undeveloped; although this will be reduced by appropriate landscaping.		Slight beneficial		
	Accidents	Reduction in traffic through Stubbington and reduced potential conflict with pedestrians and cyclists. Overall increase in vehicle kilometres could potentially off-set some of this benefit.		Slight beneficial		See Summary DI Assessment (Appendix D)
	Security	There is a degree of informal surveillance on the existing route through Stubbington village, for instance as provided by properties adjacent to the road. With the new bypass route, which largely runs through open fields, the level of informal surveillance will be reduced. The existing route alignment has street lighting. It is proposed that the new bypass route itself would not be lit, due to its rural surroundings.		Slight adverse		See Summary DI Assessment (Appendix D)
	Access to services	No significant change to service provision expected. Slight improvements to bus punctuality expected on the bus route through Stubbington. Introduction of signals on Peak Lane is likely to introduce some additional delay to the X5 service on this route.		Neutral		See Summary DI Assessment (Appendix D)
	Affordability	No significant impact expected on the cost of travel.		Neutral		See Summary DI Assessment (Appendix D)
	Severance	Based upon the EIA assessment of changes in traffic flows on sixteen selected road links, the level of severance decreases on seven of the links from either severe to moderate and moderate to slight. On three links the severance increases from moderate to severe while on all other links the level of severance remains the same level, despite the links experiencing an increase or decrease in traffic flows. The re-assignment of traffic from Stubbington village to the bypass can reduce severance for pedestrians crossing the B3334. In the centre of Stubbington the traffic flows are forecast to drop by over 10,000 vehicles per day which will significantly improve residents accessibility to local facilities, especially the elderly crossing Titchfield Road or Gosport Road. There will be no extinguishment of any Public Rights of Way (PRoW) that are crossed by the Bypass.		Slight beneficial		See Summary DI Assessment (Appendix D)
	Option and non-use values	No impact - the scheme does not alter the availability of transport services.		Neutral		
Public Accounts	Cost to Broad Transport Budget	Total scheme capital costs	Present Value of Costs in 2010 prices discounted to 2010		£29.3m	
	Indirect Tax Revenues	Improvements to network conditions results in increased demand to/from Gosport and increased travel distance, and therefore increases in indirect tax revenues to central government (from fuel duty)	ITR output from TUBA		£4m	

Appendix F

Economic Appraisal Outputs

(Scenario 4d)

- TEE Table
- AMCB Table
- Public Accounts Table

TEE Table

Economic Efficiency of the Transport System (TEE)								
Non-business: Commuting	ALL MODES			ROAD	PT	ACTIVE MODES		
<i>User benefits</i>	TOTAL			Private Cars and LGVs	Passengers	Passengers		
Travel time	9480			9737	-257	0		
Vehicle operating costs	-895			-895	0	0		
User charges	18			-8	25	0		
During Construction & Maintenance	0			-	-	-		
NET NON-BUSINESS BENEFITS: COMMUTING	8603	<i>(1a)</i>		8834	-232	0		
Non-business: Other	ALL MODES			ROAD	PT	ACTIVE MODES		
<i>User benefits</i>	TOTAL			Private Cars and LGVs	Passengers	Passengers		
Travel time	20669			20913	-245	0		
Vehicle operating costs	-2912			-2912	0	0		
User charges	-367			5	-372	0		
During Construction & Maintenance	0			-	-	-		
NET NON-BUSINESS BENEFITS: OTHER	17390	<i>(1b)</i>		18007	-617	0		
Business				ROAD	PT	ACTIVE MODES		
<i>User benefits</i>				Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Active Passengers
Travel time	28759			17535	11354	-130	-	0
Vehicle operating costs	4125			2761	1364	0	-	0
User charges	44			1	-1	44	-	0
During Construction & Maintenance	0			-	-	-	-	-
Subtotal	32927	<i>(2)</i>		20297	12717	-86	0	0
Private sector provider impacts							Freight	Passengers
Revenue	-824					-	-	-824
Operating costs	0					-	0	0
Investment costs	0					-	0	0
Grant/subsidy	0					-	0	0
Subtotal	-824	<i>(3)</i>				0	0	-824
Other business impacts								
Developer contributions	0	<i>(4)</i>		-	-			-
NET BUSINESS IMPACT	32103	<i>(5) = (2) + (3) + (4)</i>						
TOTAL								
Present Value of Transport Economic Efficiency Benefits (TEE)	58095	<i>(6) = (1a) + (1b) + (5)</i>						
Notes: Benefits appear as positive numbers, while costs appear as negative numbers.								
All entries are discounted present values, in 2010 prices and values								

Public Accounts

Public Accounts				
Local Government Funding	ALL MODES	ROAD	PT	ACTIVE MODES
Revenue	326	326	0	0
Operating Costs	0	0	0	0
Investment Costs	29087	29087	0	0
Developer Contributions	0	0	0	0
Grant/Subsidy Payments	0	0	0	0
NET IMPACT	29413	29413	0	0
Central Government Funding: Transport	ALL MODES	ROAD	PT	ACTIVE MODES
Revenue	0	0	0	0
Operating costs	0	0	0	0
Investment costs	0	0	0	0
Developer Contributions	0	0	0	0
Grant/Subsidy Payments	0	0	0	0
NET IMPACT	0	0	0	0
Central Government Funding: Non-Transport	ALL MODES	ROAD	PT	ACTIVE MODES
Indirect Tax Revenues	-4025	-3974	-51	0
TOTALS	ALL MODES	ROAD	PT	ACTIVE MODES
Broad Transport Budget	29413	29413	0	0
Wider Public Finances	-4025	-3974	-51	0
Note: Costs appear as positive numbers, while revenues and developer contributions appear as negative numbers. Note: All entries are present values discounted to 2010, in 2010 prices				

Analysis of Monetised Costs and Benefits	
Greenhouse Gases	-1261
Economic Efficiency: Consumer Users (Commuting)	8603
Economic Efficiency: Consumer Users (Other)	17390
Economic Efficiency: Business Users and Providers	32103
Wider Public Finances (Indirect Taxation Revenues)	4025
Present Value of Benefits (PVB)	60859
Broad Transport Budget	29413
Present Value of Costs (PVC)	29413
OVERALL IMPACTS	
Net Present Value (NPV)	31445
Benefit to Cost Ratio (BCR)	2.069
Note: This table includes costs and benefits which are regularly or occasionally presented in monetized form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetized form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.	

Appendix G

Project Gantt Chart (Indicative)

Appendix H

Risk Register / QRA

Project Risk Register		CONFIDENTIAL													
Scheme Title:		Stubbington Bypass		Job Number:		R.J504603.01									
Date of Assessment:		29/06/2015		Client Manager:		Heather Walmsley									
Date of Last Assessment:		17/12/2014		Project Manager:		Linda Wickens									
														←-----This section to be developed by CM and PM-----→	
Risk ID	Risk Category	Description of Potential Risk	Effect of Risk Occuring	Mitigating Action	Residual Risk	Residual Risk Scoring			Financial Impacts				Risk Owner	Potential Programme Impact of Residual Risk	Comments (to include details of any revisions, date and who by)
						Impact	Likelihood	Risk Score	Lowest Cost Estimate	Highest Cost Estimate	Probability	Current Estimated Risk Value			
1	Funding	Funding needed from Solent LEP to deliver scheme not secured	Scheme cannot be taken forward for delivery until issue resolved	Develop robust WebTAG compliant business case using SRTM to demonstrate good V/M of scheme to LEP		5	4	20	£500	£1,000	0.650	£488	Heather Walmsley		
2	Political	Political imperative to deliver scheme changes	Delays scheme and costs increase	Early engagement with members on key issues via comms strategy/ Stakeholder Management Plan		3	1	3	£10,000	£50,000	0.025	£750	Heather Walmsley		
3	Corporate	Inflation on fees	Increased fees	None	Additional fees	1	4	4	£2,000	£20,000	0.650	£7,150	N/A		
4	Corporate	Legal challenge because robust options feasibility study not carried out	Delays scheme and costs increase			3	2	6	£5,000	£50,000	0.125	£3,438	Heather Walmsley		
5	Corporate	Additional cost for legal challenges (protestors, site possession) against the works	Delays scheme and increases works and fee costs			4	2	8	£20,000	£100,000	0.125	£7,500	Heather Walmsley		
6	Corporate	Key Stakeholders (e.g. Daedalus) interfere in design requirements due to lack of communication	Delays scheme and costs increase	Early consultation with stakeholders		1	2	2	£5,000	£10,000	0.125	£938	Heather Walmsley		
7	Planning	Design & Programme overruns	Delays scheme and costs increase	Ensure adequate time is allowed for the processes		3	3	9	£15,000	£500,000	0.350	£90,125	Linda Wickens		
9	Planning	Part 1 claims exceed estimated amount	Additional costs			1	3	3	£10,000	£500,000	0.350	£89,250	Nick Bishop		
12	Land Acquisition	Land owner takes us to the Lands Chamber of the Upper Tribunal (formerly known as the Lands Tribunal) if entry taken under confirmed CPO. Tribunal awards in favour of third party based on evidence put before it. Compensation cannot be agreed for land purchase	Delays scheme and costs increase	Early communication with land owners. Ensure watertight nil detriment scheme.		4	3	12	£20,000	£200,000	0.350	£38,500	Nick Bishop		
13	Land Acquisition	Legal challenge to confirmation of CPO (e.g. on grounds that Inspector's decision not based on fact/ not correct)	Delays scheme and costs increase			3	1	3	£5,000	£50,000	0.025	£688	Nick Bishop		
14	Land Acquisition	Not enough time and budget for a CPO process for land purchases	Delays scheme and costs increase			2	3	6	£10,000	£30,000	0.350	£7,000	Nick Bishop		
15	Land Acquisition	Unknown Legal Cost for CPO process for land purchases	Delays scheme and costs increase			2	2	4	£50,000	£150,000	0.125	£12,500	Nick Bishop		
16	Land Acquisition	Land not acquired because negotiations with landowners collapse and additional hope value is sought	Delays scheme and costs increase	Prepare CPOs in parallel		4	3	12	£100,000	£100,000	0.350	£35,000	Nick Bishop		
18	Land Acquisition	Unknown cost for Accomodation Works (i.e flooding mitigation and access improvements) for Land Purchases	Increases costs			2	3	6	£5,000	£50,000	0.350	£9,625	Rob Ward		

19	Land Acquisition	"Village Green" legal challenge, opposition from local residents	Delays scheme and costs increase	To negotiate with land owners and purchase land asap		4	2	8	£10,000	£50,000	0.125	£3,750	Heather Walmsley		
20	Land Acquisition	Additional time and budget required for Public Inquiry for Land Purchases	Delays scheme and costs increase			5	2	10	£20,000	£100,000	0.125	£7,500	Nick Bishop		
21	Land Acquisition	Additional cost and time for Part 2 Claims from residents	Increases costs			2	1	2	£10,000	£100,000	0.025	£1,375	Nick Bishop		
22	Programme	Extended Programme	Additional client fees	None	Additional fees	2	2	4	£500	£10,000	0.125	£656	Heather Walmsley		
23	Programme	Extended Programme	Additional project management fees	None	Additional fees	2	2	4	£500	£20,000	0.125	£1,281	Linda Wickens		
27	Design	Cost estimate exceeds budget	Delays scheme and costs increase	Reduce scope of works		4	3	12	£100,000	£200,000	0.350	£52,500	Heather Walmsley		
28	Design	Inadequate resources across disciplines to deliver the project	Delays scheme and costs increase	Consider alternative means of procuring design resources		3	3	9	£25,000	£100,000	0.350	£21,875	EC		
29	Design	HCC disciplines exceed their estimated design fees	Additional fees	Monitor progress and design fees	Additional fees	2	4	8	£1,000	£40,000	0.650	£13,325	Linda Wickens	N/A	
32	Design	Additional time and cost for changes to the ITS signal design due to need to changes of the project scope and need to reduce project costs	Delays scheme and increases fee costs			3	3	9	£5,000	£20,000	0.350	£4,375	Jonathan Mundy		
33	Design	Titchfield Rd - Treatment (insufficient treatment) of highway runoff may prove problematic (as discussed at drainage mtg).	Increases costs			2	3	6	£45,000	£50,000	0.350	£16,625	Rob Ward		
36	Ecological/ Environmental	Unknown cost for required planting for Ecology and Accomodation Work mitigation	Increases costs			0	0	0			0.000	£0	Adam Eggesfield		Risk removed - Full EIA carried out and mitigation included in preliminary design.
37	Ecological/ Environmental	Unknown cost and extent of existing tree removal	Increases costs			2	2	4	£0	£75,000	0.125	£4,688	Mark Weal		
38	Ecological/ Environmental	Additional time and cost for arranging legal permission to remove existing trees (i.e TPO)	Increases costs and programme			2	1	2	£0	£50,000	0.025	£625	Mark Weal		
39	Ecological/ Environmental	Additional cost and time (approx. 6 weeks) for arranging license for removing Bats from existing trees	Increases costs and programme	Full EIA assessment to be carried out		2	2	4	£5,000	£10,000	0.125	£938	WSP		
40	Ecological/ Environmental	Unknown cost for Environmental Mitigation - Water Quality , Archaeological and Contaminated Land issues	Delays scheme and costs increase	Early surveys to be carried out		2	2	4	£5,000	£30,000	0.125	£2,188	WSP		
41	Ecological/ Environmental	Adverse weather conditions during the works i.e Flooding requiring remediation such as de-watering	Delays scheme and increases works and fee costs			2	2	4	£25,000	£50,000	0.125	£4,688	EC		
42	Ecological/ Environmental	Unknown cost for Geophysical issues	Delays scheme and costs increase	Extensive trial pits to 5% of area be carried out		2	2	4	£5,000	£100,000	0.125	£6,563	Hannah Fluck		
43	Ecological/ Environmental	Unknown extent of required existing watercourse improvements (ditch clearance to unblock existing water courses)				4	2	8	£100,000	£200,000	0.125	£18,750	Chris Murray		
44	Statutory Undertakers	SU delay diversion works	Increases fee costs and civil works costs (contractor prologation costs) and delays programme			3	5	15	£20,000	£100,000	0.900	£54,000	EC		
45	Statutory Undertakers	SU services need protection - inaccurate records	Delays scheme and costs increase	Trial pits to establish locations of services		3	3	9	£5,000	£50,000	0.350	£9,625	Rob Ward		
46	Statutory Undertakers	SU services need diversion - inaccurate records	Delays scheme and costs increase	Trial pits to establish locations of services		3	3	9	£10,000	£200,000	0.350	£36,750	Rob Ward		
47	Statutory Undertakers	Unknown services encountered - inaccurate records	Delays scheme and costs increase	Trial pits to establish locations of services		3	3	9	£10,000	£200,000	0.350	£36,750	Rob Ward		
48	Construction	Disruption during construction due to complaints from local residents	Delays scheme and costs increase	Ensure suitable clauses in contract		3	1	3	£10,000	£50,000	0.025	£750	Kevin Phillips		
49	Construction	Unforeseen ground conditions	Delays scheme and costs increase	Carry out full ground survey		2	1	2	£10,000	£100,000	0.025	£1,375	Chris Murray		
50	Construction	Tender price exceeds budget, estimated cost not based on robust prices	Delays scheme and costs increase	Seek early expressions of interest		4	3	12	£100,000	£2,500,000	0.350	£455,000	Steve Green		
59	Construction	High groundwater may pose issues for excavations during construction; both structures and the pavement.	Delays scheme and costs increase			2	4	8	£100,000	£500,000	0.650	£195,000	Pat McKenna		
60	Construction	Unforeseen contaminated land/unexploded ordnance potential (slight) problems.	Delays scheme and costs increase			1	1	1	£20,000	£200,000	0.025	£2,750	Pat McKenna		

Appendix I

Risk Management Strategy

Risk Management Strategy

1. Purpose

This note sets out the risk management process and strategy for the Stubbington Bypass scheme. It complements the Risk Register.

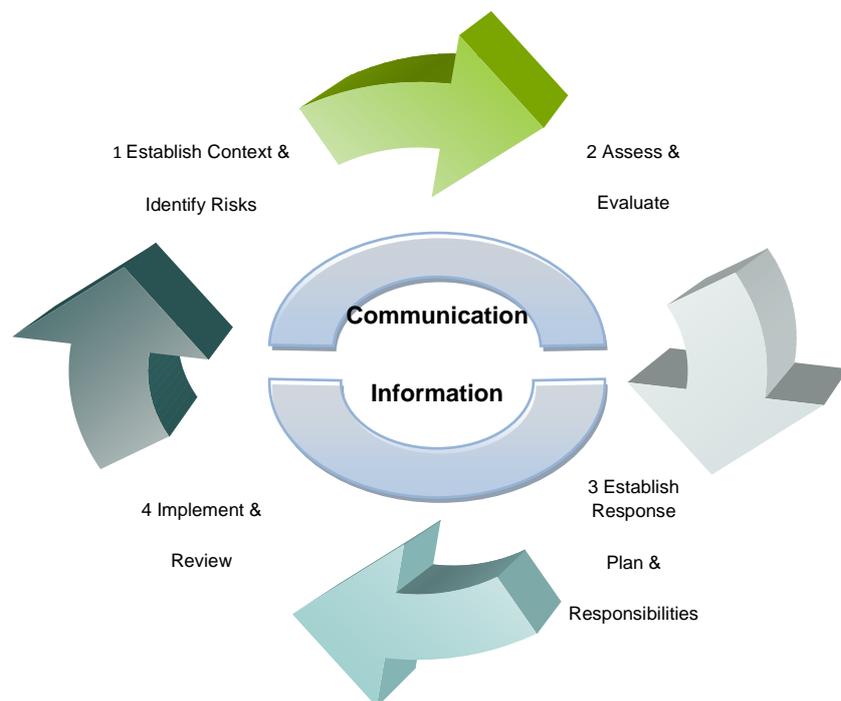
In the context of the scheme, risk has been defined as the potential for future events which have a negative impact on one or more of the following:

- the achievement of scheme objectives
- scheme costs / financials
- scheme delivery timescales.

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.

2. Overview of the Risk Management Process

The risk management approach adopts the following four primary processes as shown below:



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.

3. Identifying Risks

The identification process has been informed through inclusion of relevant scheme team technical specialists, 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)

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.

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.

4. Assessment of Risks (including risk cost allowance)

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.

Likelihood score	1	2	3	4	5
Descriptor	Rare	Unlikely	Possible	Likely	Almost certain
Frequency	This will probably never happen/recur	Do not expect it to happen/recur but it is possible	Might happen or recur occasionally	Will probably happen/recur but it is not a persisting issue	Will undoubtedly happen/recur, possibly frequently
How often might it/does it happen ?	(0 to 5% chance of occurrence)	(6 to 20% chance of occurrence)	(21 to 50% chance of occurrence)	(51 to 80% chance of occurrence)	(81 to 100% chance of occurrence)

		Impact score (severity levels) and examples of descriptors				
		1	2	3	4	5
Domains		Negligible	Minor	Moderate	Major	Catastrophic
Cost		Small loss / Insignificant cost increase	<5 per cent over project budget	5–10 per cent over project budget	10–25 per cent over project budget	>25 per cent over project budget
		Variations manageable against internal project budget headings	Requires some additional funding from the programme	Requires significant additional funding from the programme	Requires significant reallocation of funds from programme	Increases threaten the viability of the programme
Time		Slight Slippage against internal targets	Slight slippage against key milestones or published targets	Delay affects key stakeholders & causes loss of confidence in the enterprise	Failure to meet deadlines in relation to priority outcomes	Delay jeopardizes viability of the enterprise or partnership
Quality	Business objectives/ projects	Barely noticeable reduction in scope or quality	Minor reduction in quality/scope	Reduction in scope or quality	Failure to meet secondary objectives	Failure to meet primary objectives
	Service/ business interruption	Little or no impact on service delivery	Minimal service disruption having limited impact on service delivery	Moderate service disruption having adverse impact on service delivery	Major service disruption having serious impact on service users	Major service disruption having serious impact on the public Permanent loss of service or facility
	Statutory duty/ inspections	No or minimal impact or breach of guidance/ statutory duty	Breach of statutory legislation Reduced performance rating if unresolved	Single breach in statutory duty Challenging external recommendations/ improvement notice	Multiple breaches in statutory duty Critical report /Improvement notices / Enforcement action Low performance rating	Multiple breaches in statutory duty Prosecution Complete systems change required Severely critical report
	Adverse publicity/ reputation	Rumours (Potential for public concern)	Local media coverage – short-term reduction in public confidence Elements of public expectation not being met	Local media coverage – long-term reduction in public confidence	National media coverage with <3 days service well below reasonable public expectation	National media coverage with >3 days service well below reasonable public expectation. Total loss of public confidence
	Sustainability / Environmental impact	Minimal or no impact on the environment or sustainability targets	Minor impact on environment or sustainability targets	Moderate impact on environment or sustainability targets	Major impact on environment or sustainability targets	Catastrophic impact on environment or sustainability targets

		Likelihood				
		1	2	3	4	5
Impact score		Rare	Unlikely	Possible	Likely	Almost certain
5	Catastrophic	5	10	15	20	25
4	Major	4	8	12	16	20
3	Moderate	3	6	9	12	15
2	Minor	2	4	6	8	10
1	Negligible	1	2	3	4	5

Evaluation of risks is based on a scoring approach using a combination of the probability (Likelihood) of an event and its consequences (Impact) – see the risk assessment criteria set out above. An upper and lower financial impact has been identified for each risk. The estimates have been 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.

The risk register therefore sets out the forecast probability of each risk occurring and defines a range of probable costs which may be incurred for each in that instance. A Monte Carlo simulation has then been used to derive a cumulative distribution for forecast risk. This was based on a run of 1000 iterations. From this distribution a mean value has been extracted for addition to the costs for the financial assessment.

5. Response Planning

Following assessment and evaluation of risks a systematic approach is adopted to respond to risks and allocate responsibility to the most appropriate party in line with the governance arrangements set out previously.

One of four strategies has been 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.**

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 has been considered where a mix of the above options would be the most appropriate option.

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.

The initial assessment of risk probability and consequences was reviewed in line with proposed strategies and response plans.

6. 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 weekly 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.

7. 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.

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.

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 (see Chapter 6 of the main Business Case). This process will enable senior managers to consider budget requirements in a timely manner to deal with any cost overruns.