

Dunsbury Hill Farm
Transport Assessment Addendum
Portsmouth City Council

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ATKINS

Plan Design Enable

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Table of contents

Chapter	Pages
1. Introduction	5
1.1. Background	5
1.2. Structure of this Report	5
2. Planning Policy	7
2.1. National Planning Policy Framework	7
2.2. Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen	8
2.3. South East Plan	8
3. Public Transport	9
3.1. Existing Provision	9
3.2. Future Provision	9
4. Design	11
4.1. Development Link Road	11
4.2. Asda Roundabout	11
5. Pedestrians and Cyclists	13
5.1. Park Lane	13
5.2. Pedestrian and Cycle Access from the West	13
6. A3(M)	25
6.1. Hindhead Tunnel	25
6.2. Merge Assessment	25
7. Sensitivity Test	27
7.1. Results	27
8. Framework Travel Plan	32
9. Hermitage Stream	33
10. Structures	34
Appendices	35
Appendix A. Comments Response	36
Appendix B. Meeting Minutes	37
Appendix C. Correspondence with FirstGroup	38
Appendix D. Revised Drawings	39
Appendix E. Designers Risk Assessment	40
Appendix F. Pedestrian and Cycle Access Technical Note	41
Appendix G. Analysis of A3(M) Flow	42
Appendix H. Framework Travel Plan	43
Appendix I. Environment Agency – Notes of Meeting	44
Appendix J. Highway Bridge Planning Approval In Principle	45

Tables

Table 1.	Predicted Flows for Merge Assessment – AM Peak Hour	25
Table 2.	Predicted Flows for Merge Assessment – PM Peak Hour	26
Table 3.	2026 AM Queue Length Results	27
Table 4.	2026 PM Queue Length Results	28
Table 5.	2026 AM Journey Time Results	29
Table 6.	2026 PM Journey Time Results	30

Figures

Figure 1.	Potential Route	15
Figure 2.	Existing Footpath – Beech Wood	16
Figure 3.	Existing Footpath – Beech Wood: Lighting.	16
Figure 4.	Existing Track – Linking Hulbert Road to Beech Wood	17
Figure 5.	Footbridge Crossing Hermitage Stream	17
Figure 6.	Potential link from Hulbert Road to Existing Track	18
Figure 7.	Crash Cushion at A3(M) Junction 3 Southbound On-slip	19
Figure 8.	Informal Track, East of the A3(M) (Running North-South)	20
Figure 9.	Informal Track, East of the A3(M) (Running West-East)	20
Figure 10.	Informal Track Crossing the Watercourse, East of the A3(M)	21
Figure 11.	Informal Link to the A3(M) Southbound Off-Slip	21
Figure 12.	View from the bottom of the Embankment to the A3(M)	22
Figure 13.	Potential link from Hulbert Road to Existing Track, North of Hulbert Road (West) Looking North	23
Figure 14.	Potential link from Hulbert Road to Existing Track, South of the Existing Track Looking North	23
Figure 15.	Tree Blocking Informal Track East of the A3(M)	24

1. Introduction

Atkins has been commissioned by Portsmouth City Council (PCC) to produce an Addendum to the Transport Assessment (TA) Report which has been prepared in support of the hybrid planning application for the development of land at Dunsbury Hill Farm (DHF), in the strategic gap between Havant and Waterlooville in Hampshire.

The development proposal involves the construction of a business park with an associated hotel development, incorporating a new link road which would enable others to provide a Cross Borough Bus Service, which would route through the site connecting Waterlooville west of the A3(M) and Leigh Park to the east, as well as linking the site to other strategic sites including Havant Town Centre. In the context of the hybrid planning application, outline consent is sought for the Masterplan area with detailed consent for the access and link road only.

This report has been prepared in response to comments received from Hampshire County Council (HCC) and the Highways Agency (HA) requesting additional information. Initial responses to the comments are presented in Appendix A.

1.1. Background

The DHF TA Report was submitted as part of the outline planning application for the development, registered on the 30th March 2012 (application reference APP/12/00338). Since the submission of the planning application, comments have been received from HCC and the HA. At a meeting between Atkins, PCC, HBC, HCC and the HA on 14th November 2012 comments received on the planning application were discussed and it was agreed to undertake a number of additional discrete tasks. The minutes of the meeting are provided in Appendix B.

Based on comments received and as agreed within the above meeting, this addendum report contains:

- An update of the relevant policy with regards to the development;
- An update of the existing Public Transport provision at the site;
- A statement regarding the potential of a future bus service;
- Updated design drawings to include revisions to the bus link and bus gate and annotation regarding bus stops and signage;
- Inclusion of the Design Risk Assessment;
- Further assessment of pedestrian and cycle links to the site, including potential surfacing of Park Lane and revised design of a potential link to / from the west of the site;
- Consideration of the impact of the implementation of the Hindhead Tunnel on the A3(M);
- Additional merge assessment using Figure 2/3 of TD22/06;
- Assessment of the impact of the development using SRTM distribution and trip rates (Sensitivity Test 3);
- Update of the Framework Travel Plan; and
- Confirmation of discussions with the Environment Agency regarding Hermitage Stream.

1.2. Structure of this Report

The remainder of this report is structured as follows:

- Section two outlines the updated planning context and policy associated with the development;
- Section three describes the updated existing Public Transport provision at the site and the applicant response to the future provision of a bus service;
- Section four outlines changes made to the design of the bus link and gate following submission of the TA and the Design Risk Assessment;

- Section five contains further assessment of the pedestrian and cycle links to the site;
- Section six outlines the impact of the Hindhead Tunnel on traffic flows on the A3(M) and describes the additional merge assessment;
- Section seven assesses the transport impact of the development proposal using SRTM trip rates and distribution;
- Section eight contains an update of the Framework Travel Plan;
- Section nine outlines discussions held with the Environment Agency regarding Hermitage Stream; and
- Section ten provides a summary and conclusion to the report.

2. Planning Policy

2.1. National Planning Policy Framework

Since production of the TA Report, the National Planning Policy Framework (NPPF) has come into effect. The NPPF applies to England and is designed to supersede and simplify previous national planning policies. It is intended as a framework for the development of local and neighbourhood plans. However, existing Local Plan policies should not be considered out of date because they were adopted prior to the publication of the NPPF.

The NPPF emphasises that the purpose of planning is to help achieve sustainable development; i.e. that which results in positive growth and economic, environmental and social progress. The NPPF is therefore based upon a presumption in favour of sustainable development, which should be allowed to proceed without delay. Therefore, proposed development that accords with an up to date Local Plan should be approved, while that which conflicts should be refused.

The NPPF sets out twelve core land-use planning principles, which should underpin both plan-making and decision-taking. One of the principles states that planning should: *“actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable”*.

The NPPF sets out policies to achieve sustainable development under 13 headings, one of which is titled *“Promoting sustainable transport”*. Within this section, the NPPF states that:

- *“All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:*
 - *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
 - *safe and suitable access to the site can be achieved for all people; and*
 - *improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe”*.
- *“Plans and decisions should ensure developments that generate significant movement are located where the need to travel will be minimised and the use of sustainable transport modes can be maximised”;*
- *“Developments should be located and designed where practical to:*
 - *accommodate the efficient delivery of goods and supplies;*
 - *give priority to pedestrian and cycle movements, and have access to high quality public transport facilities;*
 - *create safe and secure layouts which minimise conflicts between traffic and cyclists or pedestrians, avoiding street clutter and where appropriate establishing home zones;*
 - *incorporate facilities for charging plug-in and other ultra-low emission vehicles; and*
 - *consider the needs of people with disabilities by all modes of transport”;* and
- *“All developments which generate significant amounts of movement should be required to provide a Travel Plan”*.

The proposed development accords with this policy guidance due to its placements of employment near to residential land use, thus promoting shorter trips via sustainable modes such as foot and bicycle. A Framework Travel Plan has been developed for the site, as required by the guidance. In addition, a public transport strategy for the site is currently under discussion to further encourage sustainable travel, including the options for a bus service through the site.

2.2. Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen

This local transport white paper, adopted in January 2011, sets out the government's vision for a sustainable local transport system that supports the economy and reduces carbon emissions. It explains how the government is placing localism at the heart of the transport agenda, taking measures to empower local authorities when it comes to tackling these issues in their areas. The white paper also underlines central government's direct support to local authorities, including through the Local Sustainable Transport Fund.

One of the key visions within the paper is the desire for a transport system that *"is an engine for economic growth, but one that is also greener and safer and improves quality of life in our communities"*.

By improving links that help to move people and goods around, a balanced and dynamic low-carbon economy can be developed.

The Government believes that the most impact can be made at the local level; offering a wider range of sustainable transport modes which would enable people to make more sustainable transport choices.

The white paper also contains numerous examples of smaller-scale transport schemes being instrumental in encouraging growth and reducing local carbon emissions, while also addressing public health and well-being and reducing road accidents.

The proposed development is in-line with this white paper; a public transport strategy has been developed for the site to further encourage sustainable travel. This report also provides details of proposed cycle and pedestrian links to the nearby residential land uses, enabling sustainable mode choice.

2.3. South East Plan

A summary of the South East Plan (2009) is contained within Section 2 of the TA Report.

It should be noted that the current Government revoked all Regional Strategies, including the South East Plan, in July 2010. It is the Government's intent to abolish the strategies as part of the Localism Bill.

The South East Plan will remain relevant until it is formally abolished, but it should be noted that less weight is attached to it in planning decisions.

3. Public Transport

3.1. Existing Provision

Paragraph 4.13 of the TA Report refers to two bus routes passing “immediately” to the east of the site. It should be noted that the routes do not pass directly next to the site; Route 23 serves Calshot Road, stopping approximately 300 metres from the site, and Route 39 serves Middle Park Way, approximately 500 metres from the site.

As concluded within the TA, it is therefore important that appropriate connections are made, and that bus accessibility into the site itself is provided. The potential for integration of bus services into the site is outlined below.

3.2. Future Provision

As part of the TA Report, a key mitigation measure proposed as part of the development is the public transport strategy which incorporates the provision of a road to facilitate a Cross Borough Bus route through the development site. It is envisaged that this bus route will use the Hulbert Road access and the Woolston Road bus-only link and cross the site.

In addition these access points will enable the existing local bus routes to enter and leave the site from either the east or west of the A3(M), with the potential to turnaround using an internal roundabout. The development site thus provides the opportunity for a direct link to connect the existing bus routes 39 and 23 into the site.

Appendix C provides correspondence from FirstGroup that confirms they would be willing to extend their service into the site.

3.2.1. Phasing and Contributions

Following the meeting of the 14th November 2012, we have identified the below key issues regarding public transport provision at the site.

The TA is based on demand forecasts from the Sub-Regional Transport Model (SRTM). For public transport, these show the following trip levels to/from the site, when fully occupied:

- in 2019, with Phase 1, 204 per day (2-way), 2% of all trips; and
- in 2026, with Phases 1 and 2, 258 per day (2-way), 2% of all trips.

The model includes two bus services through the site:

- an extension of route 23, at 6 buses per hour; and
- the CBBS from Waterlooville to Havant at 4 buses per hour.

The forecast bus demand is low, but reasonable given the location and nature of land uses for the site. The MVA Dunsbury Hill Farm Report (included in the TA as Appendix C) shows that, for the CBBS in the AM peak (without any MDA demand), trips to or from Dunsbury Hill Farm only account for 10%-15% of the trips on the route, with the main CBBS demand being between Waterlooville and Havant. Bus services already connect these two centres – Stagecoach routes 37 (at 1/hour) and 39 (at 6/hour). The CBBS route would be more direct, but a significant proportion of its demand would be abstracted from the 37 and 39. The overall forecast loadings on the CBBS are low (less than 10 per bus eastbound, around 15 per bus westbound).

The key points are as follows:

- The forecast level of bus demand to and from Dunsbury Hill Farm (as set out in the TA) is low, and forms only a small proportion of the expected usage of the CBBS; and
- a commercially-viable longer-term bus network solution should be developed and agreed, taking account of the forecast demand from Dunsbury Hill Farm and – critically – the wider demand in the corridor between Havant and Waterlooville.

HCC produced a draft paper on bus services cost and revenue forecasting in November 2012. It has been agreed with HCC that, based on the bus services cost and revenue forecasting paper and the requirement for bus services to DHF identified above, the contribution required can be discussed as part of Section 106 agreement.

4. Design

4.1. Development Link Road

Following confirmation of design requirements for the bus only section on the link road within the development some minor revisions to the layout have been made. These include:

- Relocation of the proposed rising bollard further west to provide a distance of 20 metres between the Woolston Road roundabout and the bollard. The central traffic island has been extended to the west to match the new position of the rising bollard;
- Provision of a turning head on the link road west of the bus gate. This is to allow vehicles erroneously entering the bus only section from the west an opportunity to turn prior to the bus gate. The proposed turning head has been designed to allow a 4.6T transit van to turn as requested by HCC;
- Narrowing of the link road carriageway to 3.5 metres at the western end of the bus only section to more clearly define the bus only section. Associated with this measure is the implementation of give way markings on the westbound approach to the narrowing to give priority to eastbound buses. It is also proposed to provide an informal pedestrian crossing point at the narrowing; and
- Annotation of drawing 5099849/TP/GA/103 Rev D to highlight that the proposed bus stops are to be constructed to BRT specification, including the implementation of:
 - Bus kerbs;
 - Bus shelter; and
 - Real time passenger information.

The full set of revised General Arrangement drawings are provided in Appendix D. The drawing numbers are:

- 5099849/TP/GA/101 Rev C;
- 5099849/TP/GA/102 Rev B;
- 5099849/TP/GA/103 Rev D; and
- 5099849/TP/GA/104 Rev C.

A copy of the latest Designers Risk Assessment is provided in Appendix E.

4.2. Asda Roundabout

It has been requested by HBC and HCC that measures to resolve the current and future congestion at the 'Asda' Roundabout (the junction of Hulbert Road / Purbrook Way / Asda Access) are investigated as part of a separate study, as detailed in the Asda Roundabout Improvement Study Preliminary Design Report. Both HCC and HBC acknowledge that there are existing capacity issues at the Asda Roundabout which need to be addressed irrespective of any development at Dunsbury Hill Farm.

As part of the TA report supporting the application for Dunsbury Hill Farm, the traffic modelling has indicated that the traffic flows generated by the Dunsbury Hill Farm development would affect some arms at the Asda Roundabout. In addition, the proposed McDonalds development adjacent to the junction will contribute further to the existing and future congestion and operational issues.

The preferred design to address the current and future capacity problems at the roundabout, and any direct congestion arising from the Dunsbury Hill Farm development at this location, comprises a partly signalised elongated Asda Roundabout and traffic calming measures at the Park House Farm Way junction, which would be retained as a priority junction. Implementation of such measures would be the responsibility of the Highway Authority.

The design at the Asda Roundabout incorporates the following:

- The signalisation of the Purbrook Way East and Purbrook Way West nodes of the roundabout;
- Two lane approaches on Hulbert Road North, Purbrook Way East and Hulbert Road South;
- A three lane approach Purbrook Way West;
- A one lane approach on the Asda Access;
- Two lanes merging to one on all exits with the exception of Purbrook Way East and the Asda Access;
- Three lane circulatory carriageway between the Purbrook Way West and Hulbert Road North exits, and between the Purbrook Way East and Hulbert Road South exits, with the remainder of the circulatory carriageway having two lanes.

HCC and HBC also requested that the existing perceived issues affecting the Park House Farm Way junction were considered alongside the Asda Roundabout Study. The following design has been developed:

- A raised table at the junction with buff surface treatment;
- Gateway feature on the eastbound approach;
- Wider pedestrian refuge (2 metres wide) on Park House Farm Way to improve provision for pedestrians and cyclists;
- Wider pedestrian refuge (2 metres wide) on Purbrook Way West to narrow the carriageway and improve provision for pedestrians and cyclists;
- Reduced kerb radii to encourage lower traffic speeds;
- Extension of two lanes on Park House Farm Way to aim to reduce queues;
- "Slow" markings with red surface treatment on the Purbrook Way West approach;
- Refreshment of road markings from the Asda roundabout through to the Park House Farm Way junction.

The traffic modelling results for the preferred scheme indicate that the roundabout will operate within theoretical capacity on all arms with the exception of Hulbert Road North in the PM Peak Hour. In the AM Peak Hour the junction is predicted to operate under capacity,

Due to the land availability at this stage of the scheme there is a short section of stacking space on the western side of the proposed circulatory carriageway. As a result the traffic modelling indicates that the queues are likely to extend beyond the available stacking space and may block traffic exiting onto Purbrook Way West. In practice, this problem may be able to be managed by refinements to the signal timings at this node.

5. Pedestrians and Cyclists

5.1. Park Lane

Park Lane will not be diverted as the part of the development proposals. However, the possibility for its improvement has been identified by HBC.

It has been confirmed that Park Lane forms a Bridleway, and as such cannot be metalled. Several guidance notes have been produced relating to shared-use paths, including:

- British Horse Society (BHS): Equestrian Access Factsheets (<http://www.pathsforall.org.uk/>);
- DMRB Provision for Non-Motorised Users (<http://www.standardsforhighways.co.uk/dmr/vol5/section2/ta9105.pdf>)
- Department for Transport: Equestrian Crossings (<http://assets.dft.gov.uk/publications/traffic-advisory-leaflets/equestriancrossings.pdf>); and
- On the right track: surface requirements for shared use routes

Guidance on the construction of paths is provided in the Equestrian Access Factsheet produced by the BHS. The guidance recommends an unbound aggregate path consisting of the following materials:

- Three metre wide path finished with compacted 40mm to dust (Type 1) crushed stone blinded with fines (10mm to dust) or whin dust to fill voids, bind and smooth the surface;
- 0.5 metre wide path edges stabilised by building up shoulders with soil/stripped turf; and
- 150mm thick path base consisting of quarry waste/large stone size according to availability <75mm located under the finished path and path edges.

Depending on the soil conditions, it is also suggested that geotextile may also be required for drainage and path reinforcement purposes but this material must be buried to a minimum depth of 225mm as exposed geotextile may catch on hooves.

Construction standards for different situations which would be appropriate for the nature of multi-user routes are also contained with a Countryside Agency document. This document provides details of various construction details for different situations, including consideration of Bridleways. (http://www.iprow.co.uk/gpg/index.php/Shared_Use_Routes#Surface_Standards).

It was confirmed by HCC / HBC at the meeting of 8th January 2013 that Park Lane will not require upgrading as part of the DHF proposals. However, it has been highlighted that Park Lane has been subject to flooding in the past adjacent to the motorway, to the north of the site. As such, drainage improvement options for the upgrade of Park Lane adjacent to the motorway where flooding is an issue may need to be considered as part of the detailed application.

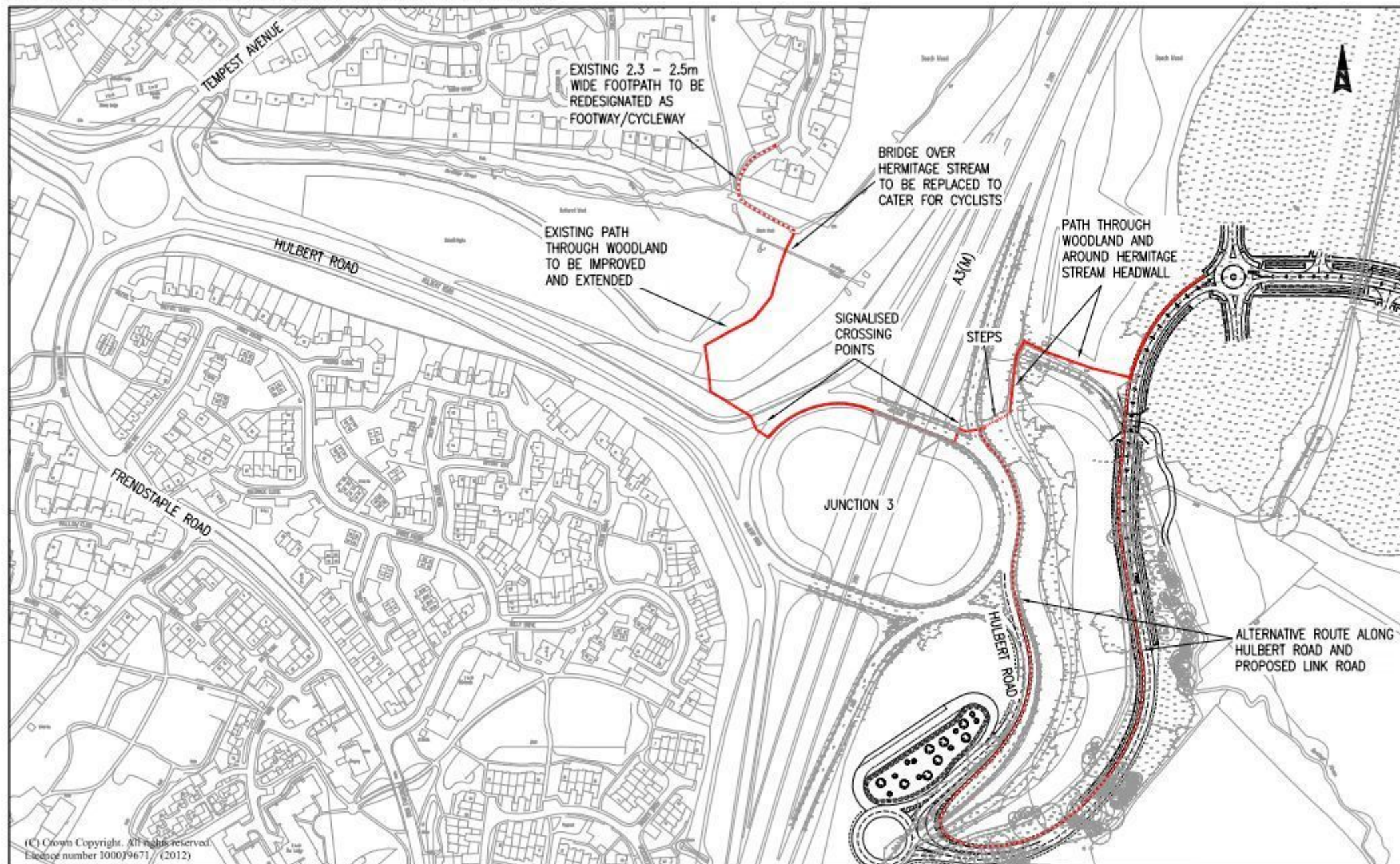
A Non-Motorised User (NMU) Audit was undertaken as part of the planning submission. The Audit identifies that Park Lane is a popular route for both commuting and leisure purposes, resulting in an upgrade in 2009. As such, it is considered that a further upgrade of the Lane could result in higher utilisation than predicted within the TA. In order to assess a worst-case scenario, any increase in pedestrian / cyclist mode share has not been taken into account as part of the traffic modelling.

5.2. Pedestrian and Cycle Access from the West

As part of the TA Report, access for pedestrians and cyclists from the west via Hulbert Road leading across the A3(M) Junction 3 to Waterlooville and south on Hulbert Road to the ASDA roundabout was considered by Atkins. This is provided in Technical Note 'Dunsbury Hill Farm: Pedestrian and Cycle Access', contained in Appendix F. Although the assessment showed that these routes are not advisable based on safety and

cost issues balanced against the expected demand from the DHF development, HBC have requested that a reduced scale scheme, linking the site to the existing Outhurst Wood / Beech Wood footpaths, is considered.

Figure 1 shows the revised potential route, including a link to the existing Outhurst Wood / Beech Wood track from the A3(M) Junction 3 junction.



5.2.1. West of the A3(M) Junction 3

There is an existing footpath to the north of Hulbert Road, which runs between Sapphire Ridge in the north and south to the west of the A3(M) via Beech Wood.

The Beech Wood footpath is approximately 2.5 metres wide and tarmacked. It should be noted that the edges of the path are overgrown in places, narrowing the usable width. The existing footpath is shown in Figure 2. The southern end of the footpath links to residential properties on Sapphire Ridge, in the vicinity of which the path is lit as shown in Figure 3.

Figure 2. Existing Footpath – Beech Wood



Figure 3. Existing Footpath – Beech Wood: Lighting.



The Beech Wood footpath also provides access to an existing track, which runs north-south from the north of Hulbert Road (west) through Outhurst Wood to Beech Wood and Sapphire Ridge and varies in gradient, up to a 1 in 6 slope. It is fairly well defined, although muddy and uneven in places, as illustrated in Figure 4.

There is a wooden footbridge provided where the track crosses Hermitage Stream, shown in Figure 5. The footbridge is approximately 1.5 metres wide, with a sign on the northern side illustrating local pedestrian routes. It should be noted that there is no signage provided for cyclists on this track.

Figure 4. Existing Track – Linking Hulbert Road to Beech Wood



Figure 5. Footbridge Crossing Hermitage Stream



Figure 6 shows the view from Hulbert Road (west) northwards towards the existing track. There is the potential to create a route through the trees at this location to link the existing Hulbert Road footway to the existing track, although it should be noted that there is a gradient of around 1 in 4 across the angle of the slope.

Figure 6. Potential link from Hulbert Road to Existing Track



As well as the gradient of the above slope, there are other steep gradients along the existing track and footpath, as outlined above. As such, it should be noted that the route does not currently meet the minimum Disabled Discrimination Act (DDA) requirements of a maximum gradient of 1 in 20. Should a link to the track be provided, there is potential that the existing track will need to be upgraded by the Local Authority in order to comply with standards.

The existing footpath and track are not designed for cyclists. Should cyclists require use of the route signage would need to be provided, the existing footbridge (illustrated in Figure 5) would need to be widened and the footpath and track widened / improved.

5.2.2. A3(M) Junction 3

In order for a link from the site to the existing footpath to be realised, a route for pedestrians and cyclists across the A3(M) Junction 3 would need to be provided.

There is sufficient space available to provide a 2.0 metre wide footway around the A3(M) Junction 3. Although guidance (LTN 2/08) recommends a minimum width of 3.0 metres for shared footways / cycleways paragraph 8.5.3 notes that "in areas with few cyclists or pedestrians a narrower route might suffice". As it is expected that pedestrian and cyclist flows will be low a width of 2.0 metre is considered appropriate. However, as the roundabout is subject to the national speed limit (with vehicles potentially travelling at high speed) and there will be a bridge parapet additional width may be required.

In order for a link to be installed and used without any further infrastructure, pedestrians and cyclists would need to cross a number of A3(M) entry and exit slips (all of which are subject to the national speed limit). This would require amendment of the existing crash barriers where appropriate.

It should be noted that the crash cushion on the south eastern corner of the roundabout protects the signalling equipment on the southbound A3(M) on-slip, as shown in Figure 7. Unless it is possible to

reconfigure or replace this crash cushion, it effectively prevents the provision of a pedestrian/cycle route on the southern section of the junction.

The northern bridge is therefore the only viable option for a pedestrian/cycle route. In order to facilitate the crossing, amendment of the existing crash barriers would be required at the eastern end of Hulbert Road (north of the carriageway) and east of the southbound off-slip. The required amendment would comprise moving the existing safety barrier and widening the verge, to create a safe access for pedestrians and cyclists.

Figure 7. Crash Cushion at A3(M) Junction 3 Southbound On-slip



The safety of pedestrians and cyclists crossing the A3(M) junction is a major issue if the crossing points are uncontrolled. The proposed scheme would encourage pedestrians and cyclists to use the route but would not provide a safe means of crossing the high speed roads. A particular issue is the crossing of the motorway entry slip where vehicles are likely to be accelerating.

If HCC / HA wish to provide a route across the A3(M) junction, traffic signals could be implemented at two nodes on the junction to improve safety for pedestrians and cyclists, specifically:

- Hulbert Road (west) / A3(M) Junction 3 northbound on-slip; and
- A3(M) Junction 3 southbound off-slip / circulatory carriageway.

It should be noted that street lighting will be required to allow pedestrians and cyclists to be seen clearly whilst waiting to cross. Given the locations of the crossing points it is quite likely that once these are individually lit to standard, the remaining gaps would be so short that lighting around the junction may be required. Not only would this be a significant cost it may also have severe implications environmentally with the problem of light pollution and this consequently requires further investigation.

It should be noted that the signalisation of the northbound off-slip as part of the MDA development proposals could be utilised to provide further pedestrian connection to the south-west of the A3(M) Junction 3.

5.2.3. East of the A3(M) Junction 3

Once on the eastern side of the A3(M) Junction 3 there are two options for providing access to the site:

- Following Hulbert Road south and then along the link road from the proposed roundabout; or
- Via a ramp/steps down the embankment immediately east of the A3(M) northbound off-slip.

There are a number of informal tracks to the east of the A3(M), mainly located to the north-east of Junction 3. These informal tracks are of a similar standard to parts of the existing Outhurst Wood track, vary in gradient, and appear to be fairly well used. As the tracks are informal, they are narrow, uneven in places and can become muddy, examples of which are shown in Figure 8 and Figure 9.

Figure 8. Informal Track, East of the A3(M) (Running North-South)



Figure 9. Informal Track, East of the A3(M) (Running West-East)



The existing informal track requires upgrading and improvement in order to provide a continuous and safe route. For example, there is currently no formal provision for crossing the watercourse, as illustrated in Figure 10.

Figure 10. Informal Track Crossing the Watercourse, East of the A3(M)



An informal link from the track to the A3(M) junction appears to be well used, following the route of the existing drainage as shown in Figure 11. The embankment from the A3(M) has a steep gradient of approximately 1 in 3, as illustrated in Figure 11 and Figure 12.

Figure 11. Informal Link to the A3(M) Southbound Off-Slip



Figure 12. View from the bottom of the Embankment to the A3(M)



As outlined above, the embankment at this point has a steep gradient. In order to meet the minimum DDA requirements, any ramp provided would need to be at least 140 metres in length. This could be achieved by allowing the ramp to zigzag, although this would likely require substantial lengths of retaining wall to support the various sections. As such, and considering the ecological sensitivity of the area, this option is not considered practicable, particularly in respect of the expected level of use.

As part of the TA Report, a link following Hulbert Road south was considered. A direct, stepped access down the embankment with a path through the woods would offer significant pedestrian journey time savings over this option, with a walk-distance of approximately 160 metres from the roundabout to the site as compared to 760 meters via Hulbert Road south.

As such, it is considered that the most practical option to link the DHF site to the A3(M) Junction 3 would be the provision of steps down the embankment adjacent to the southbound off-slip, with a stair ramp provided for cyclists. It is proposed that the steps should be designed to be in keeping with their surroundings, namely using log rolls with a granular fill.

Should the link be provided, the existing informal track could be upgraded in keeping with its location and to the applicable standards to provide a formal route to the east of the A3(M) through Beech Wood.

HBC will require confirmation from the Highways Agency that a footway can be provided across their land and signals implemented on the A3(M) J3 roundabout.

5.2.4. Ecology

Based on site observations, it is envisaged that the potential route illustrated in Figure 1 could be implemented without any significant tree loss.

To the west of the A3(M), it is possible to route the potential link between Hulbert Road to the existing track without the loss of any mature trees. However; it should be noted that the link may require the loss of a small amount of bushes / shrubbery / saplings, examples of which are shown in Figure 6 above, and Figure 13 and Figure 14 below.

Figure 13. Potential link from Hulbert Road to Existing Track, North of Hulbert Road (West) Looking North



Figure 14. Potential link from Hulbert Road to Existing Track, South of the Existing Track Looking North



To the east of the A3(M) the informal track routes between the existing trees, with the exception of the section shown in Figure 15 below. However, it should be noted that there may be the potential to reroute the track around the existing tree instead of removing it.

Figure 15. Tree Blocking Informal Track East of the A3(M)



5.2.5. Indicative Construction Costs

Given that no design work has been carried out it is only possible to provide an indicative construction cost for the proposed route. At this stage approximate indicative construction cost is £500,000.

Based on the analysis within the TA Report, the numbers of pedestrians and cyclists wishing to use the route will be not be significant. As such, should a pedestrian route to the west of the site be required, the development would not be liable for funding the A3(M) Junction 3 and Hulbert Road to Outhurst Wood improvements.

6. A3(M)

6.1. Hindhead Tunnel

As part of the TA Report, A3(M) traffic flow data was obtained from the Highways Agency TRADS database in May 2011. It was noted within the TA that the completion of the Hindhead Tunnel, further to the north along the A3, which opened in July 2011 could potentially have a slight effect on volumes of through traffic in the future.

The HA have provided an analysis of flows recorded before and after the opening of the Hindhead Tunnel as of August 2012. The HA note is provided in Appendix G.

The data indicates that there has been an average increase of 3.6 percent in average monthly flow on the A3(M) as a whole, with an average increase of 2.4 percent between Junctions 3 and 4.

A 2.4 percent increase in traffic between the junctions is not considered likely to significantly change the modelling results.

6.2. Merge Assessment

As part of the TA Report merge assessments were undertaken in accordance with DMRB TD 22/06 for the slip roads to the main A3(M) carriageway at both Junction 3 and 4 for the AM and PM Peak Hours.

The TA Report analysis shows that the northbound off-slips at Junction 3 and 4 require two lanes with a hard strip in accordance with Table 3/1b in DMRB TD 22/06. The existing off-slips have been constructed with two lanes plus a hard shoulder and are therefore considered to remain within capacity and design safety requirements. All other off-slips require one lane and a hard shoulder by design standards. They have two lanes plus a hard shoulder.

The traffic flows on the on-slips at Junction 3 and 4 require a single lane with hard shoulder for the merge in accordance with TD 22/06. All of these on-slips have two lanes with a hard shoulder and are therefore considered to remain within design standards.

As requested by the HA, an additional merge assessment has been undertaken using Figure 2/3 of TD22/06. The predicted flows used as part of the merge assessment are outlined within Section 6.39 of the TA, and are also presented below in Table 1 and Table 2.

Table 1. Predicted Flows for Merge Assessment – AM Peak Hour

Location	2011 Base	2019 Base	2019 Phase 1	2026 Base	2026 Phase 1	2026 P1&2
Junction 3						
SB mainline flow	2,088	2,474	2,471	2,522	2,511	2,503
SB on-slip	1,080	1,169	1,185	1,102	1,106	1,106
NB mainline flow	1,643	2,281	2,261	2,431	2,411	2,415
NB on-slip	571	783	787	836	831	822
Junction 4						
SB on-slip	907	986	994	1,055	1,061	1,067
SB mainline flow	3,163	3,671	3,687	3,653	3,657	3,657

Table 2. Predicted Flows for Merge Assessment – PM Peak Hour

Location	2011 Base	2019 Base	2019 Phase 1	2026 Base	2026 Phase 1	2026 P1&2
Junction 3						
SB mainline flow	2,035	2,588	2,588	2,712	2,712	2,712
SB on-slip	667	605	731	686	837	860
NB mainline flow	2,004	2,058	2,072	2,464	2,204	2,196
NB on-slip	381	613	637	613	637	641
Junction 4						
SB on-slip	664	707	718	797	805	815
SB mainline flow	2,684	3,209	3,328	3,414	3,552	3,580

When analysed using Figure 2/3 of TD22/06, the above tables show that the worst-case traffic flows (2026 Phase 1 and 2) on the Junction 3 northbound on-slip return a requirement of borderline parallel merge / lane gain. The slip road has two lanes plus a hard shoulder, with a taper merge. The worst-case traffic flows for the Junction 3 southbound on-slip return a requirement of borderline parallel merge / merge. The slip road has two lanes plus a hard shoulder, with a taper merge. Although the existing slips road at Junction 3 are not considered appropriate for the predicted flows when compared to the design standards, it should be noted that these results are returned for the 2026 base flows and, as such, the slip roads are predicted to require reconfiguration even without the addition of development traffic.

The worst-case traffic flows for the Junction 4 southbound on-slip return a requirement of parallel merge in the AM Peak Hour and taper / urban merge in the PM Peak Hour, both with a lane gain. The slip road has two lanes plus a hard shoulder, with a lane gain (and lane drop at the next junction). Therefore, the existing slip road at Junction 4 is considered appropriate for the predicted flows when compared to the design standards.

At the time of writing a response from the Highway Agency on the above assessment has not been received.

7. Sensitivity Test

As described in the TA Report, the VISSIM model was run with dynamic assignment to test which routes traffic would take to and from the site from the A3(M) Junction 3. The VISSIM model showed that 85 percent of DHF development traffic travelling to / from the A3(M) South used Junction 3, with only 15 percent routing via the Asda roundabout. In comparison, the SRTM routes 70 percent of development traffic travelling to / from the A3(M) South via the Asda roundabout, with the remaining 30 percent travelling via Junction 3.

The VISSIM proportions are considered to be more realistic at the local level, and were therefore applied to the static routing in the VISSIM models for both the AM and PM Peak Hours to assess the impact of the development within the TA Report.

Following the completion of the separate study requested by HCC to address existing issues at the Asda roundabout and background traffic growth without Dunsbury Hill Farm, a sensitivity test has been carried out to test the impact that the development could have on the highway network if development trips are routed as predicted within the SRTM. This sensitivity test has been run in VISSIM only for the worst-case scenario (2026 plus Phase 1 and 2 development), and includes the improvement scheme at the Asda roundabout.

The SRTM for the AM and PM Peak Hours only were used for the VISSIM assessment, as consistent with the base VISSIM model. The forecasting assumptions for the VISSIM model have been consistent with the SRTM model including growth (low growth assumptions), committed developments and the development trip generation for Dunsbury Hill Farm.

The results are presented below for the worst case scenario (2026 with development) as well as for the 2026 baseline (without development), which were presented within the TA Report, for the purposes of comparison. The results are presented in terms of queues on the approaches at all junctions in the Study Area and comparative journey times on two routes in the Study Area.

7.1. Results

The results of the sensitivity test are shown in Table 3 and Table 4 for AM and PM queue lengths, and Table 5 and Table 6 for AM and PM journey times respectively. For the purposes of comparison, the results reported within the TA Report for 2026 with and without Phase 1 & 2 of the development are also presented in the tables below.

Table 3. 2026 AM Queue Length Results

Queue Counter Location		Queue Length (m)		
Junction	Arm	2026 Base	2026 Phase 1 & 2	2026 Sensitivity Test
A3(M) Junction 3 / B2150 Hulbert Road	A3(M) J3 (N)	17	18	70
	Hulbert Road (E)	80	69	124
	A3(M) J3 (S)	18	31	43
	Hulbert Road (W)	54	122	61
Hulbert Road (N) / Purbrook Way Roundabout	Hulbert Road (N)	9	11	35
	Purbrook Way (E)	268	254	193
	Hulbert Road (S)	83	192	36
	Purbrook Way (W)	215	274	57
A3(M) Junction 4 / Purbrook	A3(M) J4 Off-slip	37	37	30

Queue Counter Location		Queue Length (m)		
Junction	Arm	2026 Base	2026 Phase 1 & 2	2026 Sensitivity Test
Way	Purbrook Way (W)	133	131	23
Purbrook Way (W) / B&Q Havant	B&Q Exit	11	11	9
	Purbrook Way (E)	31	27	17
	Purbrook Way (W)	95	111	15
DHF Access Roundabout Junction	DHF Access Rd	N/A	0	1
	Hulbert Road (S)	N/A	5	50
	Hulbert Road (N)	N/A	7	129

The AM peak queue results shows that queue lengths are generally predicted to reduce with the improved Asda roundabout scheme for majority of the network except at the A3(M) J3. At this junction, queue increases are likely due to an increase in traffic being processed through the Asda Roundabout as a result of the improvements. Therefore, there will be an increase in the number of vehicles reaching the A3(M) J3 from Hulbert Road East over the time period. The increase in westbound flows across the roundabout will result in more green time being allocated to the circulatory carriageway at the A3(M) J3 northbound off slip. As a result, queues increase on the northbound off slip. Queues on Hulbert Road West are predicted to decrease as a result of increased gap seeking opportunities. The resulting additional flow on the roundabout decreases gap seeking opportunities for vehicles approaching on the A3(M) J3 southbound off slip, thus increasing queues. The queues on the A3(M) J3 (N) approach increase from 18m to 70m while the queues on Hulbert Road (E) increase from 69m to 124m. These longer queues can be accommodated within the existing link lengths without adversely impacting on the operation of the network.

At the improved Asda roundabout, the results show a significant reduction in queue length at the Hulbert Road (S) approach from 192m to 36m and a slight improvement on Purbrook Way (E) from 254m to 193m.

The improvements at Asda roundabout also contribute to a significant reduction in queue length at the A3(M) J4 with the queue length reducing from 131m to 23m.

Table 4. 2026 PM Queue Length Results

Queue Counter Location		Queue Length (m)		
Junction	Arm	2026 Base	2026 Phase 1 & 2	2026 Sensitivity Test
A3(M) Junction 3 / B2150 Hulbert Road	A3(M) J3 (N)	19	22	49
	Hulbert Road (E)	37	65	174
	A3(M) J3 (S)	31	38	70
	Hulbert Road (W)	44	50	16
Hulbert Road (N) / Purbrook Way Roundabout	Hulbert Road (N)	99	315	370
	Purbrook Way (E)	37	165	83
	Hulbert Road (S)	410	91	55
	Purbrook Way (W)	368	340	78
A3(M) Junction 4 / Purbrook Way	A3(M) J4 Off-slip	129	188	41
	Purbrook Way (W)	377	350	21

Queue Counter Location		Queue Length (m)		
Junction	Arm	2026 Base	2026 Phase 1 & 2	2026 Sensitivity Test
Purbrook Way (W) / B&Q Havant	B&Q Exit	23	20	15
	Purbrook Way (E)	37	42	9
	Purbrook Way (W)	159	153	9
DHF Access Roundabout Junction	DHF Access Rd	N/A	21	40
	Hulbert Road (S)	N/A	26	167
	Hulbert Road (N)	N/A	24	35

Similarly for the PM peak the results show that queue lengths are generally predicted to reduce with the improved Asda roundabout scheme for majority of the network except at the A3(M) J3 where queues increase on all the approaches except the Hulbert Road (W) approach. As in the AM Peak, this is likely due to an increase in traffic being processed through the Asda Roundabout and therefore an increase in the number of vehicles reaching the A3(M) J3 from Hulbert Road East over the time period. The most notable increase is the Hulbert Road (E) approach where the queue length increases from 65m to 174m. This length of queue on Hulbert Road (E) would extend to the new Dunsbury Hill Farm roundabout access provided along Hulbert Road. This may result in a short period of network disruption at new Dunsbury roundabout. However, it is anticipated that this queue will not have significant adverse impact on the network operation.

At the improved Asda roundabout, the results show a general reduction in queue lengths except at the Hulbert Road (N) approach where there is a slight increase in queue length from 315m to 370m. There are significant improvements achieved on the Purbrook Way (E), the Hulbert Road (S) and the Purbrook Way (W) approaches.

The improvements at Asda roundabout also result in a significant reduction in queue length at the A3(M) J4 with the queue length reducing from 153m to 9m.

Table 5. 2026 AM Journey Time Results

Journey Time		Journey Time (sec)		
Route	Segment	2026 Base	2026 Phase 1 & 2	2026 Sensitivity Test
Route 1	South of A3(M) J4 to north of J4	16.8	16.9	16.4
	North of A3(M) J4 to A3(M) J3 Roundabout with Hulbert Road	51.0	55.5	57.8
	A3(M) J3 Roundabout to Hulbert Road / Purbrook Way Roundabout	111.5	131.1	162.3
	Hulbert Road / Purbrook Way Roundabout to A3(M) south of J4	60.7	59.8	73.2
	TOTAL Route 1	240	263	310
Route 2	South of A3(M) J4 to Hulbert Road / Purbrook Way Roundabout	138.0	148.6	80.4
	Hulbert Road / Purbrook Way Roundabout to A3(M) J3 Roundabout with Hulbert Road	109.0	118.6	170.8
	A3(M) J3 Roundabout with Hulbert	65.8	64.3	54.5

Journey Time		Journey Time (sec)		
Route	Segment	2026 Base	2026 Phase 1 & 2	2026 Sensitivity Test
	Road to north of A3(M) J4			
	North of A3(M) J4 to south of A3(M) J4	18.1	18.0	17.9
	TOTAL Route 2	331	350	323

The AM journey time results show that the total journey time on Route 1 increases by 47s compared with the 2026 Phase 1&2 results. The southbound journey from the A3(M) J3 to the Hulbert Road (N) approach at the Asda roundabout accounts for the majority of this increase. This is mainly the result of platooning of the heavy traffic demand arriving at the Purbrook Way (W) approach due to the revised distribution, which limits the number of gap seeking opportunities for traffic on Hulbert Road (N).

On Route 2, the improvement at Asda roundabout results in a reduction in journey time from 148.6s to 80.4s. However, the journey time in the northbound direction from the Asda roundabout to the A3(M) J3 increases from 118.6s to 170.8s. As for the increase in queue lengths, this is likely due to an increase in traffic being processed through the Asda Roundabout and therefore an increase in the number of vehicles reaching the A3(M) J3 from Hulbert Road East over the time period. The total journey time on Route 2 however decreases by 27s.

Table 6. 2026 PM Journey Time Results

Journey Time		Journey Time (sec)		
Route	Segment	2026 Base	2026 Phase 1 & 2	2026 Sensitivity Test
Route 1	South of A3(M) J4 to north of J4	16.6	16.6	16.8
	North of A3(M) J4 to A3(M) J3 Roundabout with Hulbert Road	54.9	56.4	63.3
	A3(M) J3 Roundabout to Hulbert Road / Purbrook Way Roundabout	134.8	221.5	225.9
	Hulbert Road / Purbrook Way Roundabout to A3(M) south of J4	62.2	64.5	75.5
	TOTAL Route 1	268	359	382
Route 2	South of A3(M) J4 to Hulbert Road / Purbrook Way Roundabout	238.5	251.8	87.0
	Hulbert Road / Purbrook Way Roundabout to A3(M) J3 Roundabout with Hulbert Road	100.8	119.3	189.2
	A3(M) J3 Roundabout with Hulbert Road to north of A3(M) J4	46.3	49.3	45.0
	North of A3(M) J4 to south of A3(M) J4	17.8	17.9	17.4
	TOTAL Route 2	403	438	339

The PM journey time results follow a similar pattern to AM results with a 23s increase in the total journey time on Route 1 compared with the 2026 Phase 1&2 results.

On Route 2, the improvement at Asda roundabout results in a reduction in journey time from 251.8s to 87s. However, the journey time in the northbound direction from the Asda roundabout to the A3(M) J3 increases from 119.3s to 189.2s. As for the AM Peak Hour, this is likely due to an increase in traffic being processed through the Asda Roundabout and therefore an increase in the number of vehicles reaching the A3(M) J3 from Hulbert Road East over the time period.. This increase in journey time is offset by the decrease in journey along Purbrook Way resulting in a total journey time decrease of 99s along the entire route.

8. Framework Travel Plan

Appendix F of the TA Report contains the Framework Travel Plan for the site.

The Framework Travel Plan, contained within Appendix F of the TA Report, includes a package of measures that have been identified for this site with the aim of promoting travel by sustainable modes. The purpose of the Plan is to identify an effective strategy for managing travel behaviour of staff and visitors to the Business Park and associated hotel development. It also aims to manage the parking demand on site.

Following occupation of the site, the Framework Travel Plan will be updated and become a full Travel Plan. The full Travel Plan will be a detailed document containing specific information of the sustainable travel modes available and identifying targets for mode share at the site. This information will include details on the CBBS, including its method of operation, funding, frequency and route.

It is proposed that the Framework Travel Plan proposed as part of the TA report will be discussed as part of planning conditions / Section 106 Agreement.

Section 8.27 of the Framework Travel Plan identifies information which should be gathered as part of its annual monitoring. This includes *"information on bus passenger levels that local bus operators may be able to provide"*. There is a risk that local bus operators will be unable to provide meaningful and suitably disaggregated information to the occupiers. As such, the identified information has been amended to include the provision of staff questionnaires to ascertain home postcodes and usual modes of travel. The amended Framework Travel Plan is provided in Appendix H.

9. Hermitage Stream

As requested by HCC, correspondence with the Environment Agency regarding the diversion works to Hermitage Stream is presented in Appendix I.

10. Structures

Following comments from HCC, the Structures AIP has been updated, including:

- The amendment of text to indicate the extent of the U4 finish over deck surface, parapet plinth upstands and a return at the ends of the deck;
- Inclusion of an idealised diagram showing the grillage model within Section 5.2;
- Amendment of the checking Category to Category 2;
- Inclusion of signature Sections 9 and 10; and
- Addition of four space 100mm brown UPVC ducts in each verge on the drawing, and covered in Section 4.1.8.

The updated Highway Bridge Planning Approval In Principle (AIP) is contained in Appendix J.

Appendices

Appendix A. Comments Response

Technical note

Project: Dunsbury Hill Farm - Stage 2

Subject: Highways and Transportation –
Comments from HCC and the
HA and Atkins response

Date: Nov 2012

1. Introduction

Atkins has been commissioned by Portsmouth City Council (PCC) to prepare a hybrid planning application for the development of land at Dunsbury Hill Farm (DHF), near Waterlooville in Hampshire. Atkins has prepared a Transport Assessment (TA) report in support of the planning application – filename: *Dunsbury Hill TA_Final_Mar2012.pdf*

In the context of the hybrid planning application, outline consent is sought for the Masterplan area with detailed consent for the access and link road only.

The TA report was prepared based on the content and methodology set out in a scoping note dated 12th April 2011 that was submitted to HBC, Hampshire County Council (HCC) and the Highways Agency (HA). Following this, the approach was agreed, and some comments were received from each authority that were taken into account in the report. Pre-application discussions have also taken place with the HA on 5th April 2011.

Comments on the TA report have been received from:

- Hampshire County Council (Steve Jenkins). Ref SJJ/6/3/13/78 and APP/12/00338 and dated 26th June 2012 and 23rd August 2012 [hereby referenced as HCC SJ 06/12 and HCC SJ 08/12]; and
- Highways Agency (Helen Batty): Ref APP/12/00338 and dated 4th May 2012 [hereby referenced as HA HB 05/12].

This Technical Note outlines the comments made, and presents Atkins' responses to them.

2. Planning Policy

HCC SJ 06/12: *"The National Planning Policy Framework has been published subsequent to the preparation of the TA and, as you will be aware, replaced PPG13 with immediate effect. No mention is made of the 2011 white paper entitled Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen. The South East Plan is covered, but no mention is made of the fact that government intends, and is taking steps, to abolish it."*

Updated – see Section 2 of the Transport Assessment Addendum.

3. Public Transport

3.1. Existing Provision

HCC SJ 06/12: *"Paragraph 4.13 to 4.17 of the TA outline the applicant's public transport proposals. Paragraph 4.14 states that bus routes 39 and 23 pass immediately to the east of Phases 1 and 2 respectively. Whilst it appears that the nearest parts of both phases are within 100 crow-fly metres of the route of bus service 23 as it runs along Calshot Road (but further from the bus stops), service 39 appears to run 400 crow-fly metres from Phase 1 and 850m from Phase 2. The applicants will need to explain his calculations here. The latter distances fall beyond those usually deemed acceptable for public transport accessibility in new developments and make it important that bus accessibility into the site itself is provided."*

Technical note

Updated – see Section 3.1 of the Transport Assessment Addendum.

3.2. Proposed Provision

HCC SJ 06/12: *"Paragraph 4.15 of the TA states that the applicant is committed to the Cross-Borough Bus Service (CBBS) being delivered as part of the Dunsbury Hill Farm development. The CBBS appears in the Core Strategy and Development Brief. Appendix H of the TA contains a letter which the TA states demonstrates commitment to this service. However, the letter only states that 'provision' be made for an east/west link road, giving the 'opportunity' of an east/west CBBS link."*

This is not acceptable to the County Council and does not meet the Core Strategy development requirements for a dedicated transport link between residential areas to the east and west, which I take to mean Waterloooville and Leigh Park / Havant town. The Core Strategy also requires that measures to maximise the proportion of Journeys to and from the site by public transport, cycling and walking must be demonstrated by the applicant. Maximising the proportion of journeys to and from the site will rely - in part - on better links to the nearby residential areas which are currently unserved by direct bus services. This will be best achieved through the provision of a bus service through the site on the east-west link road.

The County Council will require the applicant to contribute to the timely commencement of the Havant CBBS through a s106 agreement, in line with the Core Strategy Policies CS21 and DM11. Discussions are required between the applicant, local bus companies and the County Council to ensure that an acceptable bus service proposal is prepared and agreed in advance of planning permission being granted. It will be important for agreement in principle to be reached on delivery so that the statement relating to 'dramatically' or 'substantially reduced' journey times between Waterloooville and Leigh Park can be quantified. At this stage it should also be noted that the applicant has not outlined any mechanisms to ensure any local bus service operates through or into the site whatsoever. The proposed development simply does not work in planning terms without this certainty.

I also have concerns about the accessibility to bus services from the northern most proposed employment land plots. These plots are up to 500m away from the link road, and pending the confirmation of bus services on the link road, there does not appear to be a direct means of pedestrian access to reach the bus stops on Calshot Road. The applicant's consultants should explain how the northern plots are to be served by bus or otherwise accessed by bus users."

HCC SJ 08/12: *"Applicant / HCC to agree a priced strategy to deliver CBBS. HCC to draft subsidy / revenue strategy."*

See Section 3.2 of the Transport Assessment Addendum.

The provision of the new road will enable the development and general area to have the opportunity to be served by bus. By providing the new road with an appropriate bus gate we are demonstrating our commitment to assist in the provision of the proposed eastwest CBBS link.

We are assuming the Planning Authority are seeking a contribution to the proposed CBBS through a single payment and not an ongoing revenue contribution .The timing and level of any payment will need to be the subject of future discussion and linked to the phasing of the development. We therefore suggest this matter be conditioned and linked to the reserve matter submission when the proposed development is brought forward. As it may be sometime before occupation of any units we are of the view it would be more appropriate that any agreement should relate to circumstances prevailing at the time.

Discussions to be held following HCC's issue of a paper outlining suggested level of service, cost and expected revenue for the CBBS.

The northern plots are afforded direct access to the existing Park Lane footpath, which links to Calshot Road.

Bus Gate and Bus Stops

HCC SJ 06/12: *"No measures are shown at the easternmost plot access road junction to discourage or prevent vehicles (other than buses) heading all the way to the bus gate. Unless this is done then vehicles will*

Technical note

unnecessarily attempt to use the bus gate and have to reverse back. I suggest that the easternmost plot access junction needs to be reconfigured to change the priority away from the bus-only road or the applicants should explain what signing will be installed to prevent general traffic from using the road abortively."

HA HB 05/12: *"It is proposed that a bus gate is placed on the far east of the Dunsbury Hill Farm Link Road so that the site is permeable to buses. HA requests further details about the bus gate operation and how cars will be prevented from using it."*

HCC SJ 08/12: **"Drawing 104.** The location of the CCTV cameras should be shown, it is suggested that these be placed on the nearside verges facing oncoming vehicles. An area of hard standing will be required for maintenance vehicles for the bus gate. Preferred location would be to the west of the bus gate. Appropriate signage and road marking should be considered to highlight the bus gate, with the possibility of red coloured surfacing."

The implementation of a bus gate on the proposed link road at the Woolston Road roundabout would prevent access to the development by general traffic. It has been agreed that a hybrid planning application will be submitted for the proposed development. A detailed application is to be prepared for the proposed access junction and link road, with an outline application for the remainder of the development.

As outlined in paragraph 4.19 of the Highway Design Report, the precise location and form of the bus gate will need to be confirmed at the detailed design stage. At this stage it is proposed to extend the existing traffic island on the western arm of the Woolston Road roundabout and to implement rising bollards. In discussion with HCC the following items are included for the bus gate:

- Appropriate signing;
- Loop detection with a proximity card in the vehicle;
- CCTV;
- A remote monitoring connection to the Traffic Control Outstation;
- Two land lines for CCTV and another link for out of hours to Havant Town Centre Security; and
- A commuted sum for future maintenance of the bus gate and associated infrastructure will be discussed as part of Section 106 agreements

As outlined in paragraph 4.20 of the Highway Design Report, it is suggested that the bus gate is located close to the Woolston Road roundabout to ensure motorists can clearly see the restriction. This may help avoid vehicles erroneously using the link and needing to complete turning manoeuvres on the link road.

The construction cost estimate for providing this infrastructure is provided in Table 4.1 of the Highway Design Report.

Submitted drawings show signage / road markings, bus stops and additional notes regarding additional signage – see Section 4.1 of the Transport Assessment Addendum.

HCC SJ 08/12: **"Drawing 104.** The rising bollards that enable the bus gate to be provided should be located a minimum of 25m from the roundabout 'Give Way' to allow for a bus to exit / enter the roundabout without encroaching on the bollard or the roundabout. Due to this the central island will need to be extended 5m beyond the bollard, thus the central island should be a minimum of 30m in length. Furthermore consideration should be given to preventing vehicles from mounting the footway and bypassing the bollard."

See Section 4.1 of the Transport Assessment Addendum.

HCC SJ 08/12: **"Drawing 104.** The bus gate is situated approximately 200m from the nearest turning point on the western side, therefore any vehicle passing this turning will not be able to turn around when confronted by the bollard thus needing to reverse a considerable distance. Therefore it is necessary for a turning head to be provided for an appropriately sized vehicle. Consideration should be given to amending the geometry of the last access road to the west of the bus gate, this should be changed to effectively make the bus link the side road. This could be achieved through a combination of measures such as road

Technical note

markings, kerb line changes and narrowing the road width at the entry to the bus link. These measures will help to dissuade unauthorised drivers from entering the bus link."

Narrowing of the carriageway at the western end of the link and a turning head have been incorporated within the design – see Section 4.1 of the Transport Assessment Addendum.

HCC SJ 06/12: "The bus stops will require shelters. The applicant's consultants should provide information on these. I will expect the applicant to provide real-time information screens at the bus stops, in line with the Development Brief statement on bus information systems."

HCC SJ 08/12: "Bus lay-bys should be made usable for buses of 12m in length. These should be a minimum of 2.5m in width and total length of 16m. Furthermore, the lay-bys design shall enable shelters to be provided and the shelters shall be of a high quality 'BRT' type specification."

As outlined in paragraph 4.4.6 in the Highway Design Report, the bus stop facilities should meet the required BRT standards. In particular, shelters, Real Time Passenger Information (RTPI) and bus kerbs should be provided. Drawing 5099849/TP/GA/103 Rev D has been annotated to highlight that the proposed bus stops are to be constructed to BRT specification – see Section 4.1 of the Transport Assessment Addendum.

4. Walking & Cycling Access Proposals

HCC SJ 06/12: "Paragraphs 4.18 to 4.23 of the TA discuss non-car access. As per the draft TA, the final TA states that the main pedestrian access will be from Woolston Road in Leigh Park, and the main cycle access from both Woolston Road and Park Lane (Havant Bridleway 123). Paragraph 4.20 states that Park Lane will be maintained. For clarity I presume the applicant means that the route will be preserved and not diverted, which is acceptable. Mention is then made of upgrading Park Lane, and other rights of way, which was absent in the draft TA. Notwithstanding this is the application should indicate the sections of rights of way which would be affected by the site-wide approach to upgrades outlined in paragraph 4.21. Core Strategy Policy CS18 states that providing a metalled surface to Park Lane is a development requirement. It is not clear if this is to be provided."

The Non-Motorised User (NMU) audit outlines the issues at specific locations, with consideration of actions to be undertaken at each location to address them.

The surfacing of Park Lane has been investigated as part of the Transport Assessment Addendum – see Section 5.1.

4.1. Pedestrian and Cycle Access from the west

HCC SJ 06/12: "The Development Brief states that a network of routes for pedestrians and cyclists should 'link with the adjacent settlements' and 'provide or enable new links within the settlements'. It goes on to say that financial contributions will be sought towards transportation initiatives such as improved cycle links between the site and various locations, mention being made of, amongst other places, Waterlooville town centre. However, I do not feel that the routes proposed by the applicant constitute an acceptable network. Links to Waterlooville are not provided and therefore my comments relating to access from the west still remain.

In my letter of December 2011 I stated that a strategy was required to address this deficiency. The applicant's transport consultants have provided a technical note on the subject, appended to the TA as Appendix G. Paragraph 4.19 of the TA explains that the assessment found that routes across the A3(M) at Junction 3 'are not advisable based on safety and cost issues balanced against expected demand'.

Whilst I accept that low-cost options may not be possible at this junction, connections to the west must form part of the proposed network to serve the application site in order that pedestrians and cyclists are not faced with unsafe crossings to what will be the Borough's key new employment site. The technical note does not appear to have taken account of the partial signalisation of the roundabout which will be funded by the West of Waterlooville Major Development Area (MDA) and which I mentioned in my letter of December last year. The applicant should provide a revised pedestrian and cycle strategy in light of this scenario in which the

Technical note

motorway off-slips are signalised. Consideration should be given as to whether the safety fencing (which would, in its current form, prevent use of the southern roundabout bridge) can be relocated to enable a southern route to be considered."

Junction 3 is not currently signalised and Hulbert Road does not provide pedestrian facilities. Our TA sets how pedestrians and cyclists currently transverse the A3(M) North and South of the proposed development in Figure 3.7.

As part of the Pedestrian and Cycle Access Technical Note, a number of options for access were considered including a route to/from South Eastern Waterlooville. It is anticipated that there would be a total of 22 walk / cycle trips in the AM peak period and 18 trips in the PM peak period on a route to/from South Eastern Waterlooville. This is based on the proportion of the walk / cycle trips from the SRTM and assumes 10% arrive from Hulbert Road (west), based on the vehicle trip distribution.

There are significant safety concerns with providing a footway / cycleway with uncontrolled crossings along both A3(M) entry and exit slips on the northern side of the roundabout (all of which are subject to the national speed limit) due to the existing high speed of vehicles using the roads. Therefore, controlled crossings and street lighting are considered necessary. Given the high cost of construction (for both the direct and alternative routes) relative to the anticipated benefits it is suggested that the provision of a footway / cycleway along this route would not be economical.

You will note that the demand for a pedestrian / cycle route from the west are anticipated to be fairly limited and in our view the improvements you are seeking appear more extensive than those required or arising from the proposed development.

As part of the TA Report, access for pedestrians and cyclists from the west via Hulbert Road leading across the A3(M) Junction 3 to Waterlooville and south on Hulbert Road to the ASDA roundabout was considered by Atkins. A reduced scale scheme, linking the site to the existing Outhurst Wood / Beech Wood footpaths, has been considered, as outlined in Section 5.2 of the Transport Assessment Addendum.

5. Traffic Forecasting

5.1. Trip Generation

HA HB 05/12: *"HA is content that a trip rate sensitivity test has been undertaken. The different factors applied to the SRTM trip rates (0.38) relative to the TRICS trip rates (0.46 for AM arrivals) do not fully account for the large differences found in trip numbers. HA is therefore concerned that the SRTM trip rates are an under representation of the likely trip generation associated with the site."*

As outlined in paragraph 4.32 of the TA, differences arise from the geographic location of sites in TRICS and the age of the traffic count data. Selecting the range of sites to obtain an average smooths the range in trip rates, but it is clear that a high variation between sites can exist in these broad categories.

Atkins has employed the SRTM trip predictions for the Dunsbury Hill Farm development assessment as the SRTM considered detailed planning and employment growth assumptions which form the evidence base. However a sensitivity test has been carried out to understand the impact of the higher trip rates as a worst case, as outlined in Section 7 of the Transport Assessment Addendum.

5.2. Traffic Forecasting Assessment Methodology

HCC SJ 06/12: *"the planning applicants for the West of Waterlooville MDA are legally committed to delivering the signalisation of A3(M) junction 3. The layout shown in Drawing Ref 51 Rev B which I previously sent to the applicant should be tested with development traffic and the TA amended to reflect this."*

HCC SJ 08/12: *"A3(M) J3 must be tested with committed improvement scheme from Waterlooville MDA, details have been provided to applicant."*

Technical note

This scheme has included in a Sensitivity Test (Test 2), as outlined in paragraphs 6.34 to 6.38 within the TA.

HA HB 05/12: *"With regard to Hindhead, TRADS data can be used to determine whether there has been any material difference in flows. HA requests that TRADS data is assessed to see if Hindhead has caused a materially significant alteration to traffic flows."*

See Section 6.1 of the Transport Assessment Addendum.

HCC SJ 06/12: *"Paragraph 5.17 states that existing bus service 23 (Leigh Park to Southsea) would be extended from Leigh Park to Dunsbury Hill Farm. However as stated above, the applicant has given no evidence that Stagecoach will alter its service to enter the site."*

Simon Newport, Regional Network Manager (South West and Wales) of Firstgroup, has confirmed that they are happy to operate within the site with revenue support, as outlined in Section 3.2 of the Transport Assessment Addendum.

HCC SJ 06/12: *"As per my pre application letter to the applicant the Sub Regional Transport Model which is the fundamental transport assessment tool for this site (the SRTM) assumes that the Cross-Borough Bus Service will come into operation in line with the development. The statements in the applicant's final TA relating to the 'opportunity' to provide it does not give sufficient assurance that this service will come into existence in line with the SRTM modelling. Unless an agreement is entered into relating to the provision of the CBBS then the modelling assumptions will be incorrect."*

HCC SJ 08/12: *"[Traffic modelling] Assumes CBBS will serve the development. Unless an agreement is entered into relating to provision of CBBS then modelling assumptions will be incorrect and development impact underestimated. CBBS to be secured."*

The assumption of the provision of the CBBS has been taken from the SRTM model. It is considered likely that, should the service not be realised, bus demand will be catered for by other services such as the extended Stagecoach route.

5.2.1. VISSIM modelling

HCC SJ 06/12: *"The VISSIM modelling (which has been used to assess the local network in more detail) still distributes the development traffic 85% via J3 and 15% via J4. This is contrary to the SRTM output and as highlighted in my pre application correspondence is considered to be unrealistic."*

HA HB 05/12: *"On reviewing the results from the forecast SRTM model and the forecast VISSIM model they are showing conflicting conclusions which is represented in the routing explained above. The 'Transport for South Hampshire Evidence Base – Dunsbury Hill Farm Report' states that for the AM peak, the general move of development traffic to the site from the A3(M) northbound uses Junction 4 and the Purbrook Way / Hulbert Road Roundabout. Subsequently the reverse route is witnessed in the PM peak. The report states that the reason for this route choice could be due to existing congestion northbound on the A3(M) or at Junction 3 itself."*

The VISSIM model, however, has shown that the preferred route choice for development traffic travelling from the A3(M) northbound to the site uses Junction 3 and consequently uses the same route back in the PM peak.

Although forecast results from the VISSIM model for all three scenarios indicate that there is no significant impact posed on Junction 3 and 4 of the A3(M), results have shown that queuing on the northbound off-slip at Junction 4 does increase quite dramatically from 2019 to 2026. As the VISSIM forecast model is using a route proportion of 85% using Junction 3 and 15% using Junction 4 we would require a sensitivity test being conducted using the SRTM route proportion to assess whether queuing extends back onto the mainline at Junction 4. HA requests a justification of the approach and detailed flow information is provided for both junctions, as intuitively the Junction 3 route should be quicker so it may be likely that the traffic would go this way."

The reason for using a VISSIM model for assessment is to identify local impacts – strategic impacts can be identified using the SRTM model. The 85% / 15% split has been identified using dynamic

Technical note

assignment within the VISSIM model, which is able to take account of individual driver behaviour and specific local issues / congestion.

However; the SRTM route proportion will be used to form a sensitivity test – see Section 7 of the Transport Assessment Addendum.

HCC SJ 06/12: *"In addition I am concerned about some other aspects of the VISSIM modelling, for example the TA at paragraph 6.3 states that "minor network changes were made to the VISSIM models to adjust to the higher demand in the future year models". It goes onto to state that this includes adjusted "lane change parameters by reducing safety distances and allow easier lane changing to reflect drivers becoming more aggressive". These adjusted parameters can have a strong influence over saturation flows and overall network performance. With this in mind, the changes are not seen as "minor" and further details regarding how the values were arrived at and which links/connectors they have been applied to are necessary. Whilst drivers may become more aggressive as congestion increases, quantifying this "aggression" is impossible. Accordingly, driver behaviour parameters in the Base and Forecast year models should be the same. Changing the values in the Forecast year models may be masking the true impacts of the development."*

Our approach to the VISSIM modelling follows the Highways Agency's "Guidelines for the use of micro simulation software" – July 2007, as agreed in the scope.

Paragraph 7.3.3 of the guidelines state that *"That any changes to reflect localised issues of congestion, and its impact on driver aggressiveness, should be link specific adjustments in the base year and should be reviewed in future years if significant capacity improvements have been implemented"*.

The only minor network changes made to the model were for the A3(M) junctions. As such, the overall local road network performance will not be affected by these adjustments.

HA HB 05/12: *"It is understood that the VISSIM model has been modelled for the AM peak (08:00-09:00) and PM peak (17:00-18:00). This includes a 15 minute warm up and cool down period. We would like to request the expansion factors which have used to convert the peak hour development trips to the model period as these have not been provided, along with details on how the development trips have been profiled within the model."*

The factors were calculated using the existing traffic flow data. The factors have been supplied to the HA as part of the peak hour calculation spreadsheet "VISSIM_Input_AM&PM_v5.xls".

The profile of the development trips has been taken from the SRTM model.

HA HB 05/12: *"Given the uncertainties around the modelling, HA requests to see a copy of the VISSIM model itself in order to further analyse the inputs and approach in more detail."*

The Base VISSIM models have been supplied to and approved by the HA.

6. Traffic Impact of development

HCC SJ 06/12: *"the assessment methodology remains the same as the draft TA and that methodology (principally distribution and future years parameters) mean that the impact has not been fully quantified at this stage."*

The SRTM route proportion will be used to form a sensitivity test – see Section 7 of the Transport Assessment Addendum.

HCC SJ 06/12: *"Comparison between the scenarios would be made easier if the applicant had placed comparative data next to each other in the same table."*

The Sensitivity Test results have been presented in this way –see Section 7 of the Transport Assessment Addendum.

Technical note

HCC SJ 06/12: *"There appears to be quite significant increases in queuing lengths which occur between the 2011 modelled base and the 2019 and 2026 base scenarios. It would have been useful for the applicant to have provided some commentary as to whether this is as expected."*

HCC SJ 06/12: *"Whilst the applicant states that the queues will not conflict with other junctions, they are quite considerably more than is currently experienced at these locations. This is of concern to the County Council and will require mitigation. It is reasonable expect the applicant to commit to achieving a nil detriment solution via a balanced and viable mitigation package."*

The VISSIM modelling indicates that the Hulbert Road / Purbrook Way roundabout experiences an increase in congestion even without the development. To improve operating conditions, mitigation would be required in the future scenario. Options for the improvement of the Hulbert Road / Purbrook Way (Asda) Roundabout are currently being investigated.

HCC SJ 06/12: *"It is also worth noting that the queue lengths decrease on some arms despite additional traffic being added. The TA suggests this is a result of the higher demand creating a slightly different arrival profile in VISSIM for vehicles at the junctions and hence different gap opportunities at the roundabouts. I disagree and suggest this unexpected result is a function of adjusting the future years VISSIM parameters where driver behaviours have been altered in the future years resulting in more aggressive gap acceptance which is perhaps unrealistic and masks the true impacts of the development."*

The VISSIM parameters have only been adjusted on the A3(M) junctions. No adjustments have been made at the ASDA roundabout hence results are a result of different gap opportunities with different flows on each arm.

HA HB 05/12: *"It is noted within paragraphs 7.11 and 7.12 of the TA that mitigation to the Purbrook Way / Hulbert Road roundabout will be required due to future congestion issues and will be considered at detailed planning stage. We would like to stress that any potential increase in capacity at this roundabout could result in an increase in traffic from the A3(M) Junction 4 northbound off-slip, therefore we need to understand prior to this stage what the impact of any mitigation at the Purbrook Way/Hulbert Roundabout would have on re-routing and the potential impact on A3(M) junction 4 northbound off-slip. Following the detailed review of the VISSIM model, the impact of the development at A3(M) Junctions 3 and 4, and associated mitigation needs (if any), will be confirmed."*

Noted

HA HB 05/12: *"An assessment of the Junction 3 and 4 slip roads has been undertaken. Using the slip road flows only Atkins has assessed the required slip road standards and concluded that the existing slip road widths are satisfactory. However this assessment has not considered that slip road flows relative to the mainline flows and as such a merge assessment has not been undertaken. HA requests that the merge flows are compared against the mainline flows, using Figure 2/3 of TD22/06, with outputs provided for review."*

Tables 6.11 and 6.12 within the TA outline both slip road flows and mainline flows (mainline flows referred to as "flow at Junction" for both northbound and southbound traffic).

See Section 6.2 of the Transport Assessment Addendum for a comparison using Figure 2/3 of TD22/06.

7. Site Access

7.1. Access Roundabout

HCC SJ 08/12: *"Personal Injury Accident data has been provided for this scheme which shows that there are no significant patterns of accidents within the scheme location. However immediately north of the scheme at the A3(M) roundabout the County Council are implementing a scheme to reduce rear end shunts by implementing a longer section of High Friction Surfacing and vegetation clearance. It is recommended that the applicant consider complementing these measures at Section 278 stage."*

Technical note

To be considered at the Section 278 Stage.

HCC SJ 08/12: **"Drawing 101 Eastern Arm.** The approach to the roundabout is on a continuous right hand bend. On exit from the Hulbert Roundabout consideration shall be given to the forward visibility due to the fact that it is on a tight bend and embankment. It is envisaged that a vehicle restraint system will be in place and this may hinder visibility to the low target height throughout this area. Furthermore, with the introduction of the dedicated left turn lane visibility for both lanes of merging traffic shall be considered both horizontally and vertically. This must be considered further at the Section 278 stage."

To be considered at the Section 278 Stage.

HCC SJ 08/12: **"Drawing 101 Northern Arm.** A 'No Right Turn' sign shall be considered on the northern approach to prevent vehicles from turning right into the parking/rest area to the west of the scheme."

HCC SJ 08/12: At the Section 278 stage the applicant shall consider the signing strategy within the vicinity [on approach to the A3(M) roundabout] as it would be anticipated that large Advanced Direction Sign (ADS) will be present as well as warning signs regarding the approaching roundabout, these need to be positioned as not to hinder the sight stopping distance, however must not be placed in such a fashion as to not be visible to drivers. With regards to the roundabout visibility splays need to be provided to comply with the requirements set out in TD 16/07."

To be considered at the Section 278 Stage.

HCC SJ 08/12: **"Drawing 101 Departures from Standard.** visibilities shown on the drawings do not reflect those which are approved within the departures or the visibility lines attached in labels. Therefore, the visibilities shall be re-drawn to reflect the approved Departures from Standard.

This has been addressed in the RevC drawings.

HA HB 05/12: "Given that the proposed roundabout access adjoining the B2150 Hulbert Road could have wider implications on A3(M) Junctions 3 and 4 a Road Safety Audit, Stage 1, of the roundabout design should be completed at this stage. The safety audit should be undertaken in accordance with Highways Agency Standard HD 19/03."

A Stage 1 Road Safety Audit has been completed for the roundabout design. No changes to the A3(M) Junctions 3 and 4 are proposed.

HCC SJ 08/12: **"Drawing 104. Vertical Alignment:** The applicant will need to consider the driveability of the vertical alignment on the southern approach to Hulbert Roundabout due to the undulating characteristic of the alignment and consider the eastern approach to the Hulbert Roundabout due to the steep incline. Some vehicles will need to stop on this incline and undertake a hill start which may not be ideal for some drivers. Therefore the applicant shall consider reducing the incline where possible as part of the Section 278 process."

To be considered at the Section 278 Stage.

7.2. Link Road

HCC SJ 06/12: **"Pedestrian Refuges on the link road.** These have not been added to Drawing Number 103/Rev B. I still require this omission to be amended."

HCC SJ 08/12: "The need for pedestrian refuges on the link road as raised in my earlier letter have still not been added to drawing 103/Rev B. I still require this omission to be amended."

This is referred to in Para 4.22 of the Highway Design Document .The proposed road width is 6.5m and will include appropriate dropped kerbs. Widening the width of the road to accommodate refuges will adversely impact on the core design principles of the proposal. We also consider the proposed traffic flows would not warrant a refuge on safety grounds

Technical note

HCC SJ 08/12: **"Drawing 102.** This section incorporates a bridge over the Hermitage Stream and consideration should be given to the length of parapet and safety fence required. The realignment of the stream needs to be considered so not to cause scour on the bridge, this can be done at the post planning stage."

To be considered at the post planning stage.

7.3. Hotel Roundabout

HCC SJ 06/12: "Pedestrian crossing facilities on hotel roundabout splitter islands. This does not appear to have been added to Drawing Number 103/Rev B. I still require this omission to be amended."

HCC SJ 08/12: "the pedestrian crossing facilities on hotel roundabout splitter islands have not been added to drawing 103/Rev B. I still require this omission to be amended."

The current drawings include provision on the southern arm and other informal crossing arrangements are also included on the submitted drawing.

HCC SJ 08/12: **"Drawing 103.** With regards to the Hotel roundabout.... the two entrances to the roundabout on both north and south shall be constructed to a minimum length of 45m to assure that the required visibility is provided.

Noted.

7.4. General

HCC SJ 08/12: **"Drawing 104.** Drainage Proposals: the applicant shall provide all correspondence with the Environment Agency regarding the diversion works to Hermitage Stream, including flood risk analysis, all discharge consents that are required and the water quality report within a future submission."

As discussed by John Malyon and HCC, the level of approval required from EA / the Water Company in relation to diverting / bridging the stream can be covered by meeting minutes. See Section 9 of the Transport Assessment Addendum.

HCC SJ 08/12: **"Drawing 104.** Street Lighting Proposals: Maintenance numbers of all existing street lighting furniture, including illuminated signs and bollards shall be provided at the detail Section 278 stage."

To be considered at the Section 278 Stage.

8. Mitigation Measures

HCC SJ 06/12: "As per the draft TA, the only physical works to mitigate the transport impact of the development are the access, east-west link road and bus gate. At this stage this is considered to be inadequate in the light of the above concerns."

We have reviewed the Asda Roundabout and Park Lane at the request of HCC and HBC. Our Transport Assessment report and subsequent Addendum TA report identifies that the mitigation measures proposed are appropriate for the level of the impact on the highway network.

8.1. B2150 Hulbert Road / Purbrook Way Roundabout

HCC SJ 06/12: "My letter to the applicant's transport consultant in December noted that no scheme to improve this roundabout had been submitted with the draft TA... As you will know this matter is now the subject of a separate study seeking to design a scheme which overcomes the queuing forecast to occur due to the proposed development... The detailed modelling of the scheme at the B2150 Hulbert Road / Purbrook Way Roundabout this may need to be revisited once we have agreement on the above points and a favoured type of junction emerges."

Technical note

Noted.

8.2. Framework Travel Plan

HCC SJ 06/12: *"Appendix F of the TA contains a framework travel plan for the site and paragraphs 7.6 to 7.10 of the TA report summarise it.... I do however note once more that the issue of the CBBS is identified in what is termed the 'public transport strategy'. In reality this refers only to information provision and ticketing arrangements. This is unacceptable and the travel plan for the site will need to be based around firmer plans for a better bus service to and through the site."*

See Section 8 of the Transport Assessment Addendum.

HCC SJ 06/12: *"The information provided on the proposed annual monitoring survey identifies for four potential datasets, including passenger information from local bus operators. This is unlikely to be available to the occupiers in a suitably disaggregated form to be of use to travel planning and should not be included. Information on the number of staff / visitors will, of course, be required to be able to make statements about proportions of travel by various modes. In reality a short questionnaire of staff covering home postcode and usual means of travel may elicit the most relevant information."*

See Section 8 of the Transport Assessment Addendum.

HCC SJ 06/12: *"The County Council will require more certainty over those Travel Planning measures which will be introduced and who will be responsible for delivering them. The cost of those measures will need to be secured in a Section 106 Agreement and that funding will be returned to the developer on completion of the Travel Plan monitoring which evidences satisfactory implementation of the measures. The Council's costs of approving and monitoring the Travel Plan will also need to be covered in the Section 106 Agreement."*

To be discussed as part of Section 106 agreements.

HCC SJ 08/12: *"Certainty over Travel Planning measures to be introduced / responsibility for delivering them required. HCC's costs of approving / monitoring the Travel Plan also required."*

Noted.

9. Other

9.1. Land Issues

HA HB 06/12: *"The applicants should also be aware that they will need to consult with the Highways Agency regarding transfer of land owned by the Secretary of State for Transport where the proposed development impinges on such land and also on construction issues that may impact the A3(M) junction 3 and boundary issues where the proposed new roundabout on Hulbert Road and adjacent lorry parking area abut the A3(M) boundary."*

Noted

9.2. Structures AIP

HCC Design Check Report: *"The Structures AIP shall be resubmitted for approval in accordance with the comments within the Structures section of this report"*

"Cl. 3.8 - A U4 finish should be specified for top of deck and surfaces to receive waterproofing."

Agreed, the text has been amended to indicate the extent of the U4 finish over deck surface, parapet plinth upstands and a return at the ends of the deck – see Section 10 of the Transport Assessment Addendum.

"Cl. 5.2 - A diagram of the idealised structure showing the grillage model will be required."

Technical note

Agreed, an idealised diagram has been added to section 5.2 – see Section 10 of the Transport Assessment Addendum.

"Cl. 7.1 - HCC require the checking Category to be Category 2 - i.e. requires a check by a team which may be from the same organisation but must be independent of the Design Team."

Amended as required – see Section 10 of the Transport Assessment Addendum.

"In accordance with BD2 the signature sections 9 and 10 must be included to enable submission signature by Design Team Leader and Approval/Rejection by HCC Chief Engineer Structures."

Sections 9 and 10 added as required – see Section 10 of the Transport Assessment Addendum.

"HCC will require 4 spare 100mm brown UPVC ducts to be provided in each verge to allow for possible future service needs."

Four ducts have been added to both verges on the drawing and covered in section 4.1.8. No other requirements for service provision have been identified to date – see Section 10 of the Transport Assessment Addendum.

"At the appropriate stages Design, Check and Construction certificates will be required."

Design and Check and Construction certificates will be provided at the appropriate stage by the relevant persons. This is not part of the current scope.

"On completion of construction the Health & Safety file, including one set of 'As Built' drawings, and one set of calculations will be required."

Health and Safety file will be compiled on completion by the relevant persons. This is not part of the current scope.

Appendix B. Meeting Minutes

Meeting notes

Project:	Dunsbury Hill Farm		
Subject:	Transport Assessment Comments		
Date and time:	14 Nov 2012 - 10:00	Meeting no:	1
Meeting place:	The Castle, Hampshire CC	Minutes by:	R Fisher
Present:	Stephen Jenkins Caroline Richardson Peter Marshall Stuart Wood Stephen Cantwell Jeff Hutchins Nigel Walken Senthuran Sritharan Steve Dimmock Rachael Fisher	Representing:	HCC HCC HBC HBC HBC PCC HA / PB Atkins Atkins Atkins

ITEM	DESCRIPTION & ACTION	RESPONSIBLE
1	Introductions	
1.1	Introductions were made. SS outlined that the meeting would be structured around comments made by HCC / HA on the Dunsbury Hill Farm Planning Application.	
2	Policy	
2.1	SS confirmed that the policy section of the report will be updated, including the addition of relevant NPPF policies, as part of the Addendum TA	SS
3	Public Transport and Internal Carriageway Layout	
3.1	SJ explained that, as provision of a bus service is essential for the site, firmer commitment is required from PCC that this will be provided as part of the development. SS confirmed that PCC have confirmed that a bus service will be provided. SJ to issue paper outlining suggested level of service, cost and expected revenue for the Cross-Borough Bus Service (CBBS). SS / SJ to then agree the level of subsidy and phasing of the provision and contribution as part of the Section 106 negotiations.	SJ / SS
3.2	Comments received from HCC regarding the requirement for the proposed bus gate to be relocated 25 metres from the existing roundabout (including an extension of the proposed central island) were discussed. SJ to clarify if this is required.	SJ
3.3	The provision of a turning point / head to the west of the bus gate was discussed. SJ to clarify what sized vehicles will need to be able to turn. Atkins to include within design if required.	SJ / SD

Next meeting:

Distribution:	Attendees plus John Malyon, Martin Lavers & David Ball		
Date issued:	27 November 2012	File ref:	

NOTE TO RECIPIENTS:

These meeting notes record Atkins understanding of the meeting and intended actions arising therefrom. Your agreement that the notes form a true record of the discussion will be assumed unless adverse comments are received in writing within five days of receipt.

ITEM	DESCRIPTION & ACTION	RESPONSIBLE
3.4	SS outlined how vehicles will be stopped using the bus-only link.	
3.5	HCC suggested that the bus only link could be re-designed as a side road at its western end. Discussed the desire for a Boulevard / Avenue feel through the site and visibility requirements.	
3.6	SJ clarified that the suggestion was not necessarily a safety point – more to indicate further to drivers that the link is for buses only. SD to re-design to include a narrowing of the carriageway (four metres) at the western end of the bus link, potentially incorporating the pedestrian crossing and carriageway treatment.	SD
3.7	Discussed the potential of providing bollards at the western end of the bus link. Agreement that this would be a fall-back option if other measures do not work.	
3.8	JH questioned if footways were required on both sides of the carriageway within the site. SS confirmed that this was a HCC requirement. SJ outlined the reasoning behind the requirement.	
3.9	SD confirmed that the carriageway would be adopted to the back of the footway on both sides. SJ clarified that the road would be adopted by the highway authority.	
3.10	SS confirmed that bus stops would be provided to BRT standards. Design drawings to be annotated.	Atkins
4	Pedestrian and Cyclist Access	
4.1	Surfacing and use of Park Lane discussed. SW confirmed that it is unlikely that the Lane can be metalled as it is classified as a Bridleway. SJ to confirm.	SJ
4.2	SD confirmed that Park Lane will not be diverted as part of the development proposals. The lane will be crossed only, and be surrounded by a landscaped strip that will be looked at as part of the detailed design. SC confirmed that this can form part of the detailed design, but needs to be conditioned.	
4.3	Atkins to confirm the number of pedestrians which use Park Lane to assess whether a change in surfacing would affect the mode share used within the TA.	SS
4.4	Pedestrian / cycle access to the west of the site discussed. HCC confirmed that this will be required, and therefore that a contribution from PCC will be needed.	
4.5	SW outlined the requirement for a route over the A3(M) J3 roundabout, which would not include works further to the east (as included with Atkins' Pedestrian and Cyclist Access TN) – just a link to the existing footways is required.	
4.6	SJ confirmed that on-site and off-site access are separate matters. SS to revisit work completed as part of the Pedestrian and Cyclist Access TN and develop a "toned down" solution for a link between the existing Outhurst Wood footway and the site, and an estimate of the associated costs.	SS
4.7	Discussion of requirements for how the proposed pedestrian / cyclist access would link to the site. SD to investigate the possibility of a link crossing the existing culvert. HCC confirmed that a link via Hulbert Road and the proposed vehicular access would be acceptable if the culvert cannot be crossed. NW confirmed that the HA would not object to a crossing on the A3(M) J3 roundabout in principle.	SD
5	Traffic Modelling	
5.1	NW outlined that the HA are more comfortable with the use of SRTM trip rates following the sensitivity test contained within the TA.	

ITEM	DESCRIPTION & ACTION	RESPONSIBLE
5.2	SS clarified that the A3(M) J3 roundabout has been tested with the MDA development signals.	
5.3	SS confirmed that TRADS data will be analysed to ascertain the change in flows on the A3(M) following the implementation of the Hindhead Tunnel.	SS
5.4	It was noted that HCC are concerned that the traffic modelling will not represent the full impact of the development if the CBBS is not implemented. SS confirmed that Firstgroup have confirmed that they are willing to re-route into the site if a subsidy is paid, and therefore if the CBBS is not implemented a bus route will still be provided.	
5.5	SS confirmed that a sensitivity test will be undertaken for the development using the SRTM distribution following confirmation of the Asda roundabout design. RF clarified that SRTM trip rates would be used as part of this sensitivity test. NW to confirm that this approach is acceptable to the HA.	SS / NW
5.6	HCC raised concerns over the changes made to driver parameters within the future year VISSIM models. RF clarified that these changes were in line with HA guidance, and only made on the A3(M) links, not the local road network. SJ confirmed that this was acceptable.	
5.7	SS confirmed that the base models have been approved by the HA. SS to forward the relevant data to NW.	SS
6	Asda Roundabout / Park House Farm Way Junction	
6.1	SJ requested the designs for the two junctions. SD to finalise and send for comment.	SD
6.2	Discussion of if the proposed Asda Roundabout design will require planning permission. SJ / SC suggested that the design is appended to the Dunsbury Hill Farm Planning Application. SS disagreed and suggested that it form part of the S278 agreement. SS to provide HCC with examples of other schemes where planning permission was / wasn't required.	SS
7	Site Access	
7.1	SJ outlined the points still outstanding regarding the site access. SD confirmed that the pedestrian link across the Hotel Access has now been included within the design and splitter islands have been taken into consideration	
8	General	
8.1	Atkins to complete Hazard Risk Assessment.	Atkins
8.2	Structures AIP to be resubmitted	Atkins
8.3	SS confirmed that a Stage 1 RSA has been completed.	
8.4	SC asked for clarification that the drainage doesn't introduce any increases of quantity and quality. Atkins to advise	Atkins
8.5	SJ noted that more commitment is needed from PCC for the Travel Plan. SS confirmed that this would be included as part of the Addendum TA (framework only) and will be secured as part of the S106 agreement.	SS
8.6	Discussion on the potential for a speed limit reduction on Hulbert Road. Speed limit may be reviewed following implementation of the proposed access, but will not be before.	
8.7	SC requested that an advance direction sign is provided on Hulbert Road between the proposed access and the A3(M) at S278 stage. SD confirmed that this would be a sign swap, and that no additional signs would be provided.	

ITEM	DESCRIPTION & ACTION	RESPONSIBLE
	CR noted that several drivers have recently driven on the wrong slips at this location.	
8.8	Next meeting to be arranged for mid-December	Atkins

Appendix C. Correspondence with FirstGroup

Fisher, Rachael

From: Simon.Newport@firstgroup.com
Sent: 22 February 2012 16:04
To: Cowley, Samantha
Cc: Malyon, John J
Subject: Re: FW: Meeting Minutes

Hi Sam - we are happy to operate anything as long as someone provides the revenue support.

many thanks,

Simon Newport
Regional Network Manager
South West and Wales

Tel: Southampton 02380714842
Mobile: 07779310349

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First Cymru Buses Limited. Registered in England & Wales No. 00133884, Registered office: Heol Gwrysydd, Penlan, Swansea, West Glamorgan, SA5 7BN.

From: "Cowley, Samantha" <Samantha.Cowley@portsmouthcc.gov.uk>
To: "Simon.Newport@firstgroup.com" <Simon.Newport@firstgroup.com>
Cc: "Malyon, John J" <john.malyon@atkinsglobal.com>
Date: 22/02/2012 14:57
Subject: FW: Meeting Minutes

Hi Simon

How's things. I am working with consultants (Atkins) on a planning application for a road which will link Leigh Park to Waterlooville -East West link through Dunsbury Hill Farm.

We are up against it to get the planning application in and HCC highways are insisting that we get a letter from local bus providers to say that they would extend their services to provide bus links envisaged by Havant BC's core strategy.

I have copied John in from Atkins, he can give you details and I am hoping you will be able to advise what service run in the area and what service could be extended to offer a link from east to west.

Hope all is well with you, must catch up at some point.

Sam

Samantha Cowley BSc Hons MRICS
Valuer
Asset Management Services
Portsmouth City Council

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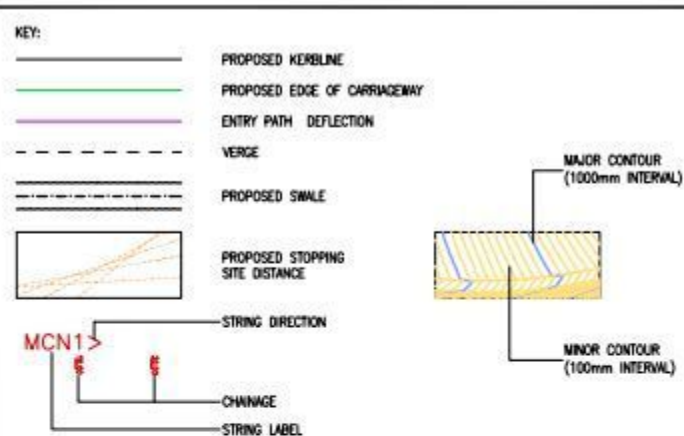
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Appendix D. Revised Drawings

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 - CARRIAGEWAY AND FOOTWAY CONSTRUCTION TO BE AGREED WITH KEY STAKEHOLDERS POST PLANNING.
 - DWRB STANDARDS HAVE BEEN APPLIED TO THE PROPOSED HIGHWAY ALIGNMENT FOR HULBERT ROAD AND THE PROPOSED HULBERT ROAD ROUNDABOUT PRIOR TO THE COMMENCEMENT OF THE PROPOSED DEVELOPMENT 30mph ZONE. MIS2 STANDARDS HAVE BEEN APPLIED TO THE HIGHWAY ALIGNMENT WITHIN THE DEVELOPMENT AREA AFTER THE COMMENCEMENT OF THE DEVELOPMENT 30mph ZONE.

HULBERT ROAD RE-ALIGNED TO PROVIDE ALIGNMENT INTO THE PROPOSED ROUNDABOUT WHICH ALLOWS AN SSD OF 160m WITHIN THE NORTHBOUND TRAFFIC LANE (HCC REQUIREMENT)

EASTERN CHANNEL LINE AND VERGE DESIGNED TO TIE INTO EXISTING HULBERT ROAD LEVELS AND RE-ALIGNED CHANNEL TO INTERFACE WITH EXISTING LEVELS VIA A 1:3 EMBANKMENT

PROPOSED COMMENCEMENT OF DEVELOPMENT 30mph ZONE (SEE NOTE 7)

EARTHWORKS REQUIRED FOR VERTICAL ALIGNMENT BETWEEN THE PROPOSED DEVELOPMENT LINK ROAD AND THE LEVEL OF THE PROPOSED ROUNDABOUT, 1:3 EMBANKMENTS PROPOSED TO INTERFACE VERGE WITH EXISTING GROUND LEVELS.

2.5% SUPERELEVATION PROPOSED FOR CURVES

VEGETATION TO BE PRUNED / REMOVED AS NECESSARY TO IMPROVE VISIBILITY ON CIRCULATORY CARRIAGEWAY AND TO THE RIGHT FROM HULBERT ROAD

3.5m WIDE SWALE PROPOSED - OUTFLOWS TO BE CONFIRMED AT THE DETAILED DESIGN PHASE

20m LONG, 3.5m WIDE DECELERATION LANE
DEDICATED LEFT TURN FACILITY

EXISTING VEGETATION RETAINED & ADDED TO IF NECESSARY

EXISTING 5%-6% SUPERELEVATION CONTINUED FROM EXISTING HULBERT ROAD EXIT FROM CYRATORY, THROUGH CURVED ALIGNMENT TO PROPOSED ROUNDABOUT.

2x70m LENGTHS OF PARKING AREA TO REPLACE 80-85m OF EXISTING LAY-BYS

1 IN 20 TAPER

2m WIDE, 750mm HIGH EARTH BUND

LOW LEVEL PLANTING

PROPOSED HULBERT RD ROUNDABOUT WITH ICD OF 48m AND CENTRAL ISLAND DIAMETER OF 32m

HULBERT RD ROUNDABOUT

MCN1

MCN2

MCN3

MCN4

MCN5

MCN6

MCN7

MCN8

MCN9

MCN10

MCN11

MCN12

MCN13

MCN14

MCN15

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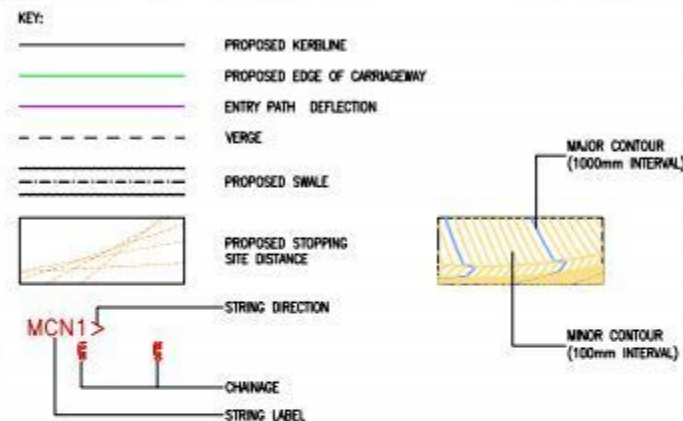
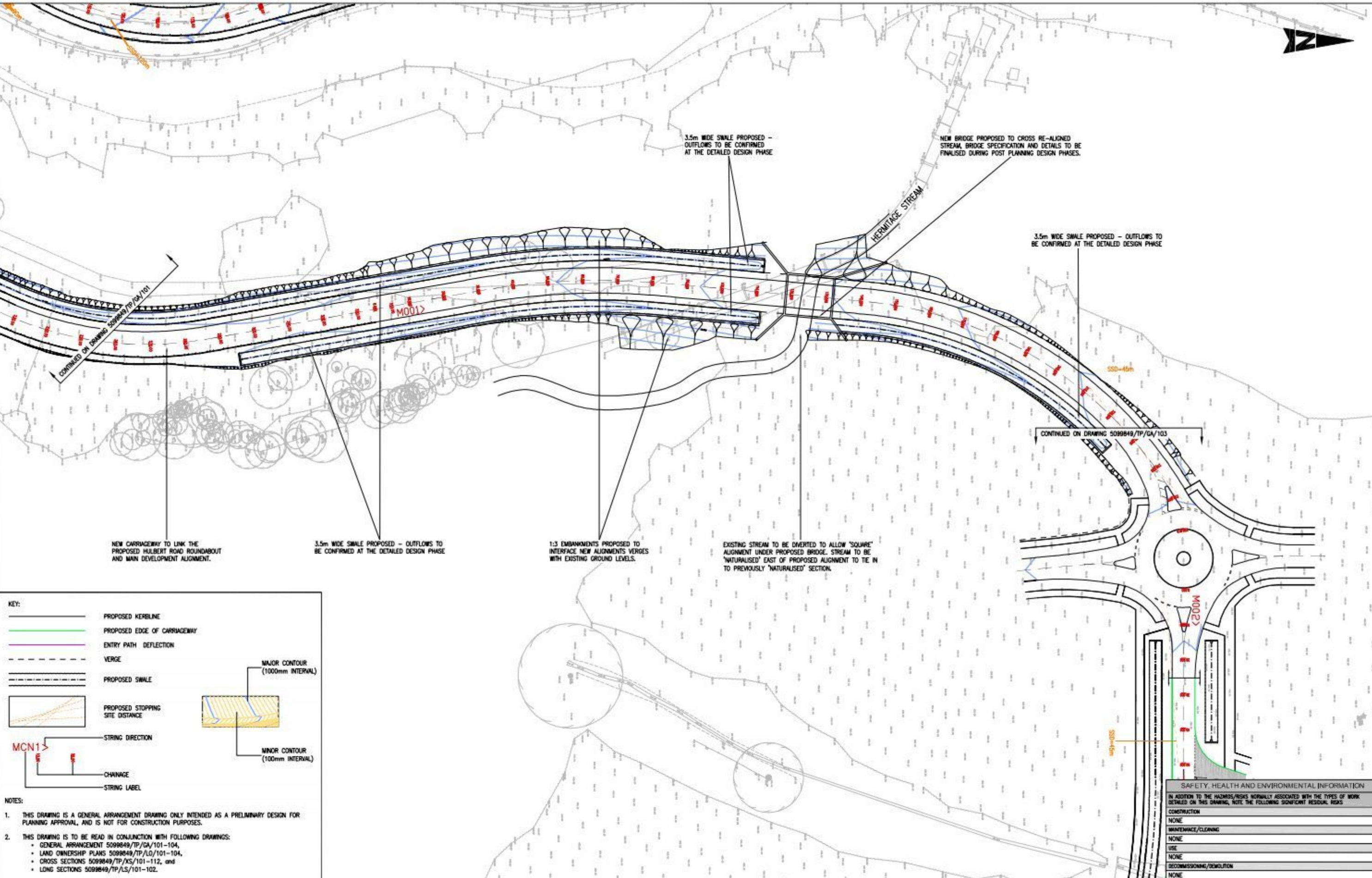
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MCN239

MCN240

MCN241



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Stat	Purpose of Issue	Date	Auth	Rev	Description	By	Date	Chk'd	Auth
P	FOR HCC APPROVAL	29.2.12	JA	B	FOOTWAY ADDED ON LINK ROAD	SD	29.2.12	ND	JA
P	FOR HCC APPROVAL	04.11.11	IPC	A	ORIGINAL ISSUE	MBW	04.11.11	SD	IPC

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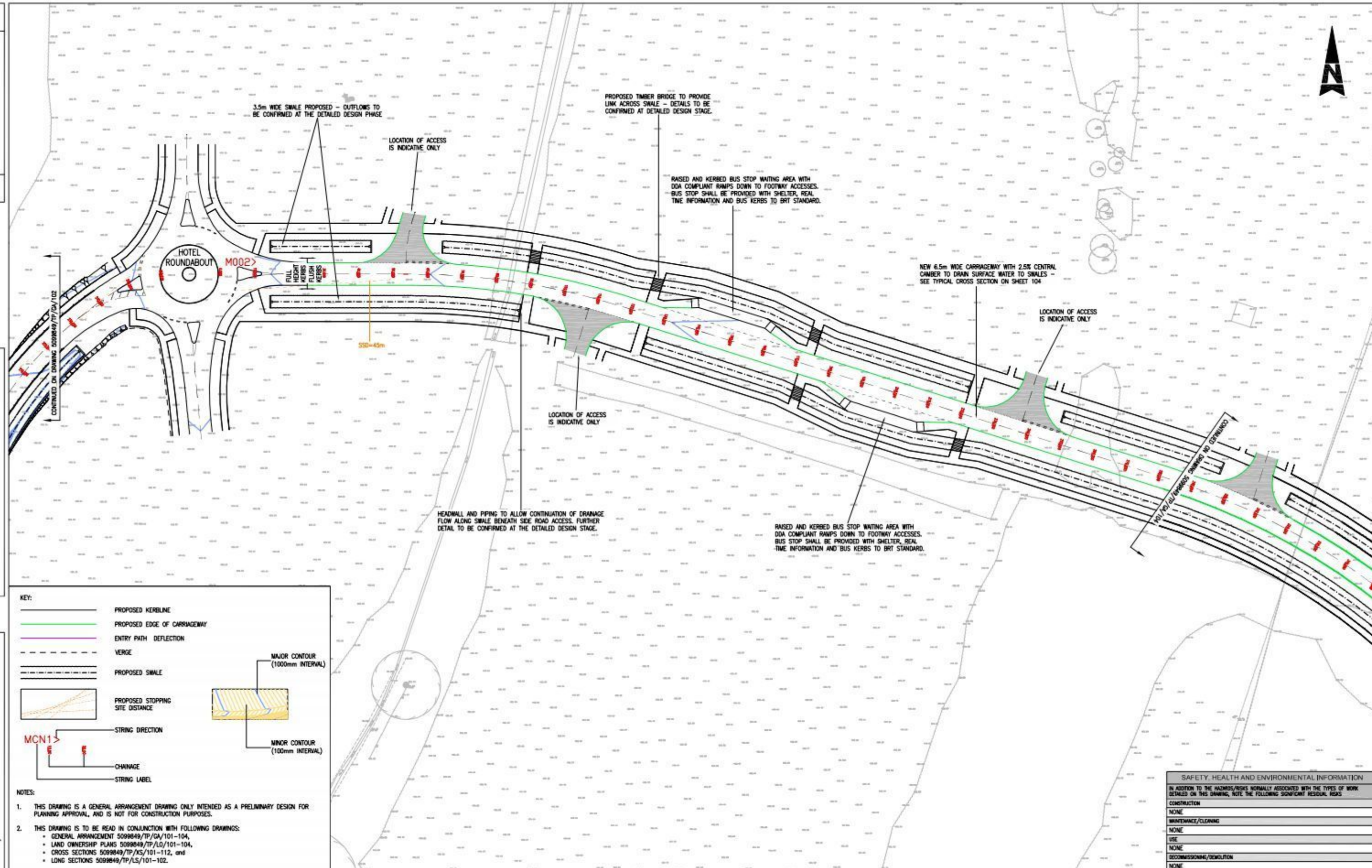
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A1	1:500	MBW	SD	PC
Status	Drawing Number	Date	Date	Date
P	5099849/TP/GA/102	10.11	04.11.11	04.11.11
				Rev
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P FOR HCC APPROVAL	10.12.12	SS	D	BUS STOP NOTE AMENDED	SD	10.12.12	ND	SS	
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Sheet Size
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SD

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PC

Date
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04.11.11

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04.11.11

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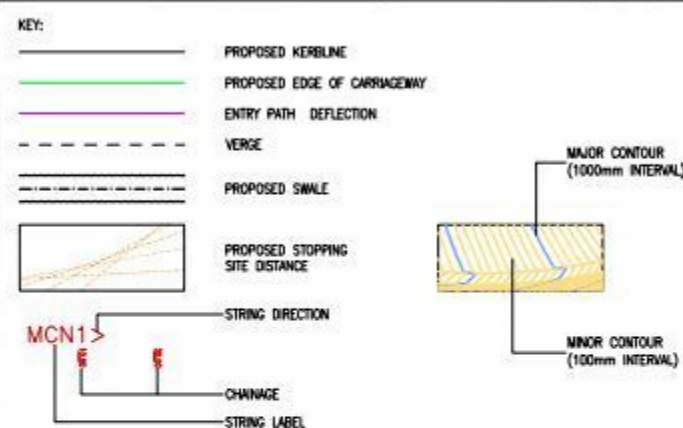
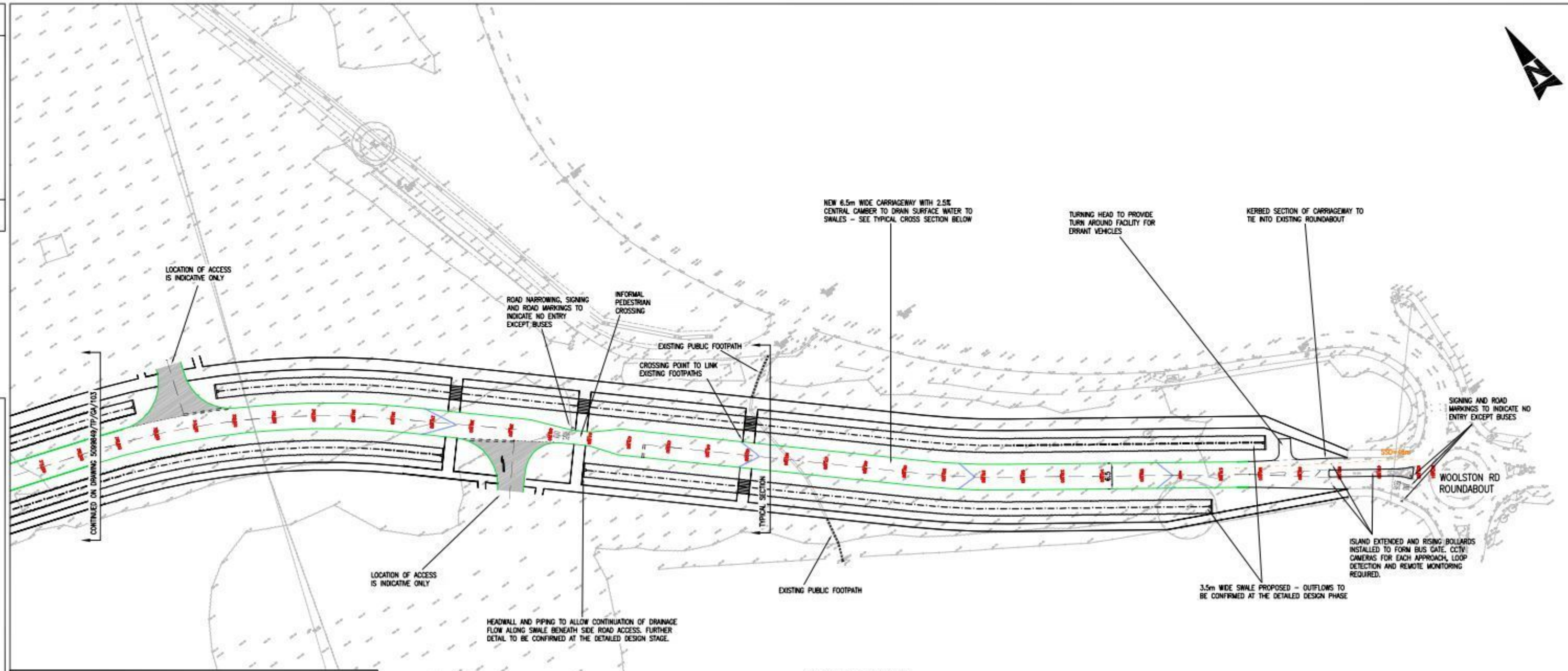
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Rev
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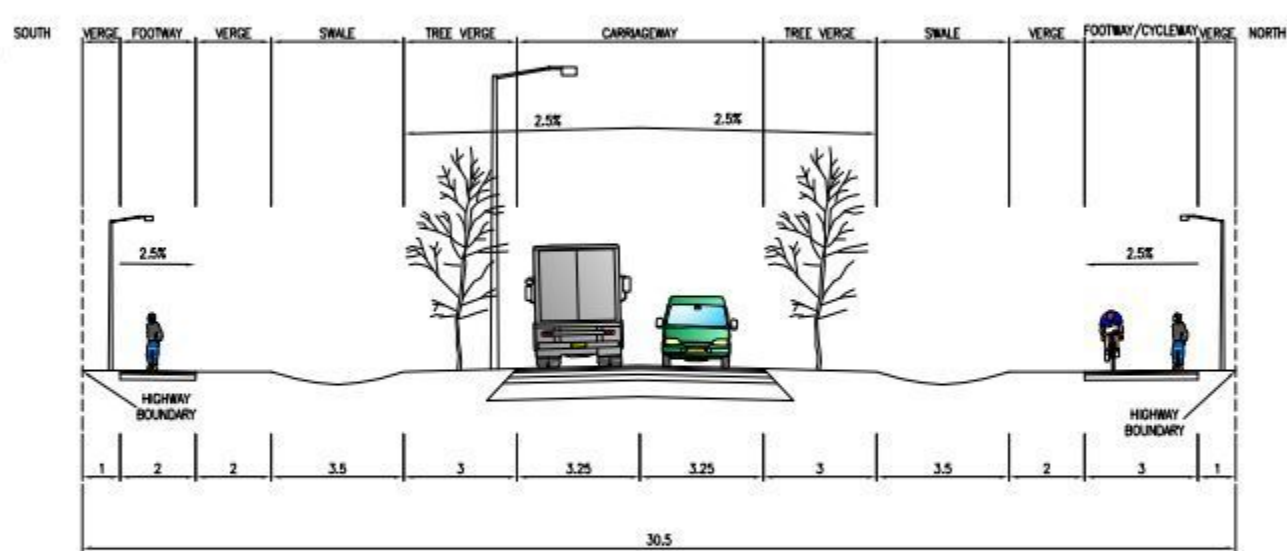
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TYPICAL CROSS SECTION
SCALE 1:100



P FOR HCC APPROVAL	10.12.12	SS	C	BUS GATE AMENDED, ROAD NARROWING AND TURNING HEAD ADDED	SD	10.12.12	ND	SS			
P FOR HCC APPROVAL	29.2.12	JA	B	FOOTWAY ADDED AND CROSS SECTION AMENDED	SD	29.2.12	ND	JA			
P FOR HCC APPROVAL	04.11.11	IPC	A	ORIGINAL ISSUE	MBW	04.11.11	SD	IPC			
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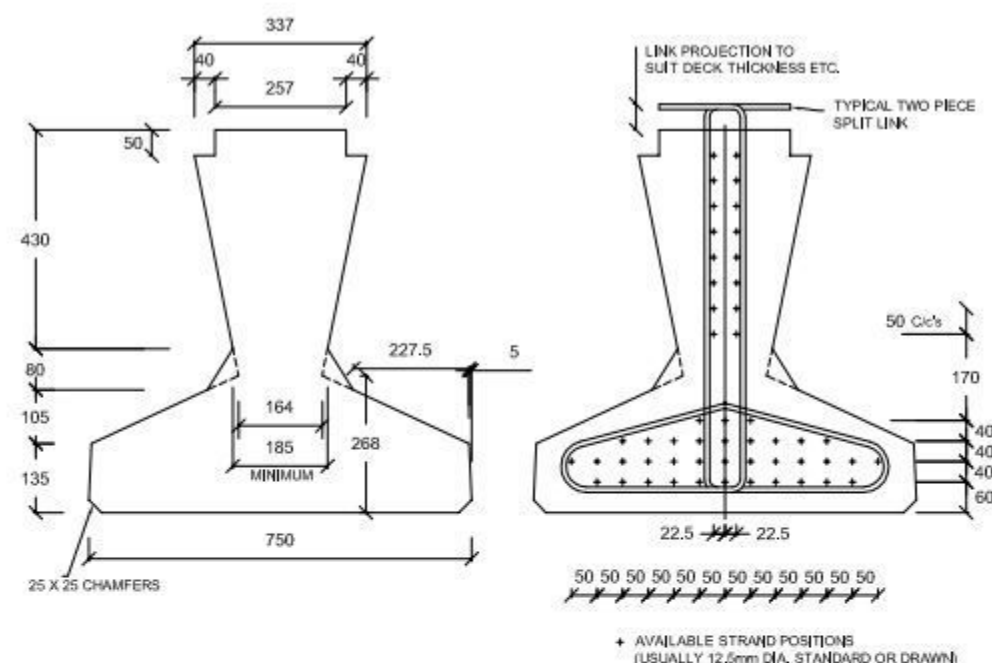
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NONE					
USE					
NONE					
DECOMMISSIONING/DEMOLITION					
NONE					
Title					
GENERAL ARRANGEMENT (SHEET 4 of 4)					
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A1	1:500	Date 10.11	Date 04.11.11	Date 04.11.11	
Status	Drawing Number			Rev	
P	5099849/TP/GA/104			C	



- NOTES:
1. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
 2. DECK, ABUTMENT AND FOUNDATION CONCRETE TO BE GRADE C40/50.
 3. ALL BURIED CONCRETE SURFACES TO HAVE TWO COATS OF BITUMINOUS PAINT APPLIED.
 4. ARCHITECTURAL FEATURE MAY BE USED ON FACE OF N2 PARAPET.
 5. FOR PLAN LOCATION OF THE BRIDGE SEE DRAWING 5099849/TP/GA/102.



TY8 BEAM DETAIL

[illegible]

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Project	DUNSBUY HILL FARM STAGE 2

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USE				
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DECOMMISSIONING/DEMOLITION				
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		Date 03/11/11	Date 04/11/11	Date 04/11/11
Status	Drawing Number			Rev
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Appendix E. Designers Risk Assessment

[CLICK TO RETURN TO NAVIGATION PAGE](#)[CLICK TO RETURN TO ACTIVITY LIST](#)[HELP](#)**DESIGN RISK ASSESSMENT**Scheme Title: **Dunbury Hill Farm**Doc. Reference No: **5009549**Prepared by: **John Malyon**Lead Designer: **Steve Dimmock**Version: **1.09**
Last updated: **07/05/2007**Revision Number: **A**Date: **30/11/2012**STAGE OF DESIGN: **PRELIMINARY**

Prepared by:

Name (in capital): **JOHN MALYON**Grade/Job Title: **SENIOR CONSULTANT**Signature: **J. Malyon**Date: **30.11.12**

Checked by:

Name (in capital): **STEVE DIMMOCK**Grade/Job Title: **HIGHWAY DESIGNER**Signature: **S. Dimmock**Date: **11.12.12**

Reviewed by CDM Co-ordinator:

Name (in capital): **WILLIAM DAWES**Grade/Job Title: **CDM-C**Signature: **W. Dawes**Date: **19.12.12**

Key:-

Details of Residual Hazards are

Located in:

D Drawing (s)

S Specifications

H Health & Safety Plan /

Information Pack

F H & S File

Stages of the Design when the

hazard may have an Ad fact:

C Construction

M Maintenance

E End User

D Demolition

Probability (P)		Severity (S)					Risk Classification:
		1	2	3	4	5	
		Highly Likely	Minor	Moderate	Major	Catastrophic	
1	Improbable	1	2	3	4	5	1-6 Low Risk - Ensure control measures are maintained and reviewed as necessary & ensure so far as is reasonably practicable the appropriate control of residual risk
2	Remote	2	4	6	8	10	
3	Assessable	3	6	9	12	15	
4	Probable	4	8	12	16	20	7-12 Medium Risk - Control measures (produced) during to a level which less than is reasonably practicable. Add details of the residual risk to the relevant control drawing(s)/document(s).
5	Almost Certain	5	10	15	20	25	
							20-25 High Risk - Activity not permitted. Hazard to be avoided or risk to be considerably reduced

Notes: 1. Where there is a residual risk (AMBER), it should be clearly shown on all the relevant Contract Drawings (see guidance note).

CDM REGULATIONS - HAZARD IDENTIFICATION AND RISK ASSESSMENT FOR THE ABOVE SCHEME - PLEASE READ ALL NOTES AND IF IN DOUBT ASK

Prior to Introduction of Risk Control Measures								Following Introduction of Risk Control Measures (i.e.Reduced Risk)							
Item	Activity	Provide Details of the Location and Description of the Health and Safety Hazard	Who Could the Hazard Affect?	At What Stage Could it Affect Them?	P	S	R	Provide Details of the Control Measures to be Implemented to Reduce the Probability and/or Severity of the Hazard?	Evidence Discussed with Contractor?	P	S	R	Methods of Communicating Residual (AMBER) Risks:	Design Team Leader to Confirm Details of Residual (AMBER) Risks are Provided with the Contract Documents (Sign & Date)	
A1	CLIENT/DEVELOPER/CONTRACTOR COMMENTS	Client not providing information about hazardous materials on site	Contractor	Construction	3	4	12	Client to provide information regarding any hazards that would have otherwise not be known to the designer and contractor		2	3	6			
A2	LOCAL AUTHORITY ISSUES/REQUIREMENTS	LA not providing information about hazardous materials on site	Contractor	Construction	3	4	12	LA to provide information regarding any hazards that would have otherwise not be known to the designer and contractor		2	3	6			
A4	OTHER INTERESTED PARTIES REQUIREMENTS	Proposals for new access and link road to development encroach into a SMC and the link road also crosses Heritage Stream. Specific requirements stipulated by the Environment Agency. Also safety requirements stipulated by the HA as the proposed access is close to the A3(M) Junction 3	Developer	Construction	4	3	12	Involvement of interested parties such as the Environment Agency, Highways Agency at an early stage. Mitigation for loss of SMC proposed and Environment Agency requirements included in design. HA requirements to be determined following traffic modelling		4	2	8			
A4	OTHER INTERESTED PARTIES REQUIREMENTS	The proposed highway/cycleway to the west of the site crosses Highways Agency land. Potential that the HA do not allow use of the land	Developer	Construction	3	4	12	Involvement of Highways Agency at an early stage.		3	4	12			
A5	SIT SQUARING CONSULTATION	A large amount of debris will need to be cleared from site. This may range from timber excavation spoil, existing road structures, concrete etc. Risk may arise if the contractor dealing with site clearance may not be qualified or have suitable plant/machinery for the task.	Contractor	Construction	3	4	12	Contractor to be assessed to ensure that they are qualified to undertake the tasks and have suitable plant/machinery to conduct the task.		2	3	6			
A6	ENVIRONMENTAL ISSUES	A large area of fields/woodland etc would need to be cleared to enable the introduction of the new road links. This may cause large amount of damage to the existing environment. Some of the proposed links run through environmentally sensitive areas and proposals to introduce roads may have environmental consequences.	Environment, End User	Construction	5	4	20	An Environmental Impact Assessment has been conducted as part of the preliminary design phase to ensure that proposals to the environment are identified and measures proposed to mitigate these issues. The proposed highway alignment has been designed to minimise environmental damage.		5	3	15			
A7	CONTAMINATED LAND	Potential sources of contamination at the site include previous site activities of landfilling and reclamation. Asbestos may also be present in the structure to be demolished near the proposed access on Hubert Road. There is risk of ingestion and inhalation of dust and gas/vapour, direct contact with contaminated soils on groundwater and surface runoff. Gases and vapours may also seep into buildings and structures representing an explosive or asphyxiation risk.	Contractor, End User	Construction	4	4	16	Complete assessment of contamination sources at the site and develop measures to mitigate the impact of any contamination		4	2	8			
A8	GROUND TYPE/CONDITIONS	At this stage of the project, there is limited knowledge of ground conditions. Ground conditions on fields may be unsuitable for any heavy construction and may require significant coping/foundation to prevent excessive settlement during and after construction. Unsuitable ground conditions may also be difficult for plant/machinery to access the construction site.	Contractor	Construction	4	4	16	Detailed ground investigation to be conducted during next design stage of the scheme to determine existing ground condition. Design to also include strengthening existing ground/conditions to enable site access/egress.		3	4	12			
A9	EARLY CONSULTATION WITH CONTRACTOR/SPECIALISTS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0					0			
A10	TIME CONSTRAINTS/PROGRAMME	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0					0			
A11	SITE CONSTRAINTS (PROXIMITY TO SCHOOLS, HOSPITAL, INDUSTRIAL & RESIDENTIAL PREMISES ETC.)	The site is in close proximity to a school and residential area. Proposed link from Leigh Park to Hubert Road could be used as a route to the A3(M). During construction there may be conflict between general road traffic and construction traffic. It may also limit working times.	Contractor, Residents	Construction	4	3	12	Design includes a bus only link to prevent rat running. Advance consultation with affected parties and possibility of accessing the site from Hubert Road so to avoid construction traffic passing through the residential area and school.		3	2	6			
A12	SOCIAL CONSTRAINTS (NOISE & LIGHT LEVELS, TRAFFIC)	Construction may cause noise pollution, light pollution (light working) and possible air pollution to the surroundings.	General public	Construction	3	4	12	Appropriate buffers should be provided on all equipment where practicable. Relevant regulations to be adhered to.		3	3	9			
A13	FORM OF CONSTRUCTION	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0					0			
A15	FUTURE MAINTENANCE ISSUES (CAN IT BE MADE SAFER TO MAINTAIN)	Additional highway and associated structures require maintenance by the highway authority. Risk of injury during maintenance	End User	Maintenance	4	4	16	Design has been produced to reduce maintenance required. Street lighting has been minimised and exes have been proposed instead of kerbs with gullies. Spacing between street lighting and exes has been designed to minimise maintenance requirements.		3	4	12			
A17	FUTURE ROAD USER & NONMOTORISED USER ISSUES	Construction in the development of new junctions and access road with associated NMU facilities will introduce conflict points	End User	End-User	4	4	16	The proposal includes provision for enhanced facility/cycleway along the northern side of the link road within the development and a footway on the southern side of the link road. Informal crossing points with dropped kerbs are proposed as traffic flows and speeds are expected to be relatively low.		3	4	12			
A17	FUTURE ROAD USER & NONMOTORISED USER ISSUES	Provision of pedestrian and cycle links from west of A3(M) J2 to the site will introduce additional conflict points	End User	End-User	4	5	20	The proposed pedestrian and cycle links across the A3(M) Junction 3 will include traffic signals to improve safety.		3	5	15			
A17	FUTURE ROAD USER & NONMOTORISED USER ISSUES	Proposed pedestrian and cycle route to the west of the site through woodland and along Park Lane is not a footway therefore potentially hazardous in the dark (e.g. steps, trips and tripping/bushes)	End User	End-User	3	4	12	Provide lighting at the A3(M) J2 crossings, however, due to environmental reasons lighting is not to be provided on the remainder of the route(s).		3	4	12			
A17	FUTURE ROAD USER & NONMOTORISED USER ISSUES	Proposed pedestrian and cycle route to the west of the site would not be DDA compliant due to the existing gradient	End User	End-User				The design includes steps and steep gradients. To meet DDA guidelines ramps could be provided, however, there would be a significant environmental impact and cost implication relative to the expected level of use							
A18	ACCESS/EGRESS	Conflict between construction traffic and general traffic. Due to the size of the site, there may be issues with the number of access/egress points required on site. Also proposed scheme will introduce additional accesses throughout the site	Construction, End User	Construction	4	3	12	Advance consultation with affected parties. Ensure design of temporary traffic management is to standard. Ensure proposed scheme design is to standard to minimise risk of conflict etc.		3	2	6			
A19	COMMUNAL HAZARD PROTECTION (INSTALL BARRIERS @ JUNCTIONS ETC.)	Additional traffic accessing the site for construction and when the scheme is implemented may create a risk of conflict with normal Rights of Way.	Construction, End User	Construction	4	4	16	Ensure proposed design minimises risk of conflict and take steps to mitigate any issues		3	3	9			

A20	HAZARDOUS MATERIALS (H410, C09H4 ETC.)	Risk of poisoning	Contractor	Construction	4	4	10	COSHH guidelines must be adhered to at all times. Storage and handling of materials to be strictly as specified by manufacturers' guidance.	2	3	5	
A21	WORKING AT HEIGHT (DESIGN TO MAKE SAFE TO BUILD, MAINTAIN & DEMOLISH)	Injury due to fall from height	Contractor	Construction	4	4	10	Ensure all equipment working at height are in good condition. Operatives to be trained on working at height. Relevant regulations are to be adhered to.	2	3	5	
A22	WORKING OVER OR NEAR WATER/RAILROADS/INFANTRY SERVICES	The proposed road link will require the introduction of a new bridge across the Heritage Stream under the alignment of the stream. There may be a risk of drowning or contagious diseases such as Legionnaires.	Contractor	Construction	4	4	10	Ensure staff are trained to undertake such construction works, proper equipment is provided and work is planned in advance.	2	4	5	
A23	ASBESTOS RISKS (CONSTRUCTION, MAINTENANCE & DEMOLITION)	The proposed link road would require the demolition of a building close to Hubert Road. There is a risk of finding asbestos at the building and also asbestos containing material may be found within the landfill.	Contractor	Construction	3	4	10	Ensure staff are aware of the asbestos risk and are suitably trained. Identify asbestos sources on site and ensure safe removal. Suitable equipment should be provided and work planned in advance.	3	2	5	
A24	NOISE AT WORK AND ENVIRONMENTAL ISSUES	See P3 - Noise Intensity and A5 - Environmental Issues					0				0	
A25	CONFINED SPACE ISSUES (MANHOLE, TUNNEL, HOLE, CHAMBER ETC.)	Risk of fumes/explosion and collapse of walls	Contractor	Construction	4	4	10	Relevant regulations to be adhered to	2	4	5	
A26	AIR QUALITY ISSUES (DUST FROM DEMOLITION/CUTTING ACTIVITIES ETC.)	Dust from site clearance and excavation may be dispersed into the air and reduce air quality in the adjacent areas.	General Public, Contractor	Construction	4	3	10	Relevant regulations to be adhered to	3	3	5	
A28	TRAFFIC MANAGEMENT REQUIREMENTS	See E1 - Lane Closures, E2 - Restricted Lane Widths and E5 - Proximity to Live Traffic					0				0	
A29	TRAFFIC SPEED	See E5 - Proximity to Live Traffic					0				0	
A30	ROAD ALIGNMENT/ VISIBILITY	There is a bend in the alignment of Hubert at the location of the proposed roundabout. This together with the fact that Hubert Road is lined with mature trees to the south of the proposed roundabout restricts visibility.	End User	End User	3	4	10	Alignment of Hubert Road has been designed to maintain forward visibility. The proposed alignment has been discussed with HCC to agree the most appropriate layout based on recorded traffic speeds and posted speed limit. Safety audits to be conducted to identify any issues with the design. Departures from Standard have been submitted to HCC and approved.	3	2	5	
A31	STRUCTURE FOOTPRINT	The introduction of highway structures may cause a negative environmental footprint on site.	End User	Construction	5	4	20	An Environmental Impact Assessment has been conducted as part of the design to ensure that all hazards to the environment are identified and measures proposed to mitigate these issues.	5	3	10	
A32	SITING BOUNDARIES/ INTERFACES (E.G. RAIL ETC.)	The site borders the HA network and a SINC. There may be objections from the HA to the proposed scheme and possible environmental issues.	Contractor, End User	Construction	3	3	5	Consultation has been held with affected parties. The proposed highway alignment minimises environmental damage although part of the SINC is affected. An EIA has been completed and the highway works have included measures to mitigate impact to the environment.	3	2	5	
A33	SIGNIFICANT SERVICES ABOVE GROUND/ UNDERGROUND OR ADJACENT TO SITE	There are overhead power lines, plus a high pressure gas main across the site. Potential damage to services / risk of injury or death. Also there are services that may limit the extent of development.	Developer, Contractor	Construction	4	4	10	High Pressure gas main has been traced and recorded on the topographical survey. Contractors to have regard to the advice and guidance contained in the HSE booklet HSG 47 'Avoiding danger from underground services' (year 2000 edition). Temporary protection of cables ducts and pipes. Contractors to use 'Cat and Jerry' to detect buried services prior to excavation. No mechanical excavators or heavy compaction equipment to be used near or below buried utility plant during excavation or sign foundation. Obtain statutory data, locate services prior to any excavations and adhere to statutory requirements. Refer Health and Safety Executive Guidance Note GS 6 'Avoidance of Danger from Overhead Electric Power Lines'. Any services found on or off site to be assumed live until proved otherwise. Fire hydrants to be accessible at all times.	2	4	5	
A34	AVAILABILITY OF ASBESTOS RECORDS (UNDERGROUND SURVEY NOT AVAILABLE)	Asbestos register may not be available and therefore asbestos may not be identified	Contractor, End User	Construction	4	4	10	Confirm if survey is available, if not complete a survey prior to commencing any works.	4	2	5	
A35	ARCHAEOLOGICAL	Proposed road link may run across field which may hold archaeological value.	Public	Construction	3	4	10	Archaeological survey to identify any site with archaeological significance to be undertaken following planning approval.	2	4	5	
B1	SITING CLOSURES (VEHICLE ROUTE/ SMOKE RISERS ETC.)	Site could be accessed via Hubert Road or Leigh Park residential estate. Potential conflict with users of the residential area is access & provided through Leigh Park.	Public	Construction	3	4	10	Consider providing site access from Hubert Road only. Early discussions to be held.	2	4	5	
B2	SITING DEMOLITION (VEHICLE ROUTES/ DANGEROUS AREA)	Due to the size of the construction site, site deliveries may occur frequently. This may cause congestion on the existing road network and also conflict between construction vehicles and general traffic.	Construction, Highway user, and	Construction	4	3	10	Advance consultation with affected parties.	3	2	5	
B3	SITING COMPOUND (POSITION & SECURITY ISSUES, ETC.)	Site compound located in an unsuitable location (i.e. Close proximity to residential area and open land) may cause security risk.	Construction, Highway user, and	Construction	4	3	10	Advance consultation with affected parties.	3	2	5	
B5	VEHICLE ROUTE/ PROXIMITY TO WORK AREA	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
C2	STEELWORK (ERECTING, HANDLING, CUTTING)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
C4	MASONRY (ERECTING, HANDLING, CUTTING)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
C5	CONCRETE (ERECTING, HANDLING, CUTTING)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
C6	POWERS (ERECTING, HANDLING, CUTTING)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
C7	PRESTRESSED ELEMENTS (ERECTING, HANDLING, CUTTING)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
C8	BITUMINOUS MATERIALS (ERECTING, HANDLING, CUTTING)	See G7 - Handling Hot Materials and H2 - Hazardous Substances (COSHH)					0				0	
C13	VEHICLE RESTRAINT SYSTEMS INSTALLATION/ REPLACEMENT/ MAINTENANCE	A bus gate is proposed to be implemented at the western end of the proposed link road. If it is necessary to develop a suitable option to minimise risk in construction, use and maintenance. At this stage it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
C14	CLADDING INSTALLATION/ REPLACEMENT/ MAINTENANCE	Possible use of cladding on proposed bridge. At this stage of the design, it is unknown how the design could be affected by this activity but could be an issue at a later stage.					0				0	
C15	WRECK INSTALLATION/ HANDLING/ MAINTENANCE	See G2 - Manual Handling and G8 - Disc Cutting					0				0	
C16	CONSTRUCTION/ ERECTING/ SECURING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
D1	SITING SECURITY ISSUES	The site is open land, but is also close to a residential estate. This may create a security risk.	Contractor	Construction	3	3	5	Advance consultation with affected parties and implementation of suitable security measures	3	2	5	
D2	WITHIN RESIDENTIAL AREA	The proposed road link is located close to residential premises. This may cause a conflict between general road traffic and construction traffic and also disrupt residents.	Construction, Highway user, and user	Construction	4	3	10	Advance consultation with affected parties. Alternative route could be integrated into design to minimise potential conflict between construction and private vehicles. Consider site access only via Hubert Road.	3	2	5	
D4	REMOTE LOCATION/ FARM ETC.	The proposed road link is located in agricultural land. This may create a security risk.	Contractor	Construction	3	3	5	Advance consultation with affected parties and implementation of suitable security measures	3	2	5	
D5	NEAR TO SCHOOL OR HOME (LIVE WITH OWNERS/ COUPLES)	The proposed road link is located close to a school. This may cause a conflict between general road traffic and construction traffic. Construction works may also create health risks.	Contractor, End User	Construction	4	3	10	Advance consultation with affected parties. Alternative route could be integrated into design to minimise potential conflict between construction and private vehicles. Consider site access only via Hubert Road. Also apply relevant working practice guidelines.	3	2	5	
E1	LANE CLOSURES (ON/ OFF ROAD TRAFFIC)	Effects of Congestion: Queuing on all approach roads to the works due to lane closures.	Highway user	Construction	4	3	10	Advance signing on all approaches to warn of delays (prior to commencement of works).	3	2	5	
E2	RESTRICTED LANE WIDTHS	Effects of Congestion: Queuing on all approach roads to the works due to restricted lane widths.	Highway user	Construction	4	3	10	Advance signing on all approaches to warn of delays (prior to commencement of works).	3	2	5	
E3	THE INSTALLATION/ REMOVAL	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
E4	THE MAINTENANCE	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
E5	PROXIMITY TO LIVE TRAFFIC	Risk from live traffic to operatives on road.	Contractor	Construction	4	4	10	Arrangements to control traffic, (including pedestrian and cyclist) to be detailed in the construction health and safety plan. Adequate signing and protection in accordance with TSM Chapter 9 and Safety At Street Works And Road Works' code of practice to provide a safe working area for operatives. Buffer zone of at least 1.00 metre between working area and live traffic lanes to be maintained. When working immediately adjacent to live traffic a substantial barrier to be erected (either concrete or water-filled plastic) and moved along the road as work proceeds. When this is not practicable, a Bankman wearing clean high visibility clothing shall be continuously in attendance to direct traffic. Only experienced operatives properly supervised to be used and clean high visibility clothing worn at all times. Maintain adequate lighting levels. No materials to be stored, nor parked, even as a temporary measure, on public highway nor on verge or footway, except what is needed for immediate works.	2	3	5	
E6	TRAFFIC VOLUME FLOWS/ UNDER TAKE OFF PEAK NIGHT	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
F1	PROXIMITY TO GROUNDWATER	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	
F2	PROXIMITY TO WATER COURSE (POLLUTANTS)	Contaminated water courses from oil spills, mud, chemicals, etc.	Environment	Construction	4	4	10	Adhere to relevant regulations and frequent checks to be conducted to ensure that contamination of water course is prevented.	2	4	5	
F3	NOISE INTENSITY	Noise Pollution	General Public	Construction	3	4	10	Appropriate buffers should be provided on all equipment where practicable. Relevant regulations to be adhered to.	3	3	5	
F4	LIGHT INTENSITY	Light pollution	General Public	Construction	3	3	5	Relevant regulations to be adhered to	3	2	5	
F5	HAZARDOUS WOODS	Hazardous trees identified in Heritage stream. At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0	

Q1	SET DOWLING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q2	MANUAL HANDLING	Heavy materials or equipment	Contractor	Construction	4	4	10	Adequate training and use of suitable lifting facilities where necessary. When items are heavier than 20 kg, a manual handling risk assessment to be undertaken. The requirements of the Manual Handling Regulations 1992 to be followed.	2	4	0		
Q3	VIBRATING PLANT (DOGS & VIBRATORS)	See P3 - Noise Internal					0				0		
Q4	DRILL & FIX	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q5	PUMPING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q6	HANDLING LOOSE POWDERS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q7	HOT MATERIALS WORKING	Operatives not returned on cooled by hot materials.	Contractor	Construction	4	4	10	Adequate training must be provided for all operatives using or in the vicinity of hot materials. Follow appropriate regulations and manufacturer's guidance.	2	4	0		
Q8	DISC CUTTING	Disc cutting of kerbs or slabs could decrease air quality through the dispersal of dust from the cutting process. There are also other risks such as heat generated by the disc cutter and the risk of attack from the electric supply.	Contractor	Construction	4	4	10	Water to be used when cutting kerbs to suppress the dust. Only trained operatives with proper equipment to use the disc cutter.	2	4	0		
H1	FOUNDATION TRENCHES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
H2	DRAIN SERVICES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
H3	SERVICE DRAIN DIMENSION REQUIRED	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
H4	CONFINED SPACE ISSUES	See A25 - Confined Space Issues					0				0		
H6	PILING ACTIVITIES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
H7	GROUND CONDITIONS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
H8	CONTAMINATION	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.	Contractor, End User	Construction	4	4	10	Ground investigation to be conducted to determine the severity of contamination and to take adequate steps during construction to prevent contamination from spreading.	2	4	0		
H9	GROUND WATER	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
I1	SET PLANT EQUIPMENT (POWER SPECIFY LOW VOLTAGE VIBRATING EQUIPMENT)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
I2	MOBILE ELEVATING WORK PLATFORM (LOLOR REQUIREMENTS)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
I3	TGS TGS COMM SENSING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
I4	CRANE (POSITIONING, PULLER & LOR REQUIREMENTS)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
J1	DANGEROUS OR UNSTABLE STRUCTURE	Existing structure close to Hubert Road is illegal and may be unstable	Contractor	Construction	3	4	10	Under take a full assessment of the structure prior to demolition. Adhere to relevant guidelines	3	2	0		
J2	STEELWORK (HANDLING/CUTTING ISSUES)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
J3	TIMBER HANDLING/CUTTING & CUSH ISSUES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
J5	CONCRETE HANDLING/CUTTING & CUSH ISSUES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
J6	PRESTRESSED ELEMENTS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
J7	PRECAST UNITS (STORAGE ENERGY)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
J9	FLUOROUS MATERIALS (COSHH ISSUES)	See Q7 - Handling Hot Materials and K2 - Hazardous Substances (COSHH)					0				0		
J10	ASBESTOS CONTAINING MATERIALS	See A23 - Asbestos Issues					0				0		
J11	CONTAMINATED GROUND	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage. See H8 - Contamination					0				0		
K2	HAZARDOUS SUBSTANCES (COSHH)	Risk of poisoning	Contractor	Construction	4	4	10	COSHH guidelines must be adhered to at all times. Storage and handling of materials to be strictly as specified by manufacturer's guidance.	2	3	0		
K4	SLAKE APPLICATION (COSHH)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
L4	PAINTS/GELS (COSHH)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
L5	ADHESIVES (COSHH)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
L7	HIGH FREQUENCY SURFACING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
L8	ROAD MARKINGS	See Q7 - Handling Hot Materials and K2 - Hazardous Substances (COSHH)					0				0		
M1	BOUNDARY WALLS AND FENCING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
M2	PAVING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
M3	PLANTING REMOVAL	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
M4	SET FURNITURE	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
N1	GAS	High pressure gas main located under the site. Risk of damage / explosion	Contractor	Construction	3	5	10	Pressure guidelines are followed when constructing near the gas main. The gas main location has been traced and mapped. Consult with Southern Gas Networks	2	5	10		
N2	WATER	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
N3	ELECTRICITY	Overhead power lines across the site. Risk of injury or death	Contractor	Construction	4	4	10	Suitable training must be carried out for all operatives. All electrical work to be undertaken by contractor's specialist in that type of work. Guidance and advice contained in the HSE publication HSG141 "Electricity safety on construction sites" to be followed as far as it applies to this type of work.	2	4	0		
N4	COMMUNICATIONS (BT etc.)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
N5	UNCHARTED	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
N6	OIL PIPING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
O1	PREWORK INSTALLATION	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
O2	GAS	See N1 - Gas					0				0		
O3	TGS TGS COMM SENSING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
P1	REDUCED LIGHTING CONDITIONS	Proposed lighting strategy is not to light Hubert Road or the section of the link road between Hubert Road and the Hotel roundabout. This is in line with HCC's lighting policy for an E2 Environmental Zone. Risk of collision at street junction and on other sections	End User	End-User	3	4	10	Discussions have been held with HCC who have advised of the street lighting requirements. Adequate signing and lighting to be included in the design to raise awareness of the junction and other hazards	2	4	0		
P2	PROVISION OF ACCESS FOR FUTURE MAINTENANCE	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
P3	LAMP	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		

P4	FLANGEMOUNTING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
P5	POSITION & ILLUMINATION OF SIGNAGE POSTS (PASSINGLY SAFE)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q1	HV SWITCHGEAR	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q2	LV SWITCHGEAR	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q7	CABLE INSTALLATION	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q8	CABLE SUPPORT SYSTEM	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q9	CABLE CHAMBERS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q10	CABLE TRONCHES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
Q11	TCS TRONCHES SINKING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
R1	SURFACE WATER (CONSIDER WINTER MAINTENANCE)	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
R2	FOUL WATER	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
R4	INSPECTION CHAMBERS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
R5	CULVERTS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
R6	POLLUTION CONTROL/INTERCEPTORS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
S1	ATTENDANCE TO CONTRACT & TCS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
S2	ACTIVITIES USING WATER DURING POTENTIAL FLOODING	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
S3	ACTIVITIES DEPOSITING MOISTURE ON FOOTWAY	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
S4	ACTIVITIES DEPOSITING MOISTURE ON RUNNING LANE	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
T1	EQUIPMENT	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
T2	CABLES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
T3	SAFETY TYPE EDUCATION/COGS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
V1	AVAILABILITY OF ASSISTANCE REGISTER	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
W1	FUTURE MAINTENANCE ISSUES	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
W2	FUTURE CABLE OPERATIONS	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
W3	FUTURE CONSTRUCTION	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		
W4	OPERATIONAL ISSUES	Vehicles other than buses may enter the bus only section. These vehicles will not be able to pass through the bus gate as this will be controlled by a rising bollard.		5	2	10				Turning head provided on western side of bus gate	5	1	5
W4	OPERATIONAL ISSUES	Proposed drop park (as a replacement for existing lay-bys) may be used by travellers which may prove to be for intended purpose and/or emergency services to wait.		4	3	12				Low level planting to be introduced and maintained to ensure good visibility of the lay-by and earth bund proposed to avoid use of the central island.	3	3	9
W4	OPERATIONAL ISSUES	Risk of bus gate bollard failure when up which would prevent bus route from operating and bus may drive into bollard.		3	2	6				Regular maintenance of bollard and mechanism	2	2	4
W4	OPERATIONAL ISSUES	Risk of bus gate bollard failure when down which would allow all vehicles to use the new link. This may lead to unexpected increases in traffic flow and potential for increased conflict.		3	4	12				Regular maintenance of bollard and mechanism	2	2	4
W4	OPERATIONAL ISSUES	Vandalism of bus gate equipment may lead to disruption of bus services.		4	2	8				CCTV to be implemented to deter vandals	3	2	6
W4	OPERATIONAL ISSUES	Vehicles may tailgate at the bus gate and could be struck by the rising bollard. This may cause vehicle damage and disruption to the bus route.		4	2	8				CCTV to be implemented to deter tailgating and sensor on the rising bollard to minimise risk of vehicular damage	3	2	6
W5	FUTURE SOLUTIONALTERNATIVE MODIFICATION	At this stage of the design, it is unknown how the design could be affected by this but could be an issue at a later stage.					0				0		

Appendix F. Pedestrian and Cycle Access Technical Note

Technical note

Project:	Dunsbury Hill Farm	To:	Steve Jenkins
Subject:	Pedestrian and Cycle Access	From:	John Malyon
Date:	13 March 2012	cc:	Senthuran Sritharan

Introduction

This Technical Note considers the potential for providing a footway/cycleway link between the proposed development at Dunsbury Hill Farm and the:

- Housing areas on the south eastern outskirts of Waterloooville to the west of the A3(M) via Junction 3; and
- The 'Asda' Roundabout via Hulbert Road.

Route to/from South Eastern Waterloooville

Route Options

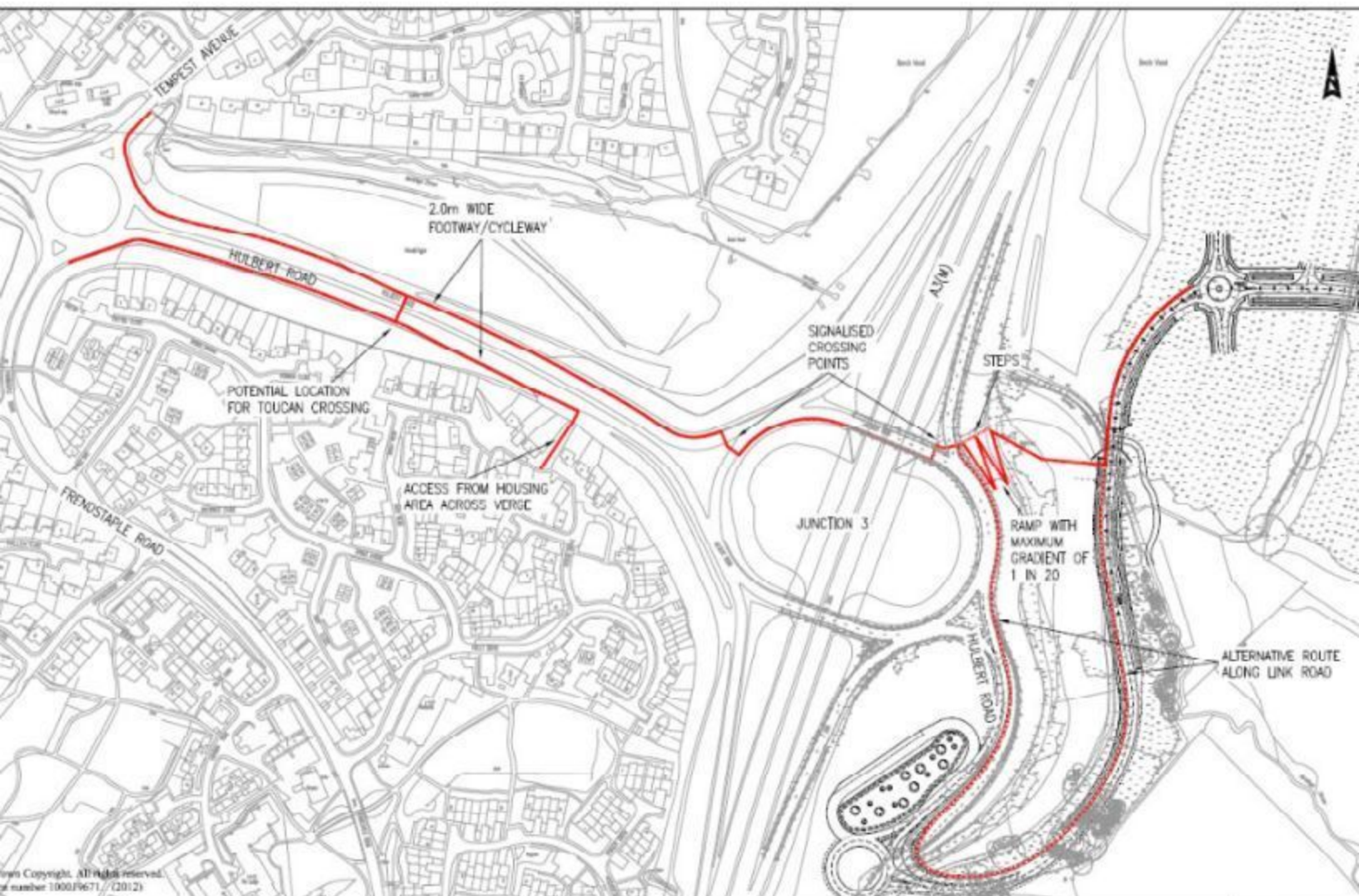
Figure 1 shows the potential routes, including a link through the fence and across the verge from the housing area to the south of Hulbert Road (west).

There is sufficient space available on both sides of Hulbert Road (west) to provide a 2.0m wide footway/cycleway for its entire length linking with the crossing points in both Tempest Avenue and Frendstaple Road at the roundabout on Hulbert Road, to the west of the A3(M). However, a number of relatively minor alterations to existing features would be required. These include the:

- Relocation of safety fencing on the northern side of Hulbert Road as the setback of this is currently between 1.0m and 1.5m;
- Relocation of the existing traffic signs, which would need to be installed at the correct mounting height; and
- Re-routing of the filter drain in the southern verge.

Technical note

Proposed Routes



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TKINS™

DUNSBURY HILL FARM : POTENTIAL PEDESTRIAN/CYCLE ROUTES

Figure 1

Technical note

There is also sufficient width to provide the same facility around the A3(M) Junction 3, with the exception of the south eastern corner where a crash cushion protects the signalling equipment at the southbound A3(M) on-slip, as shown in Figure 2.



Figure 2. Crash Cushion at A3(M) Junction 3 Southbound On-slip

Unless it is possible to reconfigure or replace this crash cushion, it effectively prevents a pedestrian/cycle route using the southern section of the junction. This leaves a route using the northern bridge as the only viable option.

Once on the eastern side of the A3(M) Junction 3 there are two options for providing access to the site:

1. Following Hulbert Road south and then along the link road from the proposed roundabout; and
2. Via a ramp/steps down the embankment immediately east of the A3(M) northbound off-slip.

There is a difference in levels of around 7.0m between the top and bottom of the embankment at this point meaning that any ramp would need to be at least 140m in length to meet the minimum Disabled Discrimination Act (DDA) requirements of a maximum gradient of 1 in 20. Allowing for the ramp to zigzag as shown in Figure 1 the length of ramp will be nearer 160m and would be likely to require substantial lengths of retaining wall to support the various sections.

Crossing Facilities

In order for the footway/cycleway to be installed and used without any further infrastructure, pedestrians and cyclists would potentially need to cross Hulbert Road (west) and both A3(M) entry and exit slips on the northern side of the roundabout (all of which are subject to the national speed limit).

The safety of pedestrians and cyclists crossing at these locations is a major concern if the crossing points are uncontrolled. The proposed scheme would encourage pedestrians and cyclists to use the route but would not provide a safe means of crossing the high speed roads. A particular concern is the crossing of the motorway entry slip where vehicles are likely to be accelerating.

In order to provide a safer route for their use, traffic signals would be required at three locations:

- A toucan crossing would be required in the middle of Hulbert Road (west) between the lay-bys and
- Traffic signals with pedestrian facilities would be needed at two nodes on the A3(M) junction
 - One at the eastern end of Hulbert Road; and
 - One at the end of the A3(M) southbound off-slip.

Technical note

Associated with the provision of traffic signals would be the need to provide street lighting to allow pedestrians and cyclists to be seen clearly whilst waiting to cross. Given the locations of the crossing points it is quite likely that once these are individually lit to standard, the remaining gaps would be so short that lighting along the entire length of Hulbert Road and the A3(M) Junction 3 may be required. Not only would this be a significant cost it may also have severe implications environmentally with the problem of light pollution.

Indicative Construction Costs

Given that no design work has been carried out, approximate indicative costs for both scheme options are given below.

Table 1. Indicative Scheme Construction Costs

Scheme Option	Route	Indicative Construction Cost
Footway / Cycleway with Controlled Crossings and Street Lighting	Direct Route (using steps and ramps)	£1,230,000
	Alternative Route (following proposed road alignment)	£970,000
Footway / Cycleway with Uncontrolled Crossings	Direct Route (using steps and ramps)	£715,000
	Alternative Route (following proposed road alignment)	£430,000

Estimated Demand

It is anticipated that there would be a total of 22 walk / cycle trips in the AM peak period and 18 trips in the PM peak period. This is based on the proportion of the walk / cycle trips from the SRTM and assumes 10% arrive from Hulbert Road (west), based on the vehicle trip distribution.

An indicative cost-benefit analysis was completed using a peak flow of 22 trips and a time saving of 10 minutes per trip. The results suggest the total benefit would be £308,018 over 30 years.

There are significant safety concerns with providing a footway / cycleway along this route with uncontrolled crossings due to the existing high speed of vehicles using the roads. Therefore, controlled crossings and street lighting are considered necessary. Given the high cost of construction (for both the direct and alternative routes) relative to the anticipated benefits it is suggested that the provision of a footway / cycleway along this route would not be economical.

Route to/from 'Asda' Roundabout

The route from the new development access roundabout to the 'Asda' roundabout would follow the alignment of Hulbert Road. The current speed limit is national speed limit and there is no footway provision. There is a 0.6m wide verge with adjacent ditches on both sides of the carriageway (see Figure 3).

Technical note



Figure 3. View along Hulbert Road between development roundabout and 'Asda' roundabout

To the east and west of Hulbert Road between the development roundabout and the 'Asda' roundabout there are Sites of Importance for Nature Conservation (SINC), namely:

- Neville's Park West Wood;
- Hulbert Road Meadow;
- Neville's Park East Wood; and
- Neville's Park Areas 4-10.

The width between the existing carriageway and the fence line is currently around 2m. A 2m wide footway could therefore be implemented on either side of the carriageway, although a 3m footway / cycleway could only be implemented if several trees within the SINC are felled. At this stage it is suggested that a footway would only be provided on the eastern side of Hulbert Road. The works required to implement the footway include:

- 2m wide footway with standard kerb upstand;
- Piping of the existing ditch to permit the implementation of the footway. This may be a conventional drainage system if gradients and outfalls permit or a piped filter drain with the footway construction over the top;
- Road drainage with gullies connecting to the pipe; and
- In some locations existing vegetation would need to be trimmed.

There are a number of unknowns at this stage, however, the anticipated cost of providing a footway on the eastern side of Hulbert Road is £540,000. This cost excludes the provision of street lighting as it is anticipated that street lighting would not be implemented due to the local environmental sensitivity.

It is expected that the level of pedestrian demand in the future year scenario would be relatively low along this route. Due to the expected high cost of the proposed scheme relative to the anticipated level of use it is suggested that the scheme would not be economical.

Conclusion

Route to/from South Eastern Waterlooville

Although the cost of the uncontrolled crossings scheme is lower than the alternative, it is considered highly undesirable to provide facilities that encourage pedestrians and cyclists to cross roads with high-speed traffic due to the associated safety risks.

Technical note

Using the proportion of walk / cycle trips from the SRTM it is anticipated that there would be 22 trips in the AM peak and 18 trips in the PM peak. This assumes 10% arrive from Hulbert Road (west) based on the vehicle trip distribution. An indicative cost-benefit analysis using a peak flow of 22 trips and a time saving of 10 minutes per trip the total benefit would only be £380,018 over 30 years.

Based on this analysis it is unlikely the numbers of pedestrians and cyclists wishing to use the route will be significant and therefore the high cost of the controlled crossings scheme make it financially uneconomical

Route to/from 'Asda' Roundabout

Due to the high cost of implementing the footway along Hulbert Road in comparison to the expected level of use it is suggested that the scheme would be uneconomical.

Appendix G. Analysis of A3(M) Flow

Summary

Traffic flows on the A3(M) have been analysed to identify changes due to the opening of the Hindhead tunnel in July 2011. (The links analysed are shown in bold in figure 1 below.)

The southbound tunnel was opened to traffic on 27 July 2011 and the northbound tunnel was opened to traffic on 29 July 2011.



Figure 1: A3(M) link set used in analysis

- The data shows that there has been an increase in the levels of flow recorded on the A3(M) from August, coinciding with the opening of the Hindhead tunnel to traffic in July 2011.
- The increase in flow has remained settled in the months following the opening of the tunnel.
- The average increase in total monthly flow on the A3(M) since July 2011 is 33,000 vehicles a month (3.6%) across all 8 links.
- All 8 links display increase in flow, to varying degrees. The increase is most significant between junctions 1–2 and 2–3, with an average monthly increase in flow of 40,000 vehicles (5.3%). Junctions 3–4 and 4–5 show a less significant increase: the average monthly increase in flow between J3– J4 is 24,000 vehicles (2.4%). The average monthly increase in flow between J4 – J5 is 20,000 vehicles (1.7%).

Appendix H. Framework Travel Plan

Dunsbury Hill Farm

Framework Travel Plan

March 2012

Notice

This report was produced by *Atkins Highways and Transportation* for Portsmouth City Council (PCC), Havant Borough Council (HBC) and the Partnership for Urban South Hampshire (PUSH) for the specific purpose of the *Dunsbury Hill Farm Framework Travel Plan*.

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Plan Design Enable

Contents

Section	Page
1. Introduction	4
Aim of the Travel Plan	4
2. Baseline Transport Conditions	7
Overview	7
Site Location	7
Existing Site Land Uses	7
Public Transport Accessibility	7
3. Development Proposals	10
New Access	10
4. Forecast Travel Patterns	12
Site Operation	12
Staff Numbers	12
Staff Shift Patterns	12
Modal Split	12
Staff Travel Survey	12
5. Travel Plan Objectives & Targets	14
Aims of the Travel Plan	14
Objectives of the Travel Plan	14
Planning Requirements and Local Policy	14
Targets of the Travel Plan	15
6. Travel Plan Measures	17
Overview	17
Development Wide Initiatives	17
Provision of On-Site Information	17
Measures to Promote Sustainable Transport	18
Walking Strategy	19
Cycling Strategy	19
Moped/Motorcycle Strategy	20
Car Sharing Strategy	21
Parking Management	21
Minimise Single Occupancy Business Travel	22
Incentives	22
TravelWise	22
7. Car Park Management Strategy	23
Parking Provision	23
Car Park Management Plan	23
8. Delivery and Monitoring	26
Delivery	26
Appointment of Travel Plan Coordinator	26
Steering Groups	26

Marketing & Communication	27
Monitoring	28
Review	29
Funding	29
9. Action Plan	30
Funding	31

List of Tables

Table 2.1 – Existing rail services at Bedhampton Station	8
Table 2.2 - Existing rail services at Havant Station	8
Table 2.3 – Existing Bus Services near Dunsbury Hill Farm	9
Table 3.1 – Dunsbury Hill Farm Land Use Breakdown	10
Table 4.1 – Estimated Modal Split	12
Table 5.1 – Travel Plan Targets/Objectives	15
Table 5.2 – Estimated and Target Staff Modal Splits	16
Table 6.1 – Public Transport Strategy	18
Table 6.2 – Walking Strategy	19
Table 6.3 – Cycling Strategy	20
Table 6.4 – Car Sharing Strategy	21
Table 7.1 – HBC Parking Standards	23
Table 7.2 – An Example of a Permit Weighting and Scoring System	24
Table 9.1 – Action Plan	30

List of Figures

Figure 1.1 – Site Location Plan	6
---------------------------------	---

1. Introduction

- 1.1 Atkins has been commissioned jointly by Portsmouth City Council (PCC), Havant Borough Council (HBC) and the Partnership for Urban South Hampshire (PUSH) to prepare a Framework Travel Plan for the proposed business park development at Dunsbury Hill Farm, near Waterlooville in Hampshire. The location of the proposed Dunsbury Hill development site is shown in Figure 1.1.
- 1.2 This Framework Travel Plan is an Appendix to the Transport Assessment (TA) that has also been completed by Atkins, to support the outline planning application for the proposed business park development at Dunsbury Hill Farm.
- 1.3 The development proposal involves the construction of a business park in two phases with an associated hotel development. Construction of road works forming the detailed element of the hybrid planning application, access and link road, is planned for 2013. It is then intended that the site will be constructed in two phases as follows:
- Phase 1 – employment land use (46,450 m² GFA) and a Hotel (5,574 m² GFA); and
 - Phase 2 – additional employment land use (15,329 m² GFA).
- 1.4 Phase 1 is currently planned to begin in 2014 with Phase 2 following in 2022. Both phases have an anticipated timescale of four years to full completion and occupation therefore will be expected for 2018 and 2026 respectively.

Aim of the Travel Plan

- 1.5 The Travel Plan is a package of incentives that has been identified for this particular site and aimed at bringing transport and other related issues together in a co-ordinated strategy with an emphasis on reducing reliance on the private car and increasing travel choice for staff and visitors. It is part of a dynamic process that will develop over time in changing circumstances.
- 1.6 In Chapter 7 of the TA, the importance of a Travel Plan is outlined in relation to its impact towards influencing travel patterns of employees and encouraging the use of non-car modes of travel, as a way of mitigating the impacts of the development.
- 1.7 Generally, the three main aims of the Travel Plan will be to:
- Support the planning application of the development;
 - Identify an effective strategy for managing travel behaviour of staff and visitors to the development, and
 - Manage parking demand on site for operational and staff vehicles.
- 1.8 More specifically it will seek to deliver the following benefits:
- Improving site access and travel choice;
 - Increasing business efficiency and equality;
 - Reducing congestion and demand for parking spaces;
 - Ensuring adequate provision for people with disabilities;
 - Providing choice and quality access to key services;
 - Delivering local environmental improvements from reduced congestion, pollution and noise; and
 - Providing opportunities for active, healthy travel.

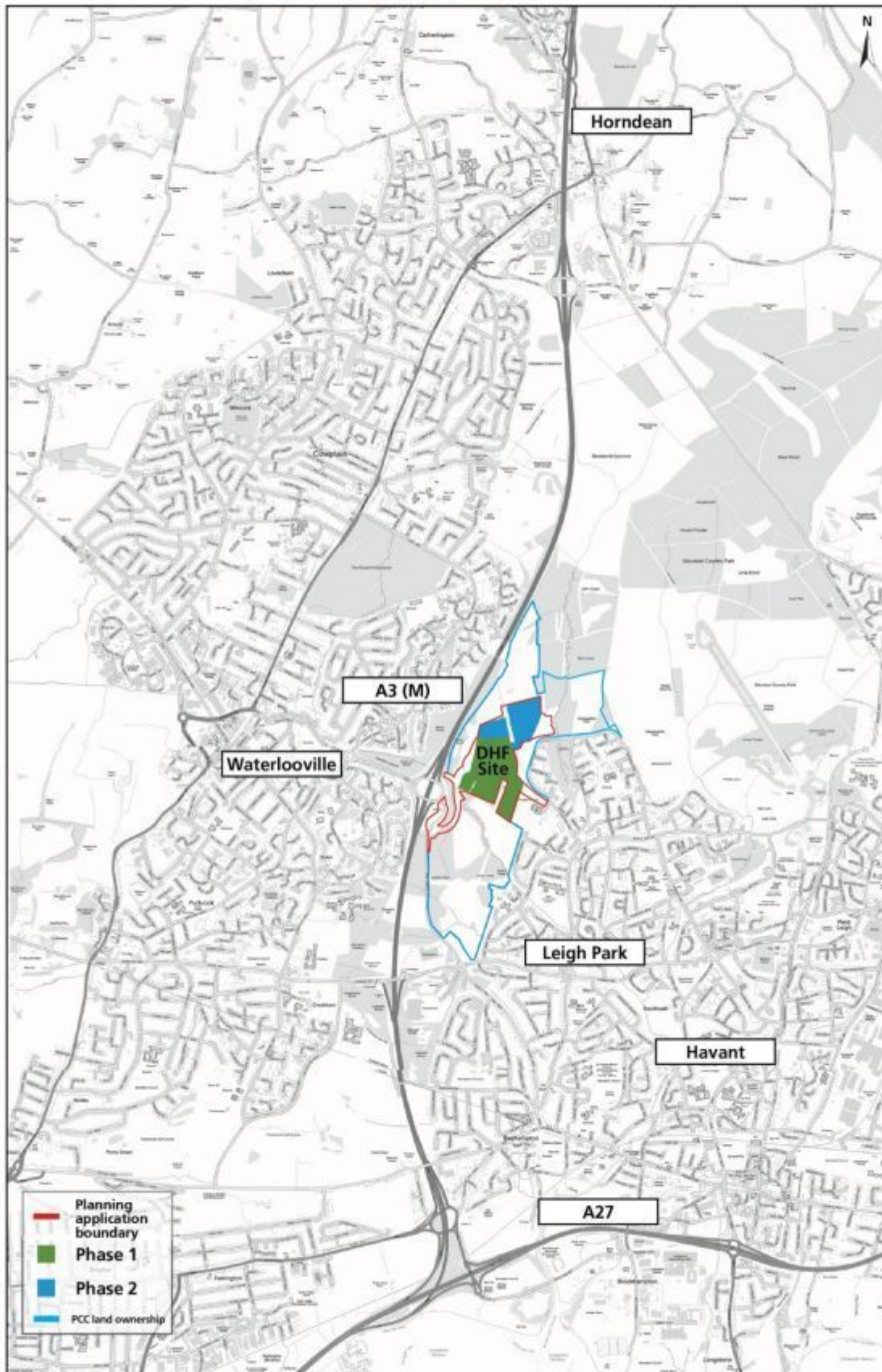
Scope of Travel Plan

- 1.9 It has been agreed that the Travel Plan will be Framework at this stage. The travel survey will therefore commence once the site is occupied and when the information can be coordinated internally.
- 1.10 The Framework Travel Plan has been prepared in line with the Department for Transport (DfT) document 'Good Practice Guidelines: Delivering Travel Plans through the Planning Process'. 2009.

Report Structure

- 1.11 The remainder of this Framework Travel Plan document will be structured as follows:
- Section 2 details as far as practical the baseline transport conditions associated with the site;
 - Section 3 summarises the development proposals;
 - Section 4 quantifies as far as practical the forecast staff travel patterns for the site;
 - Section 5 presents the objectives of the Travel Plan, a review of relevant national, regional and local policy in regards to the Travel Plan and sets out indicative targets for the Travel Plan;
 - Section 6 outlines recommended Travel Plan measures;
 - Section 7 details the car parking management strategy;
 - Section 8 details delivery and monitoring of the Travel Plan and outlines the marketing and communication strategies; and
 - Section 9 sets out the proposed Action Plan for delivery of the Travel Plan.

Figure 1.1 – Site Location Plan



2. Baseline Transport Conditions

Overview

- 2.1 This section of the report provides a summary of existing accessibility to Dunsbury Hill Farm for staff and visitors by all modes of transport.

Site Location

- 2.2 The existing Dunsbury Hill Farm site predominantly comprises agricultural land that lies within an undeveloped strategic gap immediately east of the A3 (M) motorway Junction 3, between Waterlooville and the northern area of Havant. The land is owned by PCC, however is situated in HBC, who is the planning authority for the site. The slip road leading off the A3(M) is the B2150 known as Hulbert Road which leads southwards to Purbrook Way. It is intended that this road will be adjoined by the link road to provide access to the site.

- 2.3 The site is currently characterised by the following key features:

- A series of extensive open fields enclosed within established hedgerow, lying to the west of Leigh Park residential area;
- Park Lane which connects Waterlooville and Leigh Park estate (Havant) and dissects the site across the north east corner;
- Belts of woodland lying to the south and west of the site which are identified as Sites of Importance to Nature Conservation (SINCs);
- A number of trees located within and adjacent to the study area;
- The Hermitage Stream which runs to the south west of the site, and the adjoining area, which is located within Flood Zone 3;
- Two high voltage power lines and a mains gas pipeline running through the eastern part of the site parallel to the study area boundary;
- Further overhead power lines passing through the site along an east west axis at approximately the centre of the site; and
- Part of the site overlies a former landfill site containing inert construction waste from the A3 (M) motorway requiring appropriate risk assessments.

Existing Site Land Uses

- 2.4 The Dunsbury Hill Farm development site predominantly comprises agricultural land that lies within an undeveloped strategic gap, and as such, only farm vehicle trips are generated by the site.

Public Transport Accessibility

- 2.5 Access to public transport is shown graphically in Figure 3.6 in the TA Report supporting the planning application for the site.

Access by Rail

- 2.6 The nearest railway station is Bedhampton, which is just over 2km from the site. Rail services at Bedhampton are operated by Southern and Southwest Trains and a summary of the services at Bedhampton station are shown in Table 2.1 below.

Table 2.1 – Existing rail services at Bedhampton Station

Train Operating Company	Origins	Destinations	AM Peak Hour Frequency
Southern	Barnham Brighton Ford Littlehampton London Victoria	Havant Portsmouth & Southsea Portsmouth Harbour Southampton Central	4 trains / hour
Southwest Trains	Guildford London Waterloo	Havant Hilsea Portsmouth & Southsea Portsmouth Harbour	2 trains / hour

2.7

Havant station is just over 2.5km from the site and connects with Bedhampton. Rail services at Havant are operated by First Great Western, Southern and Southwest Trains. A summary of the services at Havant station is shown in Table 2.2 below.

Table 2.2 - Existing rail services at Havant Station

Train Operating Company	Origins	Destinations	AM Peak Hour Frequency
First Great Western	Bristol Temple Meads	Brighton	N/A (limited daytime service)
Southern	Barnham Brighton Ford Littlehampton London Victoria	Portsmouth & Southsea Portsmouth Harbour Southampton Central	5 trains / hour
Southwest Trains	Guildford London Waterloo	Hilsea Portsmouth & Southsea Portsmouth Harbour	3 trains / hour

Access by Bus

2.8

The nearest bus services are Route 23 at Calshot Road (Hockham Court), approximately 400m from the site, and Route 39 at Middle Park Way (Woolston Road), approximately 500m from the site. Route 37 runs west of the site in Waterloo. A summary of these and other nearby services is shown in Table 2.3 below. These services are operated by Stagecoach.

Table 2.3 – Existing Bus Services near Dunsbury Hill Farm

Route number	Nearest stop	Origin	Destination	AM Peak Hour Frequency
23	Calshot Road (Larkwhistle Walk)	Southsea	Leigh Park	10 minutes
39	Middle Park Way (Woolston Road)	Havant	Wecock Farm	15 minutes
37	Hulbert Road Roundabout, Waterlooile	Havant	Alton	30 – 60 minutes
20	Dunsbury Way (Leigh Park)	Havant	Portsmouth Harbour	30 minutes
21	Dunsbury Way (Leigh Park)	Havant	Portsmouth Harbour	20 – 30 minutes

Pedestrians and Cyclist Connectivity

- 2.9 There is an existing bridleway passing through the development site along Park Lane, which forms a cycle route linking Tempest Avenue, to the west of the A3 (M), to Middle Park Way and Dunsbury Way to the east of the A3 (M); this crosses the A3 (M) on a bridge to the north of Junction 3. There is an off-road cycle route southbound from Woolston Road roundabout along Middle Park Way. The route continues off-road along the Hermitage Stream path which heads south towards Havant town centre. There is also an off-road cycle route along Purbrook Way west of the Hulbert Road / ASDA Roundabout which heads to the west of the A3(M). All these routes are connected to the residential areas and Havant town centre, with a network of suggested link routes, some of which are signposted at present.
- 2.10 There is a circular footpath through the site between Park House Farm Way and Ramsdale Avenue and between Ramsdale Avenue and Park Lane, which connects with the Park Lane bridleway. An east-west bridleway connects with Park Lane leading from the north of the site eastwards to Stansted and Rowland's Castle. From this there is a bridleway leading south to Swanmore Road and Dunsbury Way.
- 2.11 The walking and cycling routes are shown graphically in Figure 3.7 of the TA Report supporting the planning application for the site.

3. Development Proposals

- 3.1 Dunsbury Hill Farm is a Strategic Site in the Havant Borough Core Strategy which was adopted on the 1st March 2011. The allocation covers an area of 13.2 hectares. As part of the South Hampshire growth agenda, a seven hectare extension to this allocation was proposed in the 2008 Site Allocations: Issues and Options document.
- 3.2 The entire 20.2 hectare site is a Strategic Site in the Havant Borough Core Strategy which was adopted on 1st March 2011. It was marketed by PCC for development following publication of the Dunsbury Hill Development Brief in 2007 and the site remains key to delivering employment in the local and sub-regional areas and is seen as a potential new business gateway to South Hampshire via the A3(M) Corridor.
- 3.3 The aspirations are for a top end business park/campus and an exemplar construction and design to BREEAM Excellent standard.
- 3.4 The delivery of Dunsbury Hill Farm is integral to achieving the vision of the core strategy and wider sub-region in terms of key economic, employment and regeneration objectives. The development proposals are therefore hybrid to achieve outline consent for the core strategy allocation and detailed to cover to access and link road to provide appropriate transport infrastructure to enable future development on the site in accordance with the agreed land uses.
- 3.5 Construction of road works forming the detailed element of the hybrid planning application, access and link road, is planned for 2013. It is then intended that the site will be constructed in two phases as follows:
- Phase 1 – employment land use (46,450 m² GFA) and a Hotel (5,574 m² GFA); and
 - Phase 2 – additional employment land use (15,329 m² GFA).
- 3.6 Phase 1 is currently planned to begin in 2014 with Phase 2 following in 2022. Both phases have an anticipated timescale of four years to full completion, and occupation therefore will be expected for 2018 and 2026 respectively.
- 3.7 The hotel is intended to be internal-facing and provide conferencing facilities and accommodation for visitors to the employment zone. Employment land uses will be assigned a mix of approximately 40% B1, 40% B2 and 20% B8. The associated quantum of development is summarised in the Table 3.1 below:

Table 3.1 – Dunsbury Hill Farm Land Use Breakdown

Land Use	Phase 1 m ² GFA	Phase 2 m ² GFA	Total m ² GFA
B1 (Business)	18,580	6,132	24,712
B2 (General Industrial)	18,580	6,132	24,712
B8 (Storage and Distribution)	9,290	3,065	12,356
C1 (Hotel)	5,574	-	5,574
Total	52,024	15,329	67,354

New Access

- 3.8 A new access will be provided via a link to the B2150 Hulbert Road to the west from which traffic can distribute north to the A3(M) Junction 3 and south to Purbrook Way. A further link will be

provided to the east into Leigh Park. This will operate as a bus only link enforced via a bus gate and will also serve to provide a second point of access in emergencies.

3.9 The Indicative Masterplan is shown in Figure 4.1 of the TA.

4. Forecast Travel Patterns

- 4.1 At this stage detail regarding the site operation is limited and based on the Dunsbury Hill Farm TA.
- 4.2 Within three months of full occupation of the site a baseline travel survey will be undertaken of all staff and visitors, as appropriate, to establish the travel patterns to and from site. This information will be used to finalise the modal split targets for the Full Travel Plan, however for the proposes of this Framework Travel Plan, indicative targets have been set based on information provided in the TA for the site. The proposed methodology of the travel surveys is presented at the end of this section.

Site Operation

- 4.3 The site operation details are not yet known and this level of detail will be included in the Full Travel Plan.

Staff Numbers

- 4.4 Staff numbers are not yet known and this level of detail will be included in the Full Travel Plan.

Staff Shift Patterns

- 4.5 Staff shift patterns are not yet known and this level of detail will be included in the Full Travel Plan.

Modal Split

- 4.6 Modal split information has been taken from the Dunsbury Hill Farm TA prepared as part of the planning application for the site. The TA mode split predictions for the development have been based on the Sub-Regional Transport Model (SRTM); the methodology of which is outlined in Chapter 5 of the TA. Table 4.1 shows the predicted modal split for the development as a whole.

Table 4.1 – Estimated Modal Split

Mode	Estimated Modal Split
Car	75%
Walking and cycling	23%
Public Transport	2%
TOTAL	100%

- 4.7 This information will be used to establish indicative Travel Plan targets. Once the baseline travel survey is completed, the modal split will be updated with more accurate modal split on which targets can be based. The baseline survey will provide more detailed mode split information, including car drivers, car passengers, walking, cycling, motorcycling, train, bus and taxi.

Staff Travel Survey

- 4.8 The Baseline Travel Survey will be required to progress this Framework Travel Plan to a Full Travel Plan. Visitors will be surveyed, however the associated Travel Plan targets will relate to staff only. Staff will make up the vast majority of the trips generated by the site and this is where

significant change to travel can be made. It is recommended that the following is included in the Baseline Travel Survey:

- Existing travel patterns;
- Existing distance travelled to work;
- Existing journey times;
- Reasons for car travel; and
- Measures that would encourage travel by public transport, cycle, on foot or participation in a car sharing scheme.

4.9 This information should be completed for all employees working on site. It is recommended that the survey is electronic as this will ensure that all staff are in receipt of the survey, which may not otherwise be the case due to the staff working different shifts. The baseline travel survey will be completed within three months of the site operating to ensure early implementation of the Travel Plan.

5. Travel Plan Objectives & Targets

- 5.1 This section of the report outlines the overall objectives of the Travel Plan and identifies targets to meet these objectives. Travel Plan objectives are the high-level aims of the plan. They provide direction and focus to the Travel Plan. Travel Plan targets are measurable 'goals' set up in order to assess whether the objectives have been met.
- 5.2 The Travel Plan is a dynamic process and the targets can be used to monitor change. Where change is not achieved (and a target is not met) targets should be reviewed and replaced with a more realistic alternative.

Aims of the Travel Plan

- 5.3 The aims of the Travel Plan as set out in Section 1 of the Travel Plan are to:
- Support the planning application of the development;
 - Identify an effective strategy for managing travel behaviour of staff and visitors to the business park and associated hotel development; and
 - Manage parking demand on site for staff vehicles.

Objectives of the Travel Plan

- 5.4 In order to achieve these aims the following objectives have been set for the Travel Plan:
- **Objective 1** - To maximise opportunities for staff and visitors to travel to the business park and hotel development by means other than single occupancy car;
 - **Objective 2** - To encourage new staff to commute to work by modes of travel other than the single occupant car;
 - **Objective 3** – To reduce the carbon footprint of the development by minimising transport contributions; and
 - **Objective 4** - Improve access to the site for all.

Planning Requirements and Local Policy

- 5.5 It is necessary for a Travel Plan to be produced to promote sustainable measures of travel for the site. The requirement for a Travel Plan is supported by a number of relevant national, regional and local planning policy documents which are discussed in detail in the TA and include:
- Planning Policy Guidance Note 13 (PPG13);
 - Transport White Paper 'Future for Transport' (2004);
 - Delivering a Sustainable Transport System (2008);
 - Local Transport Act (2008);
 - From Crisis to Cutting Edge: Regional Transport Strategy (2002);
 - PUSH South Hampshire South Regional Strategy (2005);
 - South East Plan (2009);
 - Regional Economic Strategy (2006 – 2016);
 - Regional Network Report for the South East (2008);

- Hampshire Local Transport Plan 3 (2011 – 31);
- Solent Transport Sub-Regional Strategy (STSS) (2006 – 11);
- Transport for South Hampshire – Towards Delivery (2008);
- Havant Borough District-Wide Local Plan (2005) & Saved Policies (2008); and
- Havant Borough Council Local Development Framework Core Strategy (Adopted 2011).

Targets of the Travel Plan

- 5.6 Travel Plan targets are required to monitor the success of the Travel Plan in meeting the objectives outlined above. Targets are measurable goals with achievable timescales associated with them. They should be **SMART** - Specific, Measurable, Achievable, Realistic and Time bound.
- 5.7 The objectives of the Travel Plan have the overall aim of changing the travel behaviour of staff (and to some extent visitors) to reduce the number of single occupancy trips to the site and increase the number of journeys made by other modes of travel. They also aim to improve accessibility to the site by public transport, walking and cycling. The targets to achieve these objectives are set out in Table 5.1. It should be noted that the targets are often related to more than one Travel Plan objective.

Table 5.1 – Travel Plan Targets/Objectives

Objective	Target
To maximise opportunities for staff and visitors to travel to site by means other than the single occupancy car	Reduction in single occupancy trips to the site hence controlling car parking demand
To encourage new staff to commute to work by modes of travel other than the single occupant car	Increase the number of staff using public transport, cycling and walking
To reduce the carbon footprint of the site by minimising transport contributions	Reduce the use of the car overall at the site
Improve access to the site for all	Improve accessibility to the site by public transport, cycling and walking

Mode Share Targets

- 5.8 DfT guidance states that a successful Travel Plan with a wide range of measures, initiatives and promotion can reduce the volume of solo occupancy commuter travel to a site by between 15 and 30 percent.
- 5.9 The targets will need to be completed once the baseline travel survey has been completed on occupation of the site. Initial estimated targets for the site are included in Table 5.2.

Table 5.2 – Estimated and Target Staff Modal Splits

Mode	Estimated Modal Split (%)	Medium Term Modal Split (%)	Long Term Modal Split (%)
Car	75	70	65
Active travel modes (walking and cycling)	23	25	25
Public Transport	2	5	10
Total	100	100	100

5.10 The Travel Plan is a dynamic process and will need to be reassessed within a long term programme. It has been assumed that this will be a ten year programme given the size of the site. Appropriate timescales will be assigned to each measure/indicator to suit the Travel Plan objectives based upon the following timescales:

- Short Term: 0 to one year – targets designed to address the immediate concerns of the site;
- Medium Term: one to three years – targets to ensure the Travel Plan continues to meet its objectives, particularly in promoting travel by public transport; and
- Long term: three to ten years – strategic targets based upon improving the overall accessibility of the site.

6. Travel Plan Measures

Overview

- 6.1 Targeting staff that will travel to the site by private car is clearly where a change in modal split will be possible. A range of deliverables and effective measures have been developed to deliver the Travel Plan objectives and targets. These include 'physical' measures, co-ordination and promotion/information dissemination which address both staff and visitor travel.

Development Wide Initiatives

- 6.2 Raising awareness of environmental issues is important in order to promote more sustainable travel modes to the site. It is recommended that the site develops an Environmental Network for disseminating best practice in reducing environmental impacts and promoting sustainability to all staff.

- 6.3 It is recommended that the following initiatives are considered:

- Public Transport Incentives.
- Flexible Working Policy – Provision of several options for working flexibly which will reduce the need to travel at peak times. These include:
 - Compressed hours and Flexi-Time;
 - Part-time working;
 - Annualised hours;
 - Job Sharing; and
 - Home working.
- Cycling – Shower and locker facilities will be provided and consideration will be given to implementing interest free cycle loans to provide a financial incentive for cycling to work.
- Car Sharing – Encouraging car sharing among employees for car journeys to and from work. The developer will consider the site becoming a corporate member of 'Liftshare' an online car share matching scheme that puts people travelling in the same direction or a similar destination in contact with each other, allowing them to arrange to travel together and share the costs, whilst also reducing congestion and pollution on the roads.
- Teleconferencing – Consider establishing the teleconferencing technology and facilities.

Provision of On-Site Information

- 6.4 Up to date transport information will be provided on a regular basis in locations easily accessible to staff. A travel information board could be located within staff locker rooms, which are used by staff on a daily basis and display:

- Current bus timetables;
- Current rail timetables;
- Walking and cycling routes / networks;
- Upcoming Travel Plan initiatives/measures; and
- Details of the car share scheme.

- 6.5 This information should also be available on the staff intranet site and new staff made aware as part of their induction process.

Measures to Promote Sustainable Transport

- 6.6 The existing public transport routes have been discussed in Section 2 and bus routes 37 and 23 serving Leigh Park pass immediately to the east of Phase 1 and Phase 2 of the site respectively. It is therefore important for the sustainability of the site that appropriate connections are made.
- 6.7 It is understood that there are plans for a Havant Cross Borough Bus Service connecting Waterlooville to the west and Leigh Park to the East of the A3(M) corridor. It is envisaged that this bus route will use Hulbert Road access and the Woolston Road bus-only link and will cross the site. In addition these access points will enable the existing local bus routes to enter and leave the site from either the east or west of the A3(M) without needing to travel through the site. New bus infrastructure on the link road in the form of a bus turn round or bus interchange will ensure that the site can be served by the Cross Borough Bus Service and the existing local bus services. The development site thus provides the opportunity for a direct link to connect to existing bus routes 39 and 23 west of the site and A3(M).
- 6.8 It is proposed that a bus gate is placed on the far east of the Dunsbury Hill Farm Link Road so that the site is permeable to buses and an appropriate place for interchange introduced either east of west of the Link Road.
- 6.9 The existing public rights of way will be retained within the development. The existing bridleway which crosses the site will be maintained. Park Lane is a well used Bridleway which could be upgraded as part of a site wide approach to footpaths and cycleways; this would also extend connections to Havant Thicket Reservoir.
- 6.10 Secondary routes and local access, together with proposed footpaths and cycleways will form part of the reserved matters.
- 6.11 Opportunity exists to make the connection with Staunton Country Park, whilst enhancing existing accessibility across the site for all modes and prioritising pedestrians and cyclists.
- 6.12 The possible initiatives to be developed as part of a public transport strategy are identified in Table 6.1

Table 6.1 – Public Transport Strategy

Potential Measure	Details
Dissemination of information on public transport travel to staff	Information displayed in locker rooms, and other communal areas
Interest Free Season Ticket Loans	Interest Free Season Ticket Loans offered to staff which are repaid as part of a salary deduction scheme

Public Transport Information

- 6.13 By providing public transport information around the site the staff will become more aware of what public transport is available to them. This information will include timetables, planned engineering works and measures that the developer will put in place to encourage people to use public transport. The best place to put this information is in areas where staff members congregate such as communal areas. It is also suggested for staff that this information is displayed on the staff Intranet pages, if available.

Interest Free Public Transport Loans

- 6.14 Consider providing interest free public transport loans which would see the developer pay for staff members' annual season ticket and then the staff member pay this back interest free. The staff member would pay this back through reductions to their monthly/weekly wage. This measure would encourage staff who otherwise might not afford to use public transport. This would depend on the site's capability to offer loans.

Walking Strategy

- 6.15 The TA estimates that 23% percent of staff will either walk or cycle to work. To maximise the accessibility of the site by foot Table 6.2 shows the measures that could be used to encourage walking to work.

Table 6.2 – Walking Strategy

Measure	Details
Discount on Walking Equipment	Negotiations with local retailers to secure all staff with a discount on walking equipment
Map of Local Footways	A map of local footways provided free of charge to all staff to encourage them to walk to work
Changing room with showers and lockers	These facilities must be maintained to a high quality to encourage use

Discount on Walking Equipment

- 6.16 By negotiating with local stores/retailers discounts could be received for all staff on walking equipment such as appropriate footwear and clothing. This could encourage staff that currently do not walk to work, and live within an appropriate distance from the site, to begin walking. It may also encourage some members of staff to begin walking in their free time and therefore improve their health.

Map of Local Footways

- 6.17 The production of a map on local footways, particularly those which are well lit, for all staff will help to encourage those staff which have the capacity to walk to work to do so, particularly in the summer months. This measure also helps promote a healthy lifestyle to staff members.

Facilities

- 6.18 On site facilities will be maintained to high standards to ensure that all staff members are encouraged to use them.

Cycling Strategy

- 6.19 Cycle parking will be provided at the site in accordance with the relevant HBC standards for employment land uses and hotel developments (as detailed in Chapter 4 of the TA). As detailed in section 6.15 above, the TA estimates that 23% percent of staff will either walk or cycle to work. DfT have estimated that four kilometres is a reasonable commuting distance to work, which is likely to encompass a number of staff.
- 6.20 The cycle strategy for the development that should be implemented is identified in Table 6.3.

Table 6.3 – Cycling Strategy

Measure	Details
Cycle Parking	Cycle parking will be provided in accordance with the relevant HBC standards for employment land uses and hotel developments (as detailed in Chapter 4 of the TA).
On Site Cycle Store	Cycle equipment such as a puncture repair kit, spare tyres etc should be kept on site
Discount on Cycle Equipment	Negotiations with retailers to secure all staff with a discount on cycling equipment
Cycle Training	Cycle training should be available to all staff
Changing rooms with showers and lockers for staff	These facilities must be maintained to a high quality to encourage use
Cycle Loan Scheme	Bike4work scheme allowing employees the long term loan of a bicycle

On Site Cycle Store

- 6.21 It is recommended that a number of bicycle spares be kept on site such as a puncture repair kit, spanners and spare tyres in case staff members suffer problems with their cycle that would prevent them getting home from work.

Discount on Cycling Equipment

- 6.22 By negotiating with stores/retailers discounts could be received for all staff at the development on cycling equipment such as appropriate helmets and clothing. This would encourage staff that currently do not cycle to work, and live within an appropriate distance from the site, to begin cycling. It may also encourage some members of staff to begin cycling in their free time and therefore improve their health.

Cycle Training

- 6.23 Cycle training will give staff confidence to cycle on the roads and improve staff safety for those that currently cycle for their commute to work.

Facilities

- 6.24 It is recommended that secure staff lockers are provided. All staff should have access to shower facilities and changing areas with separate facilities for men and women. It would be positive if facilities such as a drying room, irons and hair dryers are also available. These facilities should be maintained to high standards to ensure that all staff members are encouraged to use them.

Cycle Loan Scheme

- 6.25 The Bike4work scheme is a government scheme for cycle loans which allows employees to benefit from a long term loan of a bike and safety equipment tax free. It is recommended that the developer participates in this scheme.

Moped/Motorcycle Strategy

- 6.26 Motorcycles and mopeds can offer a more environmentally friendly alternative to travel by private car and are more space efficient than other vehicles particularly in terms of congestion and parking.

Motorcycle/Moped Parking

- 6.27 It is recommended that a motorcycle/moped parking area is provided if a need for it is identified in the baseline travel survey.

Safety Training

- 6.28 Motorcycle training will encourage staff to travel by motorcycle to work. This will improve staff safety for those that currently use a motorcycle for their commute.

Discount on Motorcycle Equipment

- 6.29 By negotiating with local stores/retailers discounts could be received for all staff on motorcycling equipment such as appropriate helmets and clothing.

Car Sharing Strategy

- 6.30 Car sharing can be an effective way of reducing peak hour congestion and decreasing the demand for parking on the site. It also has benefits for the individual (in terms of cost of travel). The developer will consider the site becoming a corporate member of 'Liftshare'.
- 6.31 Following the baseline travel survey, postcode analysis should enable a clear picture of potential clusters for car sharing.
- 6.32 In order to encourage car sharing it will be confirmed at detailed application stage whether the developer will develop a number of initiatives to support the scheme as shown in Table 6.4.

Table 6.4 – Car Sharing Strategy

Measure	Details
Publicity of Liftshare car sharing scheme	Information displayed around the site in staff areas or staff memos
Priority parking spaces for car sharers as part of Car Park Management Plan	Dedicated car share spaces marked
Incentives for car sharing e.g. guaranteed ride home	Provision of taxi or alternative arrangements with a colleague for transport home if share arrangement fails

Publicity

- 6.33 It is essential that the car share scheme is widely promoted in order to sustain sufficient levels of car sharing. This will be part of the overall marketing strategy for the Travel Plan (see Section 8).

Priority Parking

- 6.34 To encourage car sharing staff will be provided with dedicated 'car sharer' parking spaces.
- 6.35 Priority parking spaces must have formal membership criteria and rigorous enforcements. A parking permit system could be introduced with regular patrols to check that only registered car sharers park in these bays.

Parking Management

- 6.36 It is recommended that parking will be managed by a Car Parking Management Strategy. This details the operation of the staff and visitor parking. The Car Parking Management Strategy is detailed in Section 7 of this document.

Minimise Single Occupancy Business Travel

- 6.37 Staff will be encouraged to travel sustainably in instances when they are required to travel on business. This includes travelling in groups rather than driving alone.
- 6.38 For staff travelling over long distances from the site for business needs, public transport will be encouraged as the preferred mode of transport.
- 6.39 If the site has video conferencing facilities, then staff will be encouraged to consider whether business travel is necessary or whether the need could be met using these facilities.

Incentives

- 6.40 A travel award scheme can be set up which rewards those who regularly participate in the car share scheme, use public transport, use a moped/motorcycle or walk or cycle to work.
- 6.41 Below are the possible options for a Travel Award Scheme.
- Staff who can show that they have car shared, taken public transport, travelled by motorcycle/moped, cycled or walked earn points on a daily basis. Accumulation of points will equate to a financial reward, a gift, or time off work. However, this system may prove to be difficult and onerous to monitor;
 - Contribution towards a public transport season ticket, towards the purchase of a bicycle/equipment, towards waterproof clothing;
 - Prize draws may be held which involve only those staff who do not hold a 'single car driver permit'; and
 - Staff that can demonstrate that they previously drove to work and are willing to give up a parking space are provided with a contribution towards the cost of his/her newly adopted transport to work. It will be noted that this scheme alone would not be equitable to those who already use a sustainable form of transport as they would not be rewarded.

TravelWise

- 6.42 The aim of the company TravelWise® is to help employers work with their staff to improve their travel choices and provide alternatives to the car especially for the journeys to work. Affiliation to the scheme is free and the scheme offers numerous benefits to both the employer and employees. It is suggested that the developer joins the scheme.
- 6.43 The benefits companies and their employees receive include:
- Professional advice and support; and
 - Involvement in a new car sharing system.
- 6.44 Both the employer and employee can receive the many benefits offered by the network of support companies including:
- Reduced priced travel passes;
 - Discounted bicycles;
 - Discounted motor scooter and access to training; and
 - Discounted bicycle stands.

7. Car Park Management Strategy

Parking Provision

- 7.1 Within the Masterplan area the principle will be adopted that the proposed levels of parking provision will be in accordance with relevant HBC standards for employment land uses and hotel developments. The parking standards are shown in Table 7.1 below.

Table 7.1 – HBC Parking Standards

Land Use	Car Parking Standard Maximum Limit	Cycle Parking Standard (minimum)	
		Long Stay	Short Stay
B1 Office	1 space per 30 sqm	1 stand per 150 sqm	1 stand per 500 sqm
B2 General Industrial	1 space per 45 sqm	1 stand per 350 sqm	1 stand per 500 sqm
B8 Warehousing	1 space per 90 sqm	1 stand per 500 sqm	1 stand per 1000 sqm
C1 Hotel	1 space per bedroom	1 space per 6 staff or 1 space per 40 sqm	1 stand per 10 bedrooms

- 7.2 In order to improve and control the use of the car park as well as improving safety, a Car Park Management Plan has been included for the Travel Plan.
- 7.3 The Car Park Management Plan would provide disincentives for lone car travel and ensure that staff members without alternative travel modes have priority access to parking spaces. The plan will also make provision for car sharers and staff with medical or welfare needs. As discussed in the TA it is important to manage parking effectively and prevent overspill parking on Leigh Road. The following measures are being considered for inclusion in a car park management plan:
- Staff needs-based permit allocation system;
 - Enforcement of car park measures, for example clamping;
 - Provisions for those with welfare needs/disability; and
 - Priority spaces for car sharers.

Car Park Management Plan

Parking Permit System

Needs Based Permit Criteria

- 7.4 A "Needs Based Permit" system is a means of allocating staff parking permits according to an identified "need" criteria. This has become increasingly recognised as an effective parking management strategy at employment sites, ranging from hospitals, private and public sector offices and educational establishments. A fixed permit total is identified based on parking capacity (plus 10-15 percent). This fixed number of permits is allocated to individual employees using various need-based criteria. For example accessibility to non-car travel options, as described below.
- 7.5 These criteria will be assessed by scores. A score is assigned to each staff applicant, based on these criteria. Applicants' scores are ranked and permits allocated at a level which matches the total number of permits. This system provides an equitable approach to permit allocation based on needs. The criteria for allocation will be made transparent to all staff.

Accessibility Zone

- 7.6 An 'accessibility zone' can be defined around the site within which there are assessed to be viable alternative forms of transport to single occupancy car journeys. This may be based on the following:
- Staff home addresses within 1.6 kilometres (one mile) of the site, which is a reasonable walking distance of up to 40 minutes;
 - Staff home addresses within approximately 400 metres of a frequent and direct bus route.
- 7.7 The accessibility zone would also include proximity to railway stations.
- 7.8 Other criteria should also be identified for the system. The exact definition of these (and the weighting attached in the scoring allocation system) would need to be identified in consultation with the developer. Suggested criteria that could be included in the scheme include:
- Disability/medical condition, requiring confirmation by Occupational Health;
 - Staff that require their car for business use during the working day;
 - Shift workers; and
 - Childcare/other caring responsibilities, which in relation to working hours prevent the staff member from using a mode other than car for the journey to work. This is likely to count as a relatively low priority for permit allocations.
- 7.9 Table 7.2 shows an example of a weighted points scoring system which could be adapted to be relevant to the development.

Table 7.2 – An Example of a Permit Weighting and Scoring System

Factor	Sub factor	Weighting
Mobility Impairment	Registered disability	+30
Accessibility to workplace	Outside exclusion zone	+10
Car Share	No. of Passengers	+3 per passenger carried
Unsociable Working Hours (for regular timetabled hours)	Start before 0700 hours	+2
	Finish after 1900 hours	+2
Operational need	Operational Staff	+5
	Carry heavy loads	+1
Carer Responsibilities	Need to drop off	+0.3
	Need to collect	+0.3
	Need to do both	+0.6
	Willing to car share	+0.1

- 7.10 Those with welfare needs or disabilities would be given priority in regards to parking. In a permit system they would be guaranteed a permit. Proof of welfare needs or a disability would be required to prove that the parking space is required.

Car Sharer Permits

- 7.11 Those members of staff who take part in the car sharing scheme would be guaranteed a parking space in a prime location close to building entrances at levels which match Travel Plan mode share targets for car share.

Parking Enforcement Systems

- 7.12 Staff parking could be enforced through a card reader system which monitors who enters and exits the car park. Staff would need to be made aware of the proposed managed enforcement system in place. This will have to be well communicated to staff as part of the communications strategy.
- 7.13 It is recommended that the first stage of an enforcement system is verbal, followed by a written warning to offending employees informing them that any further parking offences will result in recovery of their parking permit.
- 7.14 There will be no enforcement strategy for the visitor parking.

Incentives to Non-Car Transport

Travel Plan Document

- 7.15 The Travel Plan document will encourage travel by non car modes, with a potential target of reducing single occupancy car travel by 5 percent in the medium term and 10 percent in the longer term. The restricted number of spaces being provided in the car park and the permit system may go some way to help manage the spaces within the car park. However potential overspill will need to be managed through making staff and visitors aware of the travel alternatives to the site and offering incentives to travel by alternative means as identified in Section 6 of this document.

8. Delivery and Monitoring

Delivery

- 8.1 The objectives of the Travel Plan can only be realised through the implementation of the Travel Plan measures in an integrated manner with the correct marketing and communication. This will take strong leadership from a member of staff who will listen to the views of staff and visitors but still be willing to push the Travel Plan forward. The running of the approved Travel Plan will be by a dedicated Travel Plan Coordinator and it is proposed that the Travel Plan Coordinator is an existing member of staff.

Appointment of Travel Plan Coordinator

- 8.2 To implement the Travel Plan, support will be required by the senior management of the site to appoint a Travel Plan Coordinator (TPC). This post will be appointed on completion of the first phase of development, before occupation of the site. Establishing a named Coordinator allows staff a single point of contact with enquiries and questions regarding the Travel Plan. The Coordinator will be responsible for the implementation and monitoring of the Travel Plan on a day to day basis. This will be a site-wide role and they will be responsible for all aspects of the site. This could be an in house member of staff or someone appointed externally. Their duties will include:

- Managing the implementation of the Car Park Management Plan;
- Designing and implementing effective marketing and awareness raising campaigns to promote the Travel Plan;
- Coordinating a car share scheme and allocation of permits to those who participate in the scheme;
- Coordinating annual travel survey to monitor the progress of the Travel Plan;
- Lead the annual Travel Plan review;
- Acting as a point of information and contact for all those staff requiring information;
- Keeping Travel Plan information constantly up to date;
- Liaising with parties within the organisation and outside; and
- Maintaining a file containing all correspondence relating to the Travel Plan.

- 8.3 Before occupation of the site, as soon as an appointment is made Portsmouth City Council (PCC), Havant Borough Council (HBC) and the Partnership for Urban South Hampshire (PUSH) will be informed. It is anticipated that in order to undertake the role efficiently the Travel Plan Coordinator will spend up to one day a week on the role, although this will be more time intensive for the initial set up.

- 8.4 The detailed site-wide Travel Plan will be finalised within the first six months of occupation following the baseline travel survey to be carried out after 3 months of occupation. The TPC role will be supported by a steering group.

Steering Groups

- 8.5 The role of a Travel Plan Coordinator can be a large responsibility, particularly if one person has to incorporate the role into another role within the organisation. The Travel Plan Coordinator Role can be supported by setting up a steering group to provide direction for the overall coordinator.

- 8.6 A Travel Plan steering group should be set up for the development. It is suggested that the group could be made up of:
- One representative from the business development site;
 - One representative from the hotel staff;
 - A senior manager; and
 - The Travel Plan Coordinator.
- 8.7 The Steering Group should meet on a regular basis, every two to three months is suggested, to discuss the Travel Plan and its various successes and failures. The Steering Group will help to provide the Travel Plan with focus. Before each steering group meeting the representatives from the different staff groups should speak to the staff that they represent and see if there are any issues they would like raising or any elements of the Travel Plan that are working particularly well. This would then be fed back to the Steering Group.
- 8.8 The issues that are raised at the Steering Group Meetings will be noted by the Travel Plan Coordinator and used to direct future Travel Plan measures and initiatives.
- 8.9 The representatives within the Steering Group will feed back to the staff that they represent any issues that were raised.

Marketing & Communication

- 8.10 The effective communication and marketing of the Travel Plan to all stakeholders involved is vital to ensuring its success. Marketing and communication will be targeted at the various groups involved in the Travel Plan including:
- Senior management;
 - Staff; and
 - Visitors (where necessary).
- 8.11 Effective marketing techniques may differ for each of these target groups. All marketing and communication of the Travel Plan will be led by the Travel Plan Coordinator.
- 8.12 The implementation of the Travel Plan depends on individuals making changes to their current journey patterns and as a result it is important to view the Travel Plan as it will be perceived by each of the target groups.
- 8.13 Once this has been achieved, effective marketing and communication strategies to 'get the message across' to each target group should be identified. For example for a member of staff living a significant distance away from the site, walking routes to work may not be of interest, whilst communicating the benefits of a car share scheme (financial savings / better for the environment) may have a greater impact.
- 8.14 A publicity and marketing strategy will be developed for the Travel Plan to comprise the following components:
- Publicised launch event for the Travel Plan to develop awareness amongst staff;
 - Continual updates on the Travel Plan and its performance in communal staff areas;
 - Travel Plan Coordinator to inform staff by emails of new Travel Plan measures and initiatives;
 - Information leaflets which include public transport timetables and information about different Travel Plan initiatives to be regularly distributed to staff;
 - Participation in special events weeks such as Bike to Work etc in order to raise awareness;

- Travel Plan updates regarding public transport and car park management in visitor communal areas and on staff intranet site; and
- Information regarding different aspects of the Travel Plan to be in communal staff areas and generally widely available.

- 8.15 The Travel Plan will be marketed as helping staff / visitors to the site and should be promoted in a positive light to encourage staff / visitors to start and continue participating.
- 8.16 A Travel Plan starter pack will be produced for all new staff working at the site. This would include information on Public Transport, Travel Plan initiatives, their staff representatives and how to contact the Travel Plan Coordinator.
- 8.17 A number of approaches will be considered in the communication of the strategy. Communication should involve all the target groups and use different forms of media as appropriate.
- 8.18 The Travel Plan Coordinator will ensure that all measures proposed as part of the Travel Plan are communicated to staff and visitors in order for them to participate and change their travel patterns.
- 8.19 The Travel Plan Coordinator will also respond to comments from staff and visitors regarding the Travel Plan to ensure it continuously evolves.
- 8.20 The primary comments regarding the Travel Plan will be communicated through a series of surveys after the implementation of the Travel Plan.

Direct Marketing

- 8.21 The marketing strategy for the Travel Plan will aim to develop "a brand" that is easily recognisable to staff and visitors. This will be communicated during the launch of the Travel Plan through a leaflet or existing form of staff communication. This should detail what a Travel Plan is and what it means for the site.

Monitoring

- 8.22 Ongoing monitoring and reporting is necessary to ensure the continuous effectiveness of the Travel Plan.
- 8.23 A strategy will be implemented for the regular monitoring of the progress of the Travel Plan against objectives and targets and highlight any deficiencies in/changes required to the Travel Plan or any additional measures required. The monitoring strategy will be led by the Travel Plan Coordinator.

Baseline Survey

- 8.24 A baseline travel survey will be completed within three months of the site operating. The survey will be used to set the Travel Plan targets post occupation.
- 8.25 For a workplace Travel Plan, such as this, the following survey types are undertaken:
- Employer Management Questionnaire – Factual information completed by a senior member of onsite staff;
 - Multi-Modal Count Survey – A count of all vehicles entering and leaving the site over one day;
 - Parking Survey – A parking survey undertaken at the beginning, middle and end of day to check against the multi-modal count;
 - Deliveries/Freight Count – Count of deliveries vehicles that come on site over a day;
 - Employee Questionnaire/Diary – A handful of staff are asked to complete a questionnaire and diary about their workplace journeys over a period of one day' and

- Visitor Interview Survey – On site visitors are surveyed about their journey.

8.26 The above surveys, all completed over a single day, will be combined to produce a more complete picture of travel to and from site.

Annual Monitoring Survey

8.27 Once the Travel Plan is fully in place, snapshot surveys should be carried out periodically by the Travel Plan Coordinator. This will help to assess the modes of transport that staff and visitors are using to travel to the site. Information that should be gathered during a snapshot survey includes:

- Tracking bicycle use by counting the number of stands in use in the bicycle racks;
- Number of cars parked inside the car park and outside of permitted areas;
- Number of car sharing spaces in use; and
- Staff questionnaires to ascertain home postcodes and usual means of travel to work.

8.28 As required, this monitoring will commence with the annual review for the first three years of implementation from occupation of the site.

8.29 This information should also be used to help assess the success or failures of the Travel Plan measures, and direct its future.

Review

8.30 The travel surveys will be conducted annually for the first three years following the initial survey amongst staff and the results they produce will be presented in the form of a report.

8.31 The travel survey results will dictate the future direction and focus of the Travel Plan, identifying in which areas the Travel Plan is working successfully and areas in which there are deficiencies. Improvements can then be made accordingly. A Travel Plan is a dynamic process and likely to change over time.

8.32 The monitoring process will facilitate the implementation of the Travel Plan over the short, medium and long term. The TPC should identify which measures should be implemented over each of these timescales, with the possibility of longer term measures being developed further after initial monitoring of the effectiveness of the Travel Plan.

Funding

8.33 The funding will be confirmed upon occupation of the site. The Section 106 will outline the necessary financial commitments for this as well as commitment that targets are met and measures implemented to ensure the successful delivery of the Travel Plan.

8.34 It is likely that the monitoring and review strategy will be funded by facilities management budgets for the development. Funding will be secured for undertaking the surveys and to cover monitoring administration fees. The monitoring administration fee is usually in the region of £2,500-£3,000.

9. Action Plan

9.1 Table 9.1 shows a proposed programme of implementation for selected Travel Plan measures.

Table 9.1 – Action Plan

Action	By Whom	Cost	Timeframe
Appointment of a Travel Plan Coordinator (TPC)	Developer	No cost	Before occupation of site
Marketing and Communication of Travel Plan	TPC	Low	Ongoing from occupation of site
Provision of Site Information	TPC	Low	Ongoing from occupation of site and checked every 3 months
Public Transport Strategy	TPC	Low	Ongoing from occupation of site
Car Park Management Plan	TPC / Developer	High	Ongoing from occupation of site
Car Sharing Strategy	TPC / Developer	Low	If car sharing spaces are to installed these could be painted before occupation, other measures will be ongoing from occupation of site
Minimise Single Business Travel	TPC	Low	Ongoing from occupation of site
Walking Strategy	TPC / Developer	Low / work included in the construction cost	Showers/changing rooms/lockers to be provided before occupation, other measures will be ongoing from occupation of site
Cycle Strategy	TPC / Developer	Low / work included in the construction cost	Showers/changing rooms/lockers to be provided before occupation, other measures will be ongoing from occupation of site
Moped / Motorcycle Strategy	TPC	Low	To be considered within 3 months of the Baseline Survey being completed
Incentives	TPC	Low	Ongoing from occupation of site
TravelWise	TPC / Developer	Low	To sign up to within 3

			months of site occupation
Baseline travel survey	TPC / Staff	Low	Within 3 months of the site operating
Annual monitoring of Travel Plan	TPC / Staff	Medium	Annually from date baseline survey is completed
Re-submission of Travel Plan	TPC	Low	Within 6 months of the site operating
Travel Plan Review	TPC	Low	3 years after the baseline survey is completed

Funding

- 9.2 The funding will be confirmed upon occupation of the site. The Section 106 will outline the necessary financial commitments for this as well as commitment to meeting the targets and that measures are implemented to ensure the successful delivery of the Travel Plan.
- 9.3 It is likely that the developer will utilise the facilities management budgets for the site to ensure that the Travel Plan and its various measures are effectively delivered.

Appendix I. Environment Agency – Notes of Meeting

Mr Tom Wood
Atkins Ltd.
Water & Environment
Woodcote Grove Ashley Road
Epsom
Surrey
KT18 5BW

Our ref: HA/2010/110546/01-L01
Your ref: Dunsbury Hill
Date: 31 August 2010

Dear Mr Wood

PROPOSED EMPLOYMENT DEVELOPMENT INCLUDING A HOTEL DUNSBURY HILL FARM

Following on from our recent meeting on the 17th August regarding the above proposed development I am now able to provide you with our written notes of what we discussed. I have also included general requirements of what will need to be considered when forming a planning application.

We are keen to help ensure that new development is as sustainable as possible and therefore appreciate the opportunity to comment on development proposals at this early stage.

Ecology

We would welcome further engagement with regards to the restoration of the Hermitage stream which crosses the proposed site. Restoration of the stream is an intrinsic part of the plan for development of the site, this has been recognised in Havant Borough Councils forthcoming Local Development Framework and is in keeping with both PPS1 and PPS9.

We will also require further details of the proposal to bridge over the Hermitage stream. Including justification and assessment of potential impacts.

In addition we would welcome proposals for enhancements of existing habitats and habitat creation, particularly in line with local and UK Biodiversity Action Plans (BAP). This could be achieved in the design of the buffer for Park Lane Stream along with other suitable location within the site. Involving the retaining and enhancement of wetland habitat, including wet woodland and ponds which are both BAP habitat types.

Generally, the Environment Agency is interested in all wetland habitats and species. We would request that the following are taken into consideration when forming an application:

- Detailed, up-to-date ecological surveys (habitats and species) of the development

Environment Agency
Guildbourne House Chatsworth Road, Worthing, West Sussex, BN11 1LD.
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

Cont/d..

site, undertaken at an appropriate time of year by a suitably qualified ecologist. The surveys should identify all habitats which are present on and adjacent to the site. These surveys should identify less obvious habitats such as wet grassland, marsh and bog vegetation communities and give clear indication of locations of ponds/ditches. We would expect to see justification for any loss of wetland habitats and would require compensation which results in an overall net gain.

- Full details of impacts (construction and operational) on water and wetland habitats on site and within the surrounding area, including potential impacts on the existing hydrology. In particular consideration will need to be given to how the adjacent river corridors (Hermitage Stream and Park Lane Stream to the east) may be impacted by potential development and how this could be minimised or sufficiently mitigated for.
- The extent to which it is possible to avoid or mitigate against adverse effects, and any limitations of mitigation, including methods statements demonstrating how impacts will be minimised, and details of proposed post-development management and monitoring.
- We would expect details of green infrastructure which will be retained and delivered through development of the site. We would encourage retaining and enhancing green corridors and creation of green networks throughout the site and from the site to the wider landscape. As this application is in the early stages of the planning process we expect to see more unique use of space, this could include the provision of green roofs which provide multifunctional benefits including enhancing biodiversity, providing sustainable drainage and creating a pleasant environment. It is recommended that existing nature conservation features, within the proposed development site be retained, including mature trees, hedgerows, watercourses and other features are incorporated into site design and protected from change.
- We would also require full details of future site management of retained and created habitats, for the benefit of biodiversity.

If you have any further assistance, please do not hesitate to contact me. Adam Cave (Fisheries and Biodiversity) 01903 832325 or adam.cave@environment-agency.gov.uk

Flood Risk

The site indicated for potential development is greater than 1 hectare and lies within Flood Zone 1. Paragraph E9 of Planning Policy Statement 25 (PPS25): Development and Flood Risk requires applicants for planning permission to submit a Flood Risk Assessment (FRA) when development of this scale is proposed.

The FRA should consider the site's vulnerability to flooding from all sources and include a sustainable drainage strategy to assess and mitigate the effect of development on surface water run-off.

SuDS Design Criteria

We will expect to see that the surface water drainage scheme include SuDS elements with attenuation, storage and treatment capacities incorporated as detailed in the CIRIA SUDS Manual (C697). The scheme should be designed to meet the following criteria:

- The surface water drainage system must be designed to control runoff and prevent flooding of property in up to a 1 in 100 year storm event, plus an allowance for an increase in storm intensity with climate change in line with Table B.2 of PPS25;
- The surface water system should be designed so that up to the 1 in 30 year

storm event is contained within the system. Events up to the 1 in 100 year event (plus the allowance for climate change) should be stored safely on site, without property being flooded. This could be achieved by allowing car parks or landscaped areas to flood;

- The rate at which surface water is discharged from the site may vary with the severity of the storm event but should be no greater than the undeveloped rate of runoff for a given event;
- The drainage arrangement should also be such that the volumes of surface water leaving the site are no greater than that at pre-development. Long-term storage may be required to control any additional surface water volumes generated. Please refer to section 5.3 of the DEFRA/Environment Agency publication Preliminary Rainfall Runoff Management for Developments (W5-074/A/TR/1) for further information on the provision of long-term storage.

There may be an opportunity through the redevelopment of the site to improve the water quality of runoff from the A3. Additional SuDS features could potentially be provided to treat the runoff from the road as it passes through the site.

The final drainage strategy should incorporate a number of linked SuDS features (a management train approach, as described in CIRIA C697. The SuDS Manual) to provide water quality treatment of the surface water before it is discharged into the Hermitage Stream. The management train incorporates a hierarchy of techniques which should be used in SuDS selection:

1. **Source control:** attenuate and remove pollutants from runoff close to the source. Simple measures which can be used in high density sites include directing roof, driveway and footpath runoff over grassed areas, or promoting sheetflow through grassed areas. Green roofs, gravelled or porous car parking areas, roadside swales, filter strips, bioretention devices and filter drains.
2. **Site Controls:** These are runoff and treatment controls that serve areas of approx 2 to 5 ha. The most common forms are swales, extended detention, detention basins (some can take the form of sports pitches) which all have relatively low land take.
3. **Regional Controls:** Serve multi-hectare drainage areas greater than 5ha and can be incorporated into public open space. These include extended detention basins, retention ponds and stormwater wetlands. When source and site controls are used upstream, the size of the regional controls can be reduced, freeing additional land for other purposes.

So that sufficient land can be allocated for the inclusion of drainage features it is important that drainage requirements are considered at an early stage of the development.

Provision for long-term maintenance should be provided as part of any SuDS scheme submitted to the Local Planning Authority. Model legal agreements that provide a mechanism for SuDS maintenance can be accessed on the CIRIA web site at <http://www.ciria.org/suds/icop.htm>.

Works around the Hermitage Stream

Please note that under the terms of Section 109 of the Water Resources Act 1991, and the Southern Region Land Drainage and Sea Defence Byelaws, the prior written consent of the Environment Agency is required for any proposed works or structures, in, under, over or within 8 metres of the top of the bank of the Hermitage Stream, designated a 'main river'. Consent will only be issued if the works do not pose a flood risk to people and property, and do not conflict with the Environment Agency's other

duties.

The development offers the opportunity to restore the canalised section of the Hermitage Stream to a more natural form. We would be happy to discuss rehabilitation options with you further.

We will expect that any bridge crossing the Hermitage is of a clear-span construction with the abutments set back from the banks of the river. Bridges should be designed with a minimum afflux of 50mm in a 100 year flood event (including an allowance for climate change), and with a minimum freeboard of 600mm above the 1 in 100 year flood event (including the above allowance).

Water Quality

The Hermitage Stream Water Body catchment is currently not achieving "good status" under the Water Framework Directive and therefore any opportunities to enhance water quality should be taken. Equally any deterioration in water quality as a result of the development would be unacceptable. Therefore pollution prevention should be considered when forming the surface water drainage strategy and it should be ensured that there would be little risk of surface water contamination as a result of surface water management/run-off. This could be achieved through tertiary treatments and various SuDS techniques such as permeable paving in higher risk areas.

The waste water catchment is Budds Farm and the discharge from Budds Farm is limited in terms of nitrogen removal to below Best Available Technology limits to protect the integrity of Habitat Directive sites. Therefore although it has been estimated that this can accept the housing development proposed in the catchment, we would expect high water efficiency targets for the development to protect water resources and limit the impact of this development on Budds Farm WWTW.

Please note that the view expressed in this letter by the Environment Agency is a response to a pre application enquiry only and does not represent our final view in relation to any future planning application made in relation to this site. We reserve the right to change our position in relation to any such application.

You should seek your own expert advice in relation to technical matters relevant to any planning application before submission

I trust that the above comments are satisfactory but if you require any further information please contact me.

Yours sincerely

Miss Catherine McLeod
Planning Liaison Officer

Direct dial 01903 703858

Direct e-mail planning.southdowns@environment-agency.gov.uk

Appendix J. Highway Bridge Planning Approval In Principle

Dunsbury Hill Farm Stage 2

Highway Bridge Planning Approval In Principle

ATKINS

Plan Design Enable

Notice

This document and its contents have been prepared and are intended solely for Portsmouth City Council's information and use in relation to Dunsbury Hill Farm Stage 2.

Atkins Highway and Transportation assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Document History

JOB NUMBER: 5099849			DOCUMENT REF: 5099849/Dunsbury Bridge Structure AIP			
Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date
A	Planning Submission	SMB	RNW	RNW	RNW	23/08/11
B	Minor Amendments	SMB				
C	HCC comments incorporated	RNW	RNW	SD	SS	13/12/12

Table of contents

Chapter	Page
1. Highway Details	5
1.1. Type of highway	5
1.2. Permitted traffic speed	5
1.3. Existing restrictions	5
2. Site Details	6
2.1. Obstacles crossed	6
3. Proposed Structure	7
3.1. Description of structure and working life	7
3.2. Structural type	7
3.3. Foundation type	7
3.4. Span arrangements	7
3.5. Articulation arrangements	7
3.6. Types of road restraint systems	7
3.7. Proposed arrangements for maintenance and inspection	7
3.8. Sustainability issues considered. Materials and finishes	7
3.9. Risks and hazards considered	8
3.10. Estimated cost of proposed structure together with other structural forms considered, including where appropriate proprietary manufactured structure, and the reasons for their rejection including comparative whole life costs with dates of estimates	8
3.11. Proposed arrangements for construction	8
4. Design Criteria	9
4.1. Live loading, Headroom	9
4.2. List of relevant documents from the TAS	9
4.3. Proposed departures from Standards given in 4.2 and 4.2.1	10
4.4. Proposed methods for dealing with aspects not covered by Standards in 4.2 and 4.2.1	10
5. Structural Analysis	11
5.1. Methods of analysis proposed for superstructure, substructure and foundations	11
5.2. Description and diagram of idealised structure to be used for analysis	11
5.3. Assumptions intended for calculation of structural element stiffness	12
5.4. Proposed earth pressure coefficients (k_a , k_0 , or k_p) to be used in the design of earth retaining elements	12
6. Geotechnical Conditions	14
6.1. Acceptance of recommendations of Geotechnical Interpretative Report to be used in the design and reasons for any proposed changes	14
6.2. Highway Structure Summary Information (Form C)	14
6.3. Differential settlement to be allowed for in the design of the structure	14
6.4. If the Geotechnical Interpretative Report is not yet available, state when the results are expected and list the sources of information used to justify the preliminary choice of foundations	14

APPROVAL IN PRINCIPLE

Dunsbury Hill Farm
Dunsbury Hill Farm Bridge
Structure Ref No: to be confirmed

7.	Checking	15
7.1.	Proposed Category	15
7.2.	If Category 3, name of proposed Independent Checker	15
7.3.	Erection proposals or temporary works for which an independent check will be required, listing parts of the structure affected with reasons for recommending an independent check	15
8.	Drawings and Documents	15
8.1.	List of drawings (including numbers) and documents accompanying the submission	15

Appendices

A.	Technical Approval Schedule (TAS)	17
B.	General Arrangement Drawing	25
C.	Highway Structure Summary Information (Form C)	25

1. Highway Details

1.1. Type of highway

The scheme is to construct a new 7.3 m wide single carriageway road with 2 m wide verges either side crossing green belt land, primarily on a raised embankment.

1.2. Permitted traffic speed

The permitted traffic speed for the new road will be 48 kph (30 mph).

1.3. Existing restrictions

There is currently no highway at the location of the scheme, and therefore no vehicular access. Pedestrian access is also restricted as there are no footpaths or cycle paths in the area, or public right of ways.

2. Site Details

The proposed highway scheme is to provide access from the approach of Junction 3 of the A3(M) to a new mixed use business park under development. The highway crosses Neville's Park, a green belt area made up primarily of overgrown woodland which is a diverse natural habitat, particularly for dormice.

2.1. Obstacles crossed

The highway crosses Hermitage Stream. At the point of the bridge crossing the stream is currently a rectangular cross section with built up vertical banks crossing the proposed highway at an acute angle. The scheme is proposing to naturalise the banks of the stream and divert its path to cross the highway at a greater angle to reduce the length of bridge required.

There are no public rights of way in the area of the highway therefore no pedestrian access is required underneath the highway. The bridge is, however, to provide continuity between the existing natural habitats either side of the proposed highway to minimise the impact of the scheme to the local environment.

3. Proposed Structure

3.1. Description of structure and working life

The structure will span over the naturalised river and adjacent banks and the bridge abutments will be extended by wingwalls either side of the bridge to retain the road embankment. The 12.25 m wide deck shall be made up of precast prestressed concrete beams with a reinforced concrete slab.

The bridge structure is to have a working life of 120 years.

3.2. Structural type

The structure consists of a single span constructed from precast prestressed concrete beams made composite with a reinforced concrete deck. The beams shall be made fully integral with reinforced concrete abutments.

3.3. Foundation type

The bridge abutments are to be supported by reinforced concrete spread footings.

3.4. Span arrangements

The structure is to consist of a single span measuring 15 m between abutments with a skew angle of 7°.

3.5. Articulation arrangements

The structure will be fully integral with no bearings, articulation or movement joints between the abutments and the deck beams.

3.6. Types of road restraint systems

Class N2W2 containment parapets will be installed either side of the bridge. The design of the parapet may have architectural input to incorporate signage to form a gateway into the business park.

3.7. Proposed arrangements for maintenance and inspection

3.7.1. Traffic management

For maintenance and inspection access to the bridge deck a single lane closer will be put in place over the bridge. No traffic management will be required for maintenance and inspection access under the bridge.

3.7.2. Access

Access to the bridge deck is from the development access road. The underneath of the bridge is only accessible by foot from nearby local roads. A minimum headroom of 1.8 m is maintained under the bridge soffit to allow for access for maintenance and inspection access.

3.8. Sustainability issues considered. Materials and finishes

Materials:

All reinforced concrete: C40/50 to BS EN 206-1 with exposure classes XC3 and XD3

In accordance with the National Annex to EN 1992-1-1 $\Delta_{dev}=10$ mm, i.e. $c_{nom}=c_{min}+10$ mm

Untensioned reinforcement: Grade B500B or B500C to BS 8666 and BS 4449

Tensioned prestressing strands: BS 5896-3 standard strand-1770-12.5-relax 2

Finishes – formed surfaces:

Buried Surface	Plain concrete Class F1
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Soffit, exposed elevation wingwalls and abutments:	Plain concrete Class F2
--	-------------------------

Finishes – unformed surfaces:

Surface to receive waterproofing:	Class U4.
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(deck, parapet upstands and integral abutments down to 200mm below deck level)

Exposed surfaces:	Class U3.
-------------------	-----------

Buried surfaces	:	Class U1.
-----------------	---	-----------

All other surfaces:	Class U2.
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Reinforced concrete surface impregnation

No surface impregnation is proposed in accordance with Highway Agency Memorandum 227/08.

3.9. Risks and hazards considered

The main hazard encountered during the construction of the bridge will be working over a waterway and working at height. The deck construction from precast prestressed beams has been selected as these will be lifted into place rather than constructed over the waterway. The deck will be constructed insitu, however permanent formwork will be in place between the beams and a temporary edge restraint system will be fitted to the edge beams to prevent falls from height when working on the bridge deck.

Disruption to the local natural habitat is a risk identified for the construction of the bridge and mitigation of the impact of construction shall be considered throughout the bridge design and construction.

A Design Hazard Log will be maintained during the course of the design.

3.10. Estimated cost of proposed structure together with other structural forms considered, including where appropriate proprietary manufactured structure, and the reasons for their rejection including comparative whole life costs with dates of estimates

The initial construction cost and ongoing maintenance cost are not applicable to this AIP.

A fully integral design was chosen for the structure to minimise the ongoing maintenance requirements for the structure. A simply supported solution would have

The structural form has been chosen for ease of construction to minimise the ongoing maintenance liability. The required span of the bridge is too short for a composite steel plate girder design to be economical. With construction required over the waterway the temporary works that would be required for the construction of a solid insitu concrete slab deck

3.11. Proposed arrangements for construction**3.11.1. Traffic management**

No traffic management will be required for the construction of the bridge as there is no existing highway in the area.

3.11.2. Service diversions

No services are located within the vicinity of the bridge.

3.11.3. Interface with existing structures

There are no existing structures within the vicinity of the bridge.

4. Design Criteria

4.1. Live loading, Headroom

4.1.1. Loading relating to normal traffic under AW regulations and C&U regulations

The bridge shall be design for carriageway loading of Load Model 1 and 2 in accordance with BS EN 1991-2.

4.1.2. Loading relating to General Order traffic under STGO regulations

The bridge shall be design for carriageway loading of Load Model 3 (SV80 and SV100) in accordance with BS EN 1991-2.

4.1.3. Footway or footbridge live loading

Load Model 4 (footbridge live loading) in accordance with BS EN 1991-2 cl 4.3.5.1 shall be designed for on the verges.

4.1.4. Loading relating to Special Order Traffic, provision for exceptional abnormal loads indivisible loads including location of vehicle track on deck cross-section

No Special Order Traffic is expected to access the bridge.

4.1.5. Any special loading not covered above

None.

4.1.6. Heavy or high load route requirements and arrangements being made to preserve the route, including any provision for future heavier loads or future widening

The bridge is not located on a heavy or high load route.

4.1.7. Minimum headroom

The minimum headroom to be provided under the bridge on the river banks is 1.8 m to provide access for maintenance and inspection only.

The 1 in 100 year flood level of Hermitage Stream is 17.3 mOD with a freeboard of 600 mm required to the bridge soffit.

4.1.8. Authorities consulted and any special conditions required

The following authorities are to be consulted during the design:

- Hampshire County Council
- Portsmouth City Council
- Environment Agency

4 spare 100mm brown UPVC ducts are to be provided in each verge to allow for possible future service needs.

No other provision for utility company plant has been identified at this stage.

4.2. List of relevant documents from the TAS

See Appendix A for TAS. Non-relevant standards listed in the TAS are struck through.

4.2.1. Additional relevant standards

None required.

4.3. Proposed departures from Standards given in 4.2 and 4.2.1

None required

4.4. Proposed methods for dealing with aspects not covered by Standards in 4.2 and 4.2.1

None required.

5. Structural Analysis

5.1. Methods of analysis proposed for superstructure, substructure and foundations

All analyses will be carried out using industry recognised computer software.

The superstructure will be analysed using a 3-dimensional space grillage model incorporating the abutments and considering the construction sequence and construction loading. The concrete parapet edge beams will be included as superimposed dead loads assuming suitable discontinuities.

Local wheel load effects will be determined using Pucher charts. Elastic distribution will be undertaken for the design of the deck slab under parapet loading and accidental wheel loading. Thermal actions on the deck will be considered as per BS EN 1991-1-5. Wood- Armer equations will be used to get the final design moment.

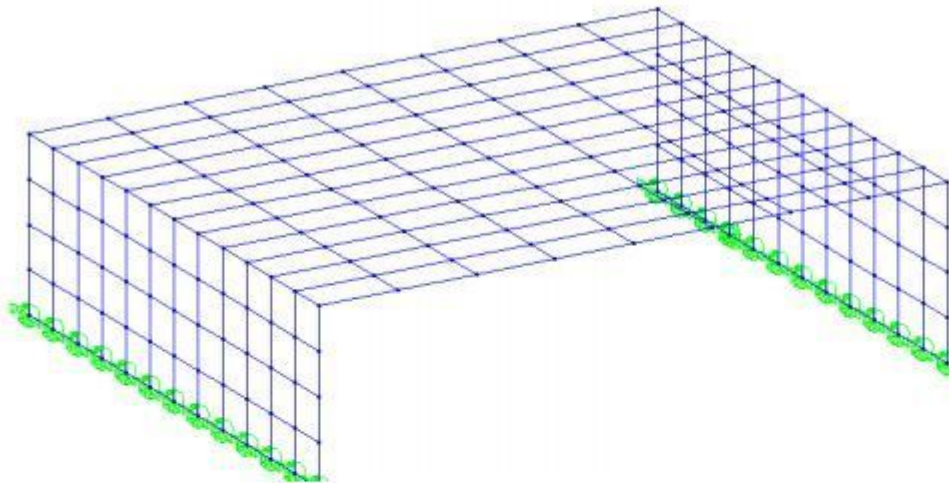
The abutments will be modelled and analysed together with the deck grillage. Upper and lower bound values for soil parameters will be used to model the founding soil and backfill material such that a realistic range of conditions is allowed for.

5.2. Description and diagram of idealised structure to be used for analysis

For global analysis, the prestressed beams will be idealised as longitudinal members and the deck slab will be idealised as transverse members in the grillage model.

The abutments walls will be modelled as vertical and transverse members rigidly connected to the deck grillage.

Idealised diagrams:



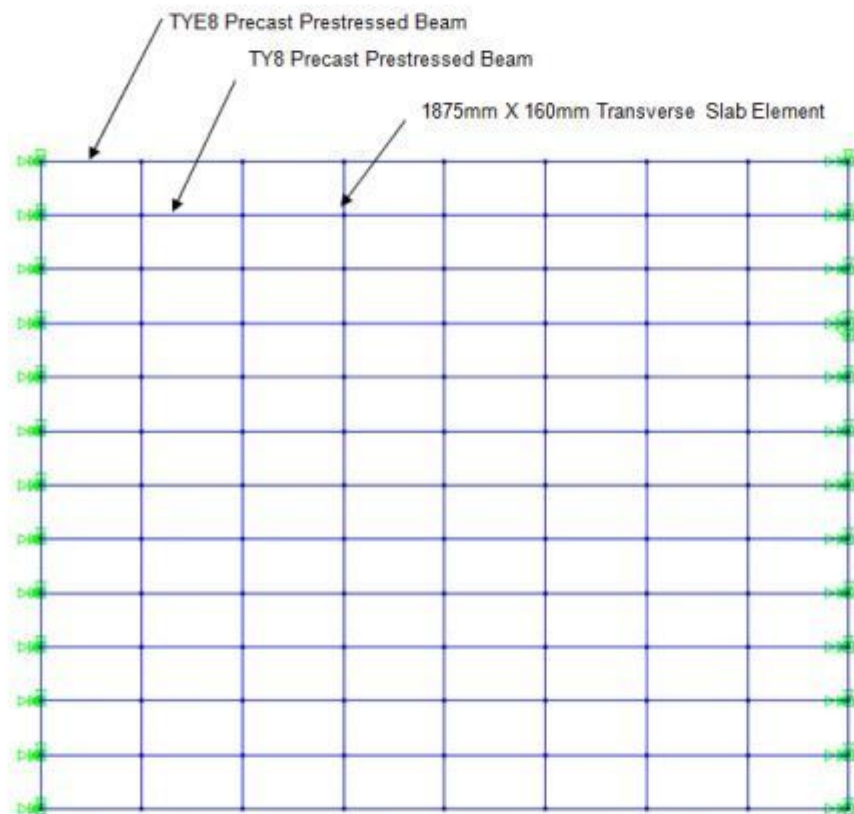
Isometric view of deck model.

Supports at the base of the wall are:

- vertical springs
- rotational springs about wall minor axis
- horizontal restraint in longitudinal and transverse directions at one corner and
- horizontal restraint in longitudinal direction at adjacent corner



Model in elevation



Element allocation (plan)

5.3. Assumptions intended for calculation of structural element stiffness

Gross section properties will be used for the bridge beam longitudinal members and for the bridge deck transverse members for analysis and design. Gross section properties will also be used for the bridge abutments.

The long term effects of creep on the structural stiffness will be accounted for by using short term and long term models for appropriate loading as recommended in BS EN 1994-2.

5.4. Proposed earth pressure coefficients (k_a , k_0 , or k_p) to be used in the design of earth retaining elements

The backfill to the abutments will be selected granular fill specific for backfill in this zone. The following earth parameters will be adopted for these elements of the design:

- $\phi' = 35^\circ$ (average value for reinforced concrete abutments with granular fill)

- $k_a = 0.27$
- $k_0 = 0.42$
- $k_p = 3.69$

6. Geotechnical Conditions

6.1. Acceptance of recommendations of Geotechnical Interpretative Report to be used in the design and reasons for any proposed changes

The recommendations of the Geotechnical Interpretative Report are accepted. Further ground investigation will be required for detailed design.

6.2. Highway Structure Summary Information (Form C)

The outline Highway Structure Summary Information Form C is enclosed in appendix C.

6.3. Differential settlement to be allowed for in the design of the structure

Differential settlement to be allowed for in the design of the structure should not exceed 50mm.

6.4. If the Geotechnical Interpretative Report is not yet available, state when the results are expected and list the sources of information used to justify the preliminary choice of foundations

The report for the preliminary ground investigation is available. Further ground investigation will be required for detailed design.

7. Checking

7.1. Proposed Category

Category 2.

7.2. If Category 3, name of proposed Independent Checker

N/A

7.3. Erection proposals or temporary works for which an independent check will be required, listing parts of the structure affected with reasons for recommending an independent check

Not applicable to this structure.

8. Drawings and Documents

8.1. List of drawings (including numbers) and documents accompanying the submission

Drawings are attached in Appendix B.

Drawing Number	Drawing Title
5099849/TP/GA/102	Plan Location
5099849/TP/BR/101	Proposed Bridge General Arrangement

9. The Above is Submitted for Acceptance

Signed Name R.N. WHEATLEY

Design Team Leader

Engineering Qualifications BENG CENG MICEName of Organisation AtkinsDate 11/1/13

**10. The Above is Rejected/Agreed Subject to
the Amendments and Conditions Shown
Below.**

Signed _____

Name _____

Position held _____

Engineering Qualifications _____

TAA _____

Date _____

A. Technical Approval Schedule (TAS)

Schedule of Design Documents Relating to Highway Bridges and Structures Using National Standards (Eurocode)

British Standards (non-conflict with Eurocodes)

BS 8006: (1995)	Strengthened/Reinforced soils and other fills
BS 8500-1: (2006)	Concrete – Complementary British Standard to BS EN 206-1 Part1: Method of specifying and guidance for the specifier
BS EN 1317-1-2010	Road Restraints Systems - Part 1 Terminology and general criteria for test methods
BS EN 1317-2-2010	Road Restraint Systems - Part 2 Performance classes, impact test acceptance criteria and test methods for safety barriers
BS EN 1317-3-2010	Road Restraint Systems - Part 3 Performance classes, impact test acceptance criteria and test methods for crash cushions
ENV 1317-4-2002	Road Restraint Systems - Part 4 Terminals and Transitions
Draft pr EN 1317-6; (August 2008)	Road Restraint Systems - Part 6 Road restraint systems - Pedestrian restraint systems - Part 6: Pedestrian Parapet.
BS EN 1337-1 (2000)	Structural bearings. General design rules
BS EN 14388 (2005)	Road traffic noise reducing devices – Specifications
BS EN 15050 (2007)	Precast concrete products. Bridge elements

Eurocodes

(To be used in conjunction with the corresponding UK National Annexes)

Eurocode 0 Basis of Structural Design

BS EN 1990 (2002 amended 2009 + NA 2004 amended 2009) Eurocode – Basis of structural design

Eurocode 1 Actions on Structures

BS EN 1991-1-1 (2002 amended 2004 + NA published 2005) Eurocode 1 – Actions on structures Part 1-1: General actions – Densities, self-weight, imposed loads for buildings

~~BS EN 1991-1-2 (2002 amended 2004 + NA published 2005) Eurocode 1: Actions on structures Part 1-2: General actions – Actions on structures exposed to fire~~

~~BS EN 1991-1-3 (2003 amended 2009 + NA published 2005) Eurocode 1 – Actions on structures Part 1-3: General actions – Snow loads~~

BS EN 1991-1-4 (2005 + NA published 2008) Eurocode 1 – Actions on structures – Part 1-4: General actions – Wind actions

BS EN 1991-1-5 (2004 amended 2004 + NA published 2007)	Eurocode 1 – Actions on structures – Part 1-5: General actions – Thermal actions
BS EN 1991-1-6 (2005 + NA published 2008)	Eurocode 1 – Actions on structures – Part 1-6: General actions – Actions during execution
BS EN 1991-1-7 (2006 + NA 2008)	Eurocode 1 – Actions on structures – Part 1-7: General actions – Accidental actions
BS EN 1991-2 (2003 amended 2004 + NA 2008)	Eurocode 1 – Actions on structures – Part 2: Traffic loads on bridges
<i>Eurocode 2 Design of Concrete Structures</i> BS EN 1992-1-1 (2004 + NA 2005)	Eurocode 2 – Design of concrete structures – Part 1-1: General rules and rules for buildings
BS EN 1992-2 (2005 + NA 2007)	Eurocode 2 – Design of concrete structures – Part 2: Concrete bridges – Design and detailing rules
BS EN 1992-3 (2006 + NA 2007)	Eurocode 2 – Design of concrete structures – Part 3: Liquid retaining and containment structures
<i>Eurocode 3 Design of Steel Structures</i> BS EN 1993-1-1 (2005 amended 2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-1: General rules and rules for buildings
BS EN 1993-1-4 (2006 + NA 2009)	Eurocode 3 – Design of steel structures – Part 1-4: Structures in stainless steel
BS EN 1993-1-5 (2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-5: General – Strength and stability of planar plated structures without transverse loading
BS EN 1993-1-6 (2007 + NA 2007)	Eurocode 3: Design of steel structures – Part 1-6: General – Strength and stability of shell structures
BS EN 1993-1-7 (2007 + NA 2007)	Eurocode 3: Design of steel structures – Part 1-7: General – Design values for plated structures subjected to out of plane loading
BS EN 1993-1-8 (2005 amended Sept 2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-8: Design of joints
BS EN 1993-1-9 (2005 amended Sept 2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-9: Fatigue strength
BS EN 1993-1-10 (2005, amended Sept 2006 + NA 2009)	Eurocode 3 – Design of steel structures – Part 1-10: Material toughness and through-thickness properties
BS EN 1993-1-11 (2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-11: Design of structures with tension components
BS EN 1993-1-12 (2007 + NA 2008)	Eurocode 3 – Design of steel structures – Part 1-12: Additional rules for the extension of EN 1993 up to steel grades S 700

BS EN 1993-2 (2006 + NA 2008)	Eurocode 3 – Design of steel structures – Part 2: Steel bridges
BS EN 1993-5 (2007 + NA 2009)	Eurocode 3 – Design of steel structures – Part 5: Piling
<i>Eurocode 4 – Design of Composite and Concrete Structures</i>	
BS EN 1994-1-1 (2005 + NA 2008)	Eurocode 4: Design of composite steel and concrete structures – Part 1-1: General – Common rules and rules for buildings
BS EN 1994-2 (2005 + NA 2007)	Eurocode 4 – Design of composite steel and concrete structures – Part 2: General rules and rules for bridges
<i>Eurocode 5 – Design of Timber Structures</i>	
BS EN 1995-1-1 (2004 amended 2008 + NA 2006)	Eurocode 5 – Design of timber structures – Part 1-1: General – Common rules and rules for buildings
BS EN 1995-2 (2004 + NA 2006)	Eurocode 5 – Design of timber structures – Part 2: Bridges
<i>Eurocode 6 – Design of Masonry Structures</i>	
BS EN 1996-1-1 (2005 amended 2006 + NA 2007)	Eurocode 6 – Design of masonry structures – Part 1-1: General rules for reinforced and unreinforced masonry structures
BS EN 1996-2 (2006 + NA 2007)	Eurocode 6 – Design of masonry structures – Part 2: Design considerations, selection of materials and execution of masonry
BS EN 1996-3 (2006 + NA 2007)	Eurocode 6 – Design of masonry structures – Part 3: Simplified calculation methods for unreinforced masonry structures
<i>Eurocode 7 – Geotechnical design</i>	
BS EN 1997-1 (2004 + NA 2007)	Eurocode 7 – Geotechnical design – Part 1: General rules
BS EN 1997-2 (2007+NA 2009)	Eurocode 7 – Geotechnical design – Part 2: Ground investigation and testing
<i>Eurocode 8 – Design of Structures For Earthquake Resistance</i>	
BS EN 1998-1 (2005 + NA 2008)	Eurocode 8 – Design for structures for earthquake resistance – Part 1: General rules, seismic actions and rules for buildings
BS EN 1998-2 (2005 amended 2009 + NA 2009)	Eurocode 8 – Design for structures for earthquake resistance – Part 2: Bridges
BS EN 1998-5 (2005 + NA 2008)	Eurocode 8 – Design for structures for earthquake resistance – Part 5: Foundations, retaining structures and geotechnical aspects
<i>Eurocode 9 Design of Aluminium Structures</i>	
BS EN 1999-1-1 (2007 + NA 2008)	Eurocode 9 – Design of aluminium structures – Part 1-1: General – common rules

BS EN 1999-1-3 (2007 + NA 2008)	Eurocode 9 Design of aluminium structures Part 1-3: Additional rules for structures susceptible to fatigue
BS EN 1999-1-4 (2007 + NA 2009)	Design of aluminium structures Part 1-4: Design of Aluminium Structures Cold formed structural sheeting

BSI Published Documents

[To be used with Eurocodes, as instructed by BD100 (DMRB 1.3.19)]

PD xxxx (Date)*	Background paper to BS EN 1990 A2
PD 6688-1-1 (Not yet published)	Background paper to the UK National Annex to BS EN 1991-1-1
PD 6688-1-4 (2009)	Background paper to the UK National Annex to BS EN 1991-1-4
PD 6688-1-5 (Not yet published)	Background paper to the UK National Annex to BS EN 1991-1-5
PD 6688-1-7 (2008)	Recommendations for the design of structures to BS EN 1991-1-7
PD 6688-2 (Not yet published)	Recommendations for the design of structures to BS EN 1991-2
PD 6687-1 (2010)	Background paper to the UK National Annex to BS EN 1992-1
PD 6687-2 (2008)	Recommendations for the design of structures to BS EN 1992-2
PD 6695-1-9 (2008)	Background paper to the UK National Annex to BS EN 1993-1-9
PD 6695-1-10 (2009)	Background paper to the UK National Annex to BS EN 1993-1-10
PD 6695-2 (2009)	Recommendations for the design of structures to BS EN 1993-2
PD 6696-2 (2007)	Background paper to BS EN 1994-2 and the UK National Annex to BS EN 1994-2
PD 6694-1 (2011)	Recommendations for the design of structures subject to traffic loading to BS EN 1997-1:2004
PD 6697 (2010)	Recommendations for the design of masonry structures to BS EN 1996-1-1 and BS EN 1996-2
PD 6698 (2009)	Background paper to the UK National Annexes to BS EN 1998-1, 1998-2, 1998-4, 1998-5 and 1998-6
PD 6703 (2009)	Structural bearings Guidance on the use of structural bearings
PD 6705-2 (2010)	Structural use of steel and aluminium. Recommendations for the execution of steel bridges to BS EN 1090-2

Execution Standards

BS EN 1090-1: 2009	Execution of steel structures and aluminium structures. Requirements for conformity assessment of structural components
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BS EN 1090-2: 2008	Execution of steel structures and aluminium structures. Technical requirements for the execution of steel structures
BS EN 1090-3: 2008	Execution of steel structures and aluminium structures. Technical requirements for the execution of aluminium structures
BS EN 13670: 2010	Execution of concrete structures

Miscellaneous

~~Circular Roads No 61/72 – Routes for heavy and high abnormal loads (refer to the website <http://www.esdal.com>)~~

Traffic Management Act 2004

Construction (Design and Management) Regulations 2007

The Manual of Contract Documents for Highway Works (MCDHW)

- Volume 1: Specification for Highway Works (May 2009)
- Volume 2: Notes for Guidance on the Specification for Highway Works (May 2009)
- Volume 3: Highway Construction Details (May 2009)

**The Design Manual for Roads and Bridges (DMRB)
General Requirements, Standards (GD Series)**

- GD 01/08 Introduction to the Design Manual for Roads and Bridges (DMRB)
- GD 02/08 Quality Management Systems for Highway Design
- GD 03/08 Implementation and Use of the Standards Improvement System

Bridges and Structures, Advice Notes (BA Series)

- ~~BA 28/92 – Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures~~
- BA 41/98 The Design and Appearance of Bridges
- ~~BA 43/94 – Strengthening, Repair and Monitoring of Post-tensioned Concrete Bridge Decks~~
- BA 47/99 Waterproofing and Surfacing Concrete Bridge Decks
- BA 57/01 Design for Durability
- ~~BA 67/96 – Enclosure of Bridges~~
- ~~BA 82/00 – Formation of Continuity Joints in Bridge Decks~~
- ~~BA 83/02 – Cathodic Protection for Use in Reinforced Concrete Highway Structures~~
- ~~BA 84/02 – Use of Stainless Steel Reinforcement in Highway Structures~~

- BA 85/04 Coatings for Concrete Highway Structures & Ancillary Structures
- ~~BA 86/06 Advice Notes on the Non-destructive Testing of Highway Structures~~
- BA 92/07 The Use of Recycled Concrete Aggregates in Structural Concrete

Bridges and Structures, Standards (BD Series)

- BD 2/05 Technical Approval of Highway Structures
- ~~BD 7/01 Weathering Steel for Highway Structures~~
- ~~BD 10/97 Design of Highway Structures in Areas of Mining Subsidence~~
- ~~BD 29/04 Design Criteria for Footbridges~~
- ~~BD 35/06 Quality Assurance Scheme for Paints and Similar Protective Coatings~~
- BD 36/92 Evaluation of Maintenance Costs in Comparing Alternative Designs for Highway Structures
- BD 43/03 The Impregnation of Reinforced and Prestressed Concrete Highway Structures using Hydrophobic Pore-Lining Impregnants
- BD 47/99 Waterproofing and Surfacing of Concrete Bridge Decks
- ~~BD 51/98 Portal and Cantilever Signs/Signal Gantries~~
- BD 57/01 Design for Durability
- ~~BD 67/96 Enclosure of Bridges~~
- ~~BD 78/99 Design of Road Tunnels~~
- ~~BD 91/04 Unreinforced Masonry Arch Bridges~~
- ~~BD 94/07 Design of Minor Structures~~
- BD 100/10 Use of Eurocodes for the Design and Construction of Highway Structures (Draft rev 02 dated July 2009, not yet published)

Bridges and Structures, Technical Memoranda (BE Series)

- ~~BE 7/04 Motorway Sign/Signal Gantries~~

Traffic Engineering and Control, Standards and Advice Notes (TD and TA Series)

- ~~TD 9/93 Highway Link Design~~
- ~~TD 89/08 Use of Passively Safe Signposts, Lighting Columns & Traffic Signal Posts to BS EN 12767~~
- ~~TD 27/05 Cross Sections and Headroom~~
- ~~TD 36/93 Subways for Pedestrians and Cyclists, Layout and Dimensions~~

TD 19/06 Requirements for Road Restraint Systems

Highways, Advice Notes (HA Series)

~~HA 66/95 Environmental Barriers – Technical Requirements~~

HA 84/01 Nature Conservation and Biodiversity

HA 59/92 Mitigating against Effects on Badgers

HA 80/99 Nature Conservation Advice in Relation to Bats

HA 81/99 Nature Conservation Advice in Relation to Otters

HA 97/01 Nature Conservation Management Advice in Relation to Dormice

HA 98/01 Nature Conservation Management Advice in Relation to Amphibians

Highways, Standards (HD Series)

HD 22/08 Managing Geotechnical Risk

Interim Advice Notes (IAN Series)

IAN 123/10 Use of Eurocodes for the design of highway structures

~~IAN 01/95 TD 37/93 Scheme Assessment Reporting~~

IAN 03/96 BA 50/93 Post Tensioned Concrete Bridges

~~IAN 04/96 BD 44/95 The Assessment of Concrete Highway Bridges and Structures~~

IAN 05/96 BD 24/92 The Design of Concrete Highway Bridges and Structures. Use of BS 5400: Part 4:1990

~~IAN 36/01 The Use and Application of Micro Simulation Traffic Models~~

~~IAN 39/01 Post Opening Project Appraisal (POPE)~~

IAN 41/02 European Cement Standards

~~IAN 42/02 Traffic Speed Condition Surveys: Revised Assessment Criteria~~

~~IAN 47/02 Post Tensioned Grouted Duct Concrete Bridges~~

IAN 48/03 Measures To Minimise The Risk of Sulphate Attack (Including Thaumasite) - New Construction and Structures Under Construction

~~IAN 49/03 Use of Warning Signs For New Asphalt Road Surfaces~~

~~IAN 53/04 Concrete Half Joint Deck Structures~~

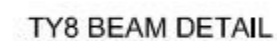
~~IAN 56/04 Maintenance Of Traffic Signs With Dew Resistant Coatings~~

- ~~IAN 63/05 rev 1 Asbestos Management Applicable To The Strategic Road Network~~
- ~~IAN 64/05 — Driver Information At Road Works~~
- ~~IAN 68/05 — Infrastructure changes to improve emergency access to and egress from the trunk road network in England~~
- IAN 69/05 Designing for Maintenance
- IAN 70/06 Implementation Of New Reinforcement Standards (BS 4449:2005, BS 4482:2005, BS 4483:2005 and BS 8666:2005)
- ~~IAN 71/06 — Marker Posts On Lay-By Segregation Islands~~
- ~~IAN 73/06 rev 1 Design of Pavement Foundations~~
- ~~IAN 75/06 — Code of Practice for Emergency Access to and Egress from the Trunk Road Network in England~~
- ~~IAN 83/06 — Principal and General Inspection of Sign/Signal Gantries, and Gantries with low handrails or open-mesh flooring~~
- ~~IAN 84/07 — Environmental Information System (EnvIS)~~
- ~~IAN 85/07 — Design of Passively Safe Portal Signal Gantries~~
- ~~IAN 86/07 — Amendments To Design Requirements For Portal And Cantilever Sign/Signal Gantries~~
- ~~IAN 87/07 — The Provision Of Signal Gantries For Motorways With Four Or More Running Lanes~~
- ~~IAN 90/07 rev 1 Guidance For The Use Of Rapid Setting Emergency Repair Materials~~
- ~~IAN 91/07 — Interim Advice on the identification of 'Particularly at Risk' Supports~~
- ~~IAN 93/07 — Driver location signs — Interim Performance Specification~~
- IAN 95/07 Revised guidance regarding the use of BS8500(2006) for the design and construction of structures using concrete
- IAN 96/07 rev 1 Guidance On Implementing Results Of Research On Bridge Deck Waterproofing
- ~~IAN 97/07 — Assessment and upgrading of existing parapets~~
- ~~IAN 98/07 HD 28 / Guidance for HA Service Providers on Implementing the Skid Resistance Policy~~
- ~~IAN 99/07 — Implementation of Local Grid Referencing System for England~~
- ~~IAN 100/07 — Cultural Heritage Asset Management Plans~~
- ~~IAN 103/08 — Ramp metering~~

B. General Arrangement Drawing



- [illegible]



SECTION A-A

Client	PORTSMOUTH CITY COUNCIL
Project	DUNSBOURY HILL FARM STAGE 2

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION				
IN ADDITION TO THE HAZARDS/ RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT PERSONAL RISKS				
CONSTRUCTION				
NONE				
MAINTENANCE/CLEANING				
NONE				
USE				
NONE				
DECOMMISSIONING/DEMOLITION				
NONE				
Title				
BRIDGE GENERAL ARRANGEMENT				
Sheet Size	Original Scale	Designed/Drawn C.J.H.	Checked S.B.	Authorised I.P.C.
A3	NTS	Date 03.11.11	Date 04.11.11	Date 04.11.11
Status	Drawing Number	Rev		
P	5099849/TP/BR/101	B		

C. Highway Structure Summary Information (Form C)

DUNSBURY HILL FARM
FORM C: HIGHWAY STRUCTURE DESIGN SUMMARY

STRUCTURE NAME: River Bridge		CHAINAGE:		Reference/ comments			
STRUCTURE TYPE: Single span integral bridge		APPROXIMATE LEVEL OF CARRIAGEWAY: 18.0m OD					
MAX-MIN RETAINED HEIGHT: N/A		AIP Ref. No. 5099849/Dunsbury Bridge Structure AIP					
RELEVANT DRAWING NUMBER: 5099849/TP/BR/101B.		DESIGN LIFE: 120 years					
SOILS/GEOLOGY		RELEVANT TRIAL HOLES:					
		BH102					
Strata		Typical levels at the top of layers (thickness)					
Firm slightly sandy CLAY (Head Deposits)		19.05 (2.10m)					
Medium dense slightly clayey SAND (Bognor Sand)		16.95 (3.20m)					
Stiff slightly fine sandy, locally silty CLAY (London Clay)		13.75 (Not proven, >9.70m)					
PREVIOUS GROUND HISTORY: Agricultural							
CONTAMINATED GROUND RISK ASSESSMENT REQUIRED: No							
GROUNDWATER: Struck at 5.00m depth (14.05m OD), rose to 3.15m depth (15.90m OD) in 20 minutes. Adjacent to Hermitage Stream (River Bed Level: 16.14m OD).							
DESIGN SOIL PARAMETERS	Stratum	γ (kN/m ³)	Φ' (deg)	c' (kPa)	v	E' (MPa)	K_o
	Head Deposits	19.5	23	0		7.3	0.61
	Bognor Sand	19.1	33	0		20	0.45
	London Clay	19.5	23	0		18	0.61
Wall Friction ($\delta/\Phi' = 0.67$)							

BEARING CAPACITY						
Structure Element	Founding Stratum	Founding Level (m AOD)	Footing Size	Allowable Bearing Pressure (kN/m ²)		
North Abutment	Bognor Sand	~15.75	13.0 x 5.0 approx	~250		
South Abutment	Bognor Sand	~15.75	13.0 x 5.0 approx	~250		
PILE DESIGN						
Chainage	Founding Stratum	Toe Level (m AOD) Approx.	Pile type (mm)	Pile Length (m)	Intermediate Pile Length (m)	Pile Working Load (kN)
Pile type: None Unplanned Excavation: N/A Criteria for selecting pile toe level: N/A Maximum Deflections: N/A Allowance for negative skin friction within design: N/A						
SETTLEMENT						
Structural Element	Founding Level (mAOD)	Immediate Settlement (mm)	Total Settlement (mm)	Time for 90%	Settlement Remaining at Completion (mm)	
North Abutment	~15.75		<25			
South Abutment	~15.75		<25			
GROUND MOVEMENTS						
Associated Earthworks						
Cause of Movement	Settlement due to Embankment Loading	Heave due to Cutting Excavation	Subsidence Due to Mineral Extraction	Flowing Water	Other	
Maximum Movement (mm)	N/A	N/A	N/A	N/A	N/A	
Measures to Deal with Movement	N/A	N/A	N/A	N/A	N/A	
CHEMICAL ANALYSIS						
type of test/sample	soil	soil:water (2:1 ex)	water	other		
Sulphate (as SO ₄)	0.15g/l	0.07g/l	--	0.03% (Acid)	(Bognor Sand)	
Chloride	0.01%	--	--	--		
pH	6.7	8.0	--	--		

redox	--	--	--	--	
other	--	--	--	0.07% (Elemental sulphur)	
Buried Concrete classification... Class DS-1/AC-1s/DC-1					BRE SD1
Corrugated Steel Culvert ground/water classification: N/A					
OTHER DESIGN FEATURES:					
Fully integral single span road over river bridge					
NOTES					
Foundation design yet to be carried out. Information provided is of a preliminary nature for planning purposes.					

Contact name
Address

Email:
Telephone:
Direct telephone:
Fax:

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