West Berkshire Council	**West Berkshire Local Plan Review 2022-2039** **Proposed Submission Representation Form** **Ref:** *(For official use only)*

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- *We cannot register your representation without your details.*
- *Representations cannot be kept confidential and will be available for public scrutiny, however, your contact details will not be published.*
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	Your details	**Agent's details (if applicable)**
Title:	Englefield Estate (C/o Firstplan Ltd)	Ms
First Name:*		Vilna
Last Name:*		Walsh
Job title *(where relevant):*		Director
Organisation *(where relevant):*		Firstplan Ltd (O.B.O Englefield Estate)
Address* *Please include postcode:*		Broadwall House 21 Broadwall London SE1 9PL
Email address:*		[redacted]
Telephone number:		020 3096 7000

**Mandatory field*

FiRSTPLAN

Response by: Englefield Estate – Land West of Wigmore Lane, Theale (March 2023)

Proposed Submission (Reg 19) West Berkshire Local Plan Review (Draft January 2023)

LPA Ref:	Proposed Submission (Reg 19) West Berkshire Local Plan Review (Draft January 2023)
Firstplan Ref:	22456/vw
Status:	Final Submission
Date:	2 March 2023

CONTENTS

APPENDICES *(Separately Bound)*

SECTION 1: INTRODUCTION

1.1 The following statement of objection is made by Firstplan Ltd ('Firstplan') on behalf of the Englefield Estate with respect to the West Berkshire Proposed Submission (Regulation 19) Local Plan Review ('LPR') which opened for consultation between January - March 2023.

1.2 The issues raised by the Englefield Estate and changes sought to the LPR are all interlinked and relate principally to the omission of the LPR to appropriately identify the potential for the existing Theale Rail-Road Transfer Site to expand and grow. The currently adopted Local Plan allows for the potential for growth of the Rail-Road facility at Theale. Similarly earlier stages of the Local Plan Review, specifically the Regulation 18 (Emerging Draft) Consultation (December 2020) identified the importance to the local economy that the site continues to be protected 'and grows'. The adopted Local Transport Plan has a specific freight policy encouraging sustainable freight transportation by rail. The emerging LTP4, at time of writing under consultation, similarly supports improving freight including the transition to more sustainable modes. It also makes direct reference under the auspices of 'support for sustainable growth' to a Theale Strategic Rail Freight Interchange and that this proposal would help, amongst other things, improved strategic connectivity. Critically there is of course at national level significant policy drivers which support the need to ensure that there is potential for sites such as that at Theale which offer the opportunity for modal shift to be allowed to grow.

1.3 Network Rail ('NR') has approached Englefield Estate with a view to investigating the key potential that land in the Estate's ownership offers to secure modal shift from road to rail in accordance with national policy and meet identified market demand for further rail served facilities in this location. Specifically the land west of Wigmore Lane and west of the existing Theale Rail-Road Transfer Site, in the ownership of the Englefield Estate, has been identified as one of only 4 candidate sites in the South East able to accommodate an Intermodal Rail Freight Interchange ('IRFI'). Indeed, the Theale site has been identified as the only site capable of serving the western end of the region.

1.4 Network Rail and Englefield Estate are now working jointly to review development options for the land west of Wigmore Lane, in particular in terms of operationally suitable options for the delivery of necessary rail siding infrastructure. The proposals are at an early stage and at the appropriate time will need to be reviewed via pre-application consultation with West Berkshire, and be subject to detailed design development and full assessment as part of a formal planning application submission. NR and the Englefield Estate are also working jointly with Beftonforth Limited ('Beftonforth') owners of the last piece of remaining undeveloped land within the existing Theale Rail-Road Transfer site to ensure an integrated approach.

1.5 Given that land west of Wigmore Lane is the only location identified as being available to provide for additional transfer of freight from road to rail to serve this part of the South East region it is critical that capability for this to grow continues to be supported in the LPR. This is alongside continued support for aggregates traffic within the existing Theale Rail-Road Transfer Site.

1.6 For these reasons it is considered that at minimum the LPR should reinstate wording which supports the growth of the existing Theale Rail-Road Transfer Site. Additionally, that the LPR should identify land west of Wigmore Lane as a potential site to support the provision of an intermodal facility for the transport of consumer goods by rail into the region, subject of course to addressing key environmental considerations at planning application stage.

1.7 Rail freight sites such as that at Theale are key to supporting the transfer of as much freight as possible from road to rail and there is a key policy drive which supports this. Securing new sites for rail freight is particularly challenging both in terms of land availability, securing connections to the main line and costs. Where potential for growth exists such as at Theale it is considered that the only 'sound' approach should be to support that potential and seek to secure the benefits that increased rail freight provision provides in terms of reductions in associated HGV road miles, emissions savings, and the meeting of decarbonisation targets and net-zero objectives.

1.8 All of the matters raised by Englefield Estate to the Regulation 19 Consultation are inextricably linked and relate directly to the failure to appropriately consider the contribution that sustainable transport of freight has to play in terms of climate change and transport policy as well as the specific opportunity offered by the growth if the existing Theale rail site.

1.9 In preparing this statement, specific regard has been had to the requirement of Response Form Question 2 to provide details of why it is considered the LPR is unsound. Specific regard has also been had to the requirement of Response Form Question 4 to provide the modifications considered necessary to make the Local Plan sound, and why the modifications are required.

1.10 On this basis it is considered that the LPR, if progressed as currently envisaged, fails the test of soundness in that it has not been positively prepared, is not justified and is not consistent with national policy.

1.11 It is confirmed that separate representations have been made by NR and Beftonforth. However, there has been close working on the drafting of the respective submissions which each include an agreed 'Joint Working Statement' and an agreed 'Schedule of Required Changes'.

SECTION 2: RELEVANT BACKGROUND AND SITE INFORMATION

(a) <u>Existing Theale Rail-Road Transfer Site</u>

2.1 Currently the Theale Rail-Road Transfer Site, as identified at Figure 1 (located at the end of Section 2 of this Statement), is primarily a rail aggregates and cement terminal with associated manufacturing plant (asphalt and concrete batching plants), material storage and ancillary structures. It also includes the Puma Energy Oil Depot. It is serviced by a series of rail sidings. Network Rail confirm that rail traffic generated by the existing site will continue to grow.

2.2 The existing Theale Rail-Road Transfer Site is bounded to the south by the main Great Western Railway ('GWR') from which rail access is taken. Vehicular access to the existing facility is via Wigmore Lane and then onto the A4 Bath Road.

2.3 The A4 connects to Junction 12 of the M4 motorway some 2km to the north-east. The settlement of Theale is located a shorter distance to the north east.

(b) <u>Beftonforth Land</u>

2.4 The Beftonforth land, as identified at Figure 1, lies between the Puma Energy Oil Depot and the mainline railway. The land has been derelict for many years and was formerly a builder's yard. Critically it is the last remaining parcel of undeveloped land within the existing rail freight site, defined as the 'Rail Industry Theale' allocation in the adopted West Berkshire Core Strategy Policies Map, and specifically referenced under Saved Policy ECON.7, to come forward for development.

2.5 Since 2021 Network Rail and Beftonforth have been working jointly to secure further rail served development supported by a new access road and new rail siding. It is understood that the new rail siding will be used to import aggregates and that Network Rail Operational Division have confirmed that the Beftonforth land would have a likely maximum capacity of 375,000 tonnes of aggregates per annum. This transfer of freight from road to rail will secure significant sustainability and environmental benefits.

2.6 It is noted that the existing Theale Rail-Road Transfer Site, including the Beftonforth land, continues to be identified on the draft LPR Policies Map for its rail freight functions as well as under Draft Policy DM43. This approach is fully supported.

(c) <u>Land West of Wigmore Lane</u>

2.7 A rail industry led, Great British Railways Transition Team ('GBRTT') national review of potential Intermodal Rail Freight Interchange ('IRFI') sites was undertaken in Spring 2022. This worked through a sequence of a) existing operational sites; b) non-operational sites with existing main line connections;

c) sites with previous main line connections; and d) other sites with potential merits in terms of location and accessible rail. The overall objective was to identify a future pipeline of sites able to provide additional capacity in the event of existing Intermodal or Strategic Rail Freight Interchange facilities being exhausted, and/or where no material capacity exists at present to serve particular regions or sub-regions (e.g. South West or South East).

2.8 From the original long list of over 600 sites nationally, a high-level search for suitable locations for IRFI identified only 4 sites following the first sift within the South East. Of these land west of Wigmore Lane (and west of the existing Theale Rail-Road Site) has been identified as the only site capable of serving the western end of the region. The assessment concluded that scope exists to create an intermodal facility subject to land availability (land is not in the ownership of the rail industry) and flood risk mitigation.

2.9 Network Rail Operational Division and Engineering Team have looked in detail at all existing rail sidings at Theale and their relationship to the mainline and regional railway lines, and they have concluded that the only site that can accommodate an IRFI is the land west of Wigmore Lane.

2.10 On this basis, Network Rail has subsequently engaged with Englefield Estate, the owners of the land west of Wigmore Lane with a view to investigating the key potential the land offers to secure modal shift from road to rail and meet identified demand for further rail served development in this location. As a result NR and the Estate are working jointly to review development options for the land in particular in terms of operationally suitable options for the delivery of necessary siding infrastructure. The proposals are at an early stage an at the appropriate time will need to be reviewed via pre-application consultation with West Berkshire, be subject to detailed design development and full assessment as part of a formal planning application. Initial engagement has also been had with West Berkshire Council in respect of the potential this site offers in rail freight terms.

2.11 The extent of the land west of Wigmore Lane currently being considered for development is indicatively identified at Figure 1. This will be subject to change/refinement based on further design development, assessment and pre-application review as detailed.

2.12 The site is currently open agricultural land, with frontage to the A4 Bath Road to the north and Wigmore Lane to the east. There are a number of residential properties located on Wigmore Lane with views over the site. The existing Theale Rail-Road Transfer Site is located east of Wigmore Lane. The Great Western Railway line forms the southern boundary, with open land and the River Kennet beyond. To the west there is further open agricultural land. To the north, and separated by the A4 Bath Road, lies the boundary of the North Wessex Downs Area of Outstanding Natural Beauty ('AONB') and further to the north the Englefield Park Registered Park and Garden.

(d) <u>Joint Working between Network Rail, Beftonforth and the Englefield Estate</u>

2.13 It is confirmed that NR, Beftonforth and Englefield Estate have been liaising with regard to the Beftonforth proposals and NR's identification of the potential that land West of Wigmore Lane offers for rail freight expansion and growth. It is understood by all parties that growth of the existing Rail-Road Transfer site will require close working between the three parties.

2.14 In this respect Network Rail, Beftonforth and Englefield Estate have agreed to work together to ensure that any rail-based development on the allocated Beftonforth land, and particularly the design of the new rail sidings, will not prejudice or preclude the opportunity to extend the rail siding westwards into the land west of Wigmore Lane should that be required to allow for the expansion and growth of the existing Rail-Road Transfer site.

2.15 The following joint statement is agreed between the three parties:

> ***It is confirmed that Network Rail, Beftonforth and Englefield Estate have been liaising with regard to the Beftonforth proposals and Network Rail's identification of the potential that land west of Wigmore Lane offers for expansion. It is understood by all parties that growth of the existing Theale Rail-Road Transfer Site will require close working between the three parties and that connection to the main line for land west of Wigmore Lane would ideally be taken via the Beftonforth Land.***
>
> ***All parties are committed to working jointly to ensure that development of the Beftonforth land is brought forward for rail freight use in accordance with the current Development Plan and that the potential for the future growth of rail freight provision at Theale on land west of Wigmore Lane is safeguarded and protected.***
>
> ***There is agreement that the provision for future rail expansion must be taken into consideration and all siding designs on the Beftonforth land will not fetter further rail connections to the west (land west of Wigmore Lane).***

2.16 There is further agreement between NR and Englefield Estate that:

> ***Rail connection of land west of Wigmore Lane could potentially be provided direct to the main line.***
>
> ***Expansion of rail freight development on land west of Wigmore Lane will give rise to a requirement to reduce risk at the pedestrian crossing of the GWR main line to the southeast of the proposed expansion site. This will require the provision of a footbridge.***

2.17 Network Rail and Beftonforth are making their own representations to the Local Plan Review which, amongst other things, reflect the above position as relevant to each party. The representations made by Network Rail and Beftonforth provide further detailed consideration of the relevant planning considerations the LPR give rise to from their respective perspectives. It is confirmed that the Englefield Estate is fully supportive of the respective representations made and are in agreement in particular with regard to points of objection raised, points of soundness identified and required changes.

(e) <u>Illustrative General Arrangement</u>

2.18 It is fully acknowledged that whilst there is a policy drive and support for rail freight growth any proposals which may come forward on land west of Wigmore Lane for rail related development will give rise to a number of key considerations that will need to be addressed. These include:

demonstrating need/demand (including consideration of alternative sites); flood fisk considerations; AONB considerations; ensuring appropriate access can be secured and other highway considerations addressed; and amenity considerations with regard to residents at Wigmore Lane.

2.19 These are all issues which would need to be assessed and considered at pre-app stage, through detailed design and then fully assessed and considered at planning application stage. However, to facilitate understanding of the proposals initial work has been undertaken for the purposes of the LPR consultation response to assist in demonstrating that a scheme could come forward which could appropriately deal with the key issues and constraints which apply and critically that there are no alternative sites which could come forward. The initial work undertaken in on the basis of one development option but more detailed consideration of the site both in terms of the identified environmental and amenity considerations and specific end user needs could of course produce other development options.

2.20 An initial illustrative option of one way in which the proposed IRFI could come forward has been produced by Intermodality the appointed rail freight consultant. An Illustrative General Arrangement Plan is attached at Appendix E of Intermodality's 'Expanding Rail Freight Facilities at Theale' Report provided at Appendix 1 to this Statement. For ease of reference it is reproduce at Figure 2 (provided at the end of Section 2 of this Statement).

APPENDIX 1

2.21 The illustrative layout for the IRFI follows the established pattern of design, development and uses for such developments, and key features include:

- A level area of hardstanding enclosed by securing fencing to prevent unauthorised access (concrete pad circa 750m in length and minimum 30m in width);
- Main line access which could be provided via the existing complex of freight sidings serving the Wigmore Lane site immediately to the east;
- Highways access direct from the A4 into the site from the north;
- Sidings within the site capable of accommodating 1-2 x 775m length trains simultaneously;
- Portable modular buildings providing gatehouse and ancillary office/amenities for staff and visitors;
- Container handling equipment, typically "reachstacker" units;
- Temporary container storage stacking up to 3-4 high (9-12m);
- Lighting columns, typically up to 18m in height around the perimeter, with directional lighting to minimise light spill onto adjacent areas.

2.22 In addition, and having specific regard to identified potential site constraints as a result of the site's location within an area of high flood risk, in proximity to an AONB and residential uses, as well as proximity to a level crossing the following additional requirements have been identified:

- Flood water displacement that would be caused by the development could be offset by compensation on other areas of land within the ownership of the Englefield Estate and in close proximity to the proposed development (potentially to the west).

- Provision of a robust landscape mitigation scheme – to provide screening and separation between any proposed development and the AONB Boundary and existing residential receptors including those at Wigmore Lane.

- Potential to deliver an improved and upgraded pedestrian crossing of the GWR mainline to the south of the site. The Englefield Estate controls land on the southern side of the main line and therefore there is potential to replace the crossing with a footbridge.

(f) <u>Expanding Rail Freight Facilities at Theale</u>

2.23 As referenced, Intermodality the appointed rail freight consultancy has produced a report titled 'Expanding Rail Freight Facilities at Theale' (attached at Appendix 1). The report considers the provision of IRFI sites within the South East and the role that the Theale site could play in addressing public policy and industry requirements for promoting mode shift of freight from road to rail. This draws on recent work undertaken for Great British Railways on behalf of the Department for Transport.

2.24 The Report, amongst other things:

- Reviews the development of Strategic Rail Freight Interchanges ('SRFI') and Intermodal Rail Freight Interchanges ('IRFI') in terms of their roles, the public policy framework supporting their expansion, and key criteria for identifying suitable potential locations.

- Considers the market for intermodal rail services, and the provision of IRFI across the regions against key demographic and economic indicators, to determine the extent of "levelling up" required in some regions to address a shortfall of provision compared to other regions with a more established network of sites.

- Sets out the methodology for identifying potential suitable sites in the South East, and the relatively small number of sites emerging from the analysis.

- Considers the local context for the Theale site within the "Western Corridor" opportunity area, indicating how an IRFI at this location might improve access to the rail network for existing local companies, as well as intercept existing road-based freight flows and reduce the road miles currently associated with this traffic.

2.25 The Report concludes that for the South East analysis suggests the share of the identified untapped demand for intermodal rail services could be in the order of 27 trains per day, or the equivalent of 6 x IRFI where currently none exist. However, a high level nationwide search for suitable locations, from an initial longlist of over 600 sites, identified only 4 potential candidate sites in the South East which is described as one of the largest concentrations of economic and freight transport activity in the country. Of these 4 potential candidate sites, Theale has been identified as the only site capable of serving the western end of the region.

2.26 The Report confirms that Government has acknowledged the wider challenge of delivering facilities for rail freight within the South East with only one of the original 4 Strategic Rail Freight Interchanges (‘SRFI’) envisaged around the M25 ultimately being taken forward and securing planning consent. Sites such as Theale are therefore of critical importance for realising public policy commitments to transport decarbonisation and freight mode shift, and for those operators and users of freight services wishing to reduce dependence on road haulage for operational, commercial and environmental reasons.

(g) Initial Assessment of Illustrative Development Option

2.27 Initial assessment work has been undertaken to consider the illustrative development option in the context of key planning and technical considerations. This serves to underpin the fact that land west of Wigmore Lane could reasonably come forward to support the expansion of the Rail-Road Transfer Site at Theale. The assessment work is proportionate to the early stage at which the project is at and to the LPR response it is addressing.

(i) Access/Highways

2.28 A Transport Technical Note (‘TN’) has been produced by i-Transport and is attached at Appendix 2. The TN assesses the site, at a high level, against the three key transport tests for development at paragraph 110 of the National Planning Policy Framework (‘NPPF’).

APPENDIX 2

2.29 The Illustrative General Arrangement Plan development assessed would be expected to accommodate six freight trains per day. The proposed rail siding to the site, as indicated on the Illustrative Plan are via a connection to the existing rail head at the Theale Depot, although a connection could potentially be provided to the main line. It is not proposed to link the site to the existing Theale Depot other than by rail. Road access would be via a new connection to the A4 Bath Road.

2.30 Road access to the site is identified as being achievable via the introduction of a new signalised junction with the A4 Bath Road designed in line with the prevailing design guidance and shown to achieve the required visibility splays. The junction could also bring forward improved pedestrian connections and improvements to the Milehouse Cottages bus stops. Capacity testing has been undertaken which demonstrates that the junction can adequately accommodate the traffic demands of the envisaged development.

2.31 The proposals are also identified as having the potential to deliver other infrastructure to improve sustainable travel connections. In particular, the envisaged development has the potential to deliver an improved and upgraded pedestrian crossing of the GWR mainline to the south of the site which is currently an uncontrolled pedestrian crossing. This would provide improved pedestrian safety in particular for users of the exiting Wigmore Lane PRoW.

2.32 Whilst the proposed development will generate additional local traffic (albeit still focused on the primary road network), the delivery of a rail freight interchange at Theale will significantly reduce the number of trunk HGV trips as these goods will now be moved by rail over long distances before being switched to local HGVs for the final mile delivery (within the indicative 15-mile catchment area identified). The proposed interchange has the potential to remove up to 540 long distance HGV movements per day which will result in a significant reduction in vehicle miles travelled over long distance (easing congestion and improving safety); and potentially reducing vehicle emissions.

2.33 The Transport TN concludes that the assessment undertaken demonstrates that the delivery of an IRFI at land west of Wigmore Lane, Theale is feasible in transport terms and will meet the transport objectives/test as set out in the NPPF as.

- The site will readily take up opportunities for access for sustainable transport modes and will deliver new sustainable transport infrastructure.
- Safe and suitable access can be achieved via a new signalised junction with the A4 Bath Road; and
- The local traffic impacts are acceptable (the proposal will also reduce long distance HGV trips on the strategic road network).

(ii) Flood Risk

2.34 A Flood Risk Technical Note has been produced by AECOM and is attached at Appendix 3. The Flood Risk TN confirms that the land west of Wigmore Lane is located in Flood Zone 3- floodplain of the River Kennet. The proposed development is considered 'Essential Infrastructure'. In this context the TN considers the proposal against NPPF requirements and in particular the application of the sequential test and the exception test.

APPENDIX 3

2.35 With regard to the sequential test the TN considers that whilst sequential test considerations will need to be reviewed more fully at pre-application and application stage, the rail industry assessment work conducted to date both by GBRTT and NR is clear in demonstrating that there are no reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding within the LPR area or indeed for some significant distance beyond. Given the extremely limited number of candidate sites for IRFI across the South East, one of the largest concentrations of economic and freight transport activity in the country, there are clear sustainability advantages which would arise from the proposals. Moreover one of the key benefits of location at Theale is that it allows the potential for connection to the mainline via the existing freight facility. On this basis it is concluded at this stage that due to the very specific requirements of the development envisaged that it is not possible for the development to be located in an area of lower risk of flooding and that the sequential test would be passed.

2.36 With regard to the exception test the TN concludes that this is expected to be passed in that the sustainability and environmental benefits that would be secured by additional rail freight development in this location are significant. Through increasing the use of rail transport and securing modal shift from road to rail, the benefits include reducing long distance HGV movements, reducing Greenhouse Gas (‘GHG’) emissions and supporting the achievement of net zero objectives as well as wider sustainability benefits linked to the local economy and the ability to serve regional manufactures, suppliers and consumer markets. In addition, the development will be raised above the projected flood levels for the area. Where the development footprint impacts upon the existing floor zone 3, flood compensation will be provided on a level for level basis following detailed modelling, and can be provided on land under the ownership of the same landowner.

(iii) Landscape and Visual Appraisal

2.37 A Landscape and Visual Appraisal (‘LVA’) has been produced by Nicholsons and is attached at Appendix 4.

APPENDIX 4

2.38 The baseline landscape appraisal found that the most sensitive receptor is the setting of the Site, and in particular the countryside to the north-west that falls within the North Wessex Downs AONB, a nationally important landscape. Other sensitive receptors related to the Site’s relationship with specific aspects of its landscape setting, namely the riparian core of the Kennet Valley and the wooded valley slopes. The Site itself, as an area of intensive arable land with existing disturbance within its immediate setting, was determined to be of relatively low sensitivity.

2.39 A robust mitigation scheme has been outlined and recommended by the LVA to support the envisaged development, principally comprising the retention of existing boundary vegetation and the creation of a substantial area of wet woodland, wet meadow and open water habitat between the developed area and AONB boundary, together with further consideration of heights at which containers would be stacked and lighting. This is anticipated to prevent any significant adverse effects upon the identified receptors. Furthermore, the positive contribution of the proposed habitat mosaic to the character of the surrounding countryside is such that the envisaged development as a whole is anticipated to result in an improvement to the character of the Site and the setting and Special Qualities of the North Wessex Downs AONB.

2.40 The visual appraisal found that the Site occupies a relatively restricted visual envelope, on account of the containment provided by the local valley topography and the strength of existing vegetation (woodland, riparian trees and hedgerows) within its landscape setting.

2.41 The most sensitive visual receptor was found to be the users of Public Rights of Way, and whilst no significant effects are anticipated upon receptors within the North Wessex Downs AONB, some unavoidable adverse effects are anticipated upon the users of routes to the south of the Site where a lack of vegetation permits inward views.

2.42 A number of existing residential properties located immediately adjacent to the Site were found to experience inward views from upper storey windows, although the recommended mitigation scheme is anticipated to reduce any effects to a non-significant level.

2.43 In terms of local transport routes, some fleeting glimpses towards the Site are anticipated from rural lanes within the North Wessex Downs AONB, although the recommended mitigation scheme is anticipated to intercept these views, preventing significant adverse impacts. In addition, the recommended mitigation scheme is anticipated to result in an overall improvement to the outlook from the A4 Bath Road for the users of this public highway.

(iv) *Residential Amenity*

2.44 In the development of any proposals for an IRFI on land west of Wigmore Lane regard will need to be had to residential amenity considerations in particular for those properties located on Wigmore Lane. Further detailed assessment will be required. However, at this stage it is considered that the following factors support the conclusion that an IRFI scheme could reasonably be brought forward which would not result in significant adverse effects in terms of residential amenity considerations:

- Significant separation distances can be maintained between proposed areas of activity (unloading of trains, storage and loading of HGV's) from existing residential dwellings.
- No vehicular access will be taken from Wigmore Lane. The proposed new vehicular access is proposed to be centrally located on the frontage to the A4 Bath Road and again some significant distance from the existing residential dwellings.
- As identified in the LVA, a number of existing residential properties located immediately adjacent to the Site were found to experience inward views from upper storey windows, although the recommended mitigation scheme is anticipated to reduce any effects to a non-significant level.

(v) Minerals and Waste Plan - Safeguarding Considerations

2.45 Land west of Wigmore Lane is identified in the Minerals and Waste Local Plan as being located within a wider 'Mineral Safeguarding Area' ('MSA') which safeguards known mineral deposits from sterilisation by non-mineral development. It is also located adjacent to the Theale Rail-Road Transfer Site, referenced in the Minerals and Waste Plan as 'Wigmore Lane Rail Depot' and comprising 'Minerals Safeguarded Infrastructure'. This applies both to the rail site and the mineral processing plant it supports.

2.46 In accordance with Policy 9, *Minerals Safeguarding,* at pre-application and detailed development stage, it is fully acknowledged that there will be a need to show that the quality, extent and possibility for the extraction and use of underlying sand and gravel has been fully explored and that at the appropriate stage this would need to be supported by a Minerals Resource Assessment ('MRA'). Whilst there is policy provision for development to progress without prior extraction in particular circumstances it is too early at this stage to confirm whether prior-extraction can be progressed in this instance or not. Either way the policy requirements are clear and at the appropriate stage an MRA will be undertaken.

2.47 In addition Policy 9 is clear that Minerals Infrastructure is safeguarded against development that would unnecessarily prevent or prejudice the operation of the infrastructure. The Policy confirms that non-mineral development affecting Minerals Safeguarded Infrastructure may be considered acceptable if the proposal would not prejudice or detrimentally affect the operation of the potential, planned or existing minerals associated infrastructure.

2.48 It is clear given the Working Statement provided jointly with NR and Beftonforth that the proposed development on land west of Wigmore Lane can come forward without prejudicing the current operation of the safeguarded mineral infrastructure at Theale and that proposed on the Beftonforth land (both in terms of highways considerations and rail access). Operationally rail access can be taken via the Beftonforth land or can potentially be taken direct from the main line. Highways access as detailed is to be provided separately and direct to the A4 Bath Road.

Figure 1: Land West of Wigmore Lane – Annotated Site Location Plan

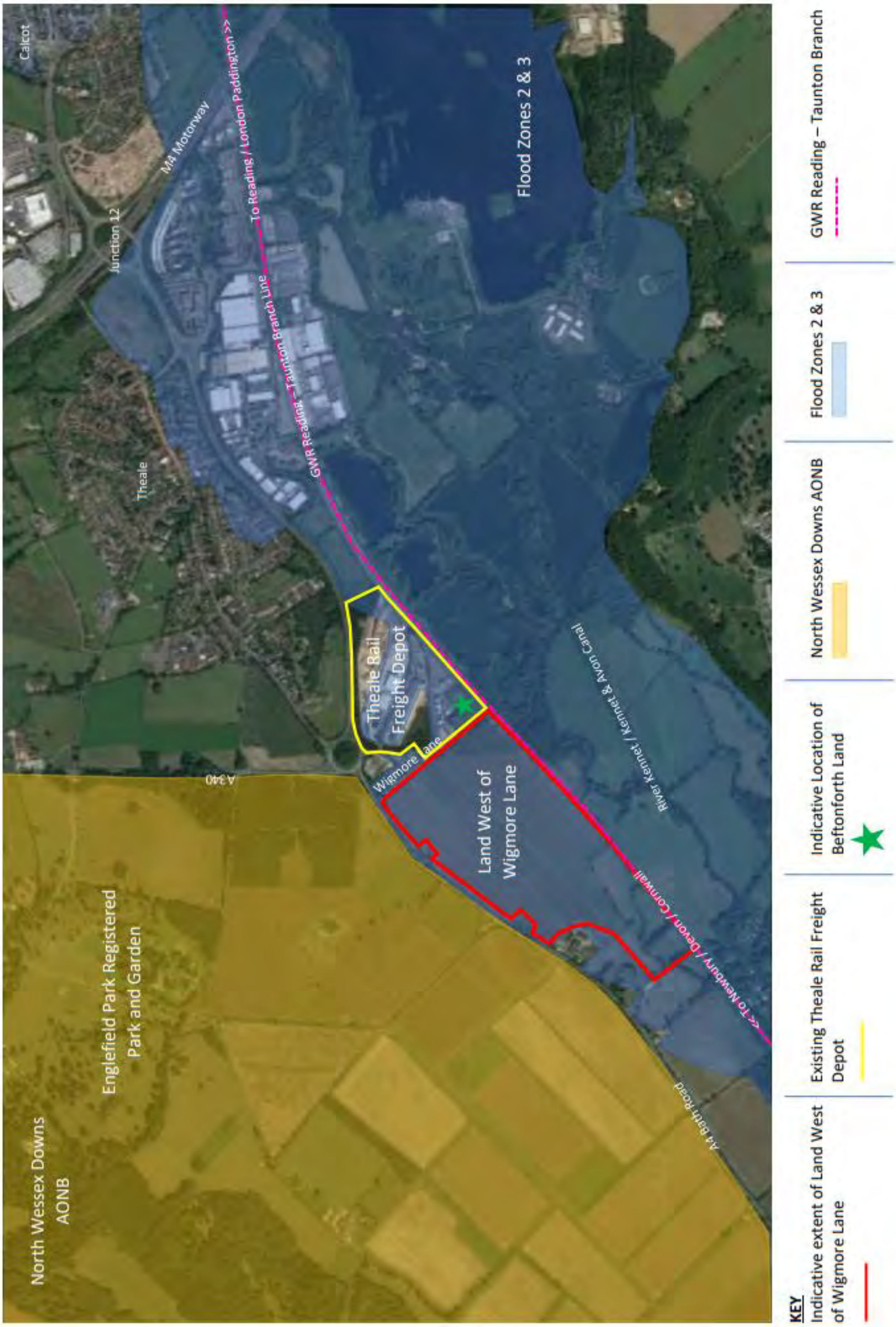
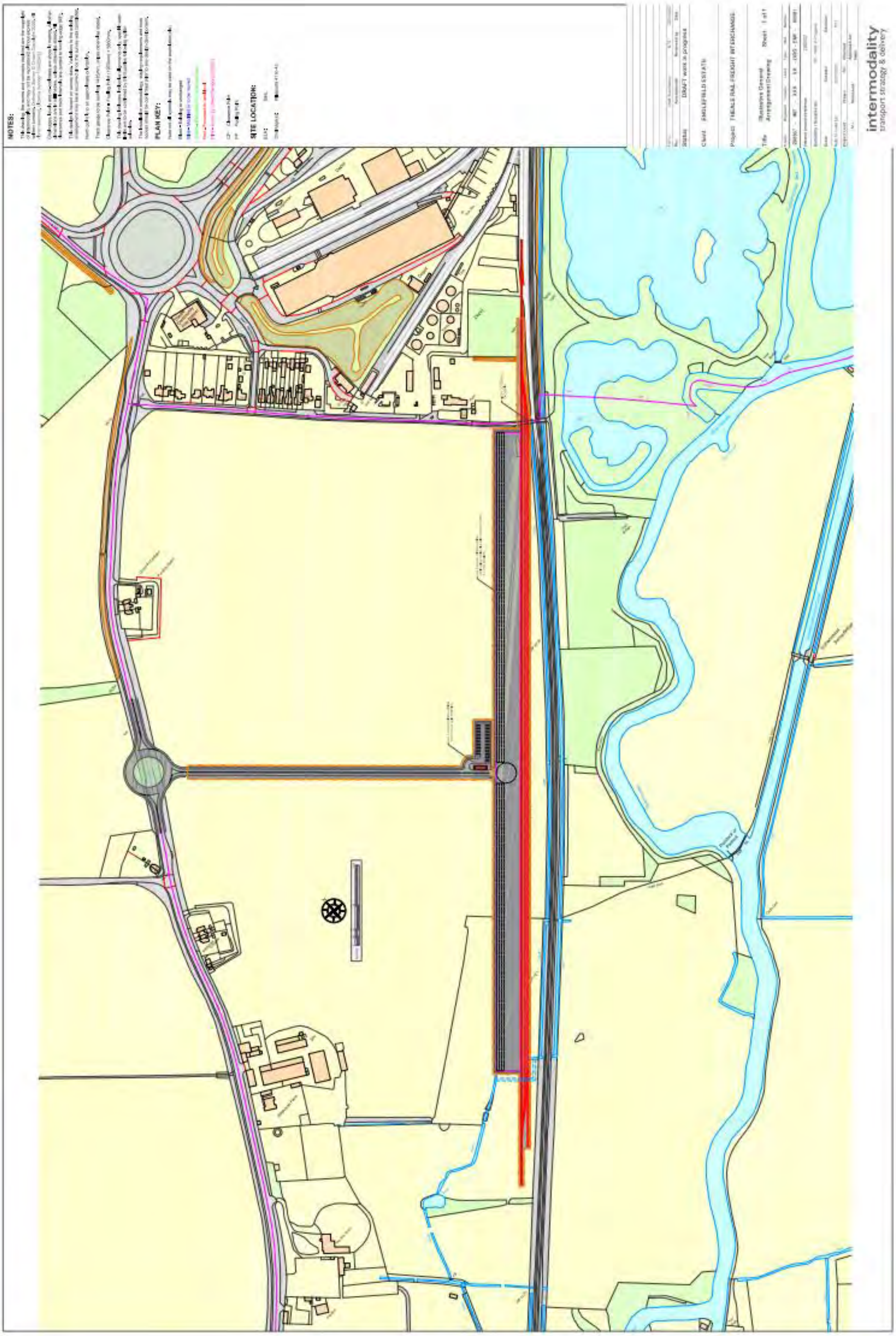


Figure 2: Intermodality – Theale Rail Freight Interchange – Illustrative General Arrangement Drawing.



SECTION 3: KEY PLANNING POLICY CONTEXT AND EVIDENCE BASE REVIEW

3.1 The following provides a review of the key planning policy context and evidence base documents relevant to the consideration of the need to support and identify the potential for growth of the Theale Rail-Road Transfer Site. It also details the evolution of the Theale Rail-Road Transfer Site Policy through the adopted and saved Local Plan Policies and the Local Plan Review process at Regulation 18 Stage and now at Regulation 19 Stage.

(a) National Planning Policy Requirements

(i) National Planning Policy Framework (2021)

3.2 In the context of promoting sustainable transport the NPPF requires at paragraph 106(c) that planning policies should:

> **"identify and protect, where there is robust evidence, sites and routes which could be critical in developing infrastructure to widen transport choice and realise opportunities for large scale development;"**

3.3 Planning policies are also required, at paragraph 106(e) to:

> **"provide for any large scale transport facilities that need to be located in the area[44], and the infrastructure and wider development required to support their operation, expansion and contribution to the wider economy…"**

3.4 Footnote 44 confirms that policies for large scale facilities should, where necessary, be developed through collaboration between strategic policy-making authorities and other relevant bodies. The footnote provides examples of such facilities which include "interchanges for rail freight".

3.5 In the context of building a strong, competitive economy the NPPF is clear, at paragraph 83 that

> **"Planning policies and decisions should recognise and address the specific locational requirement of different sectors. This includes making provision for clusters or networks of knowledge and data-driven, creative or high technology industries; and for storage and distribution operations at a variety of scales and in suitably accessible locations."** *(our underlining)*

3.6 For rail served development the scarcity of existing rail served sites and/or the costs and technical challenges of providing a rail link to the mainline are key considerations and significantly reduce the number of potential sites which can support growth.

3.7 In the context of meeting the challenge of climate change paragraph 152 confirms that the planning system should help, amongst other things, to:

> **"shape places in ways that contribute to radical reductions in greenhouse gas emissions…".**

3.8 Paragraph 153 requires that:

> **"Plans should take a proactive approach to mitigating and adapting to climate change…".**

3.9 Paragraph 154 confirms that new development should be planned for in ways that:

> **"can help reduce greenhouse gas emissions…".**

3.10 Proposed updates to the NPPF were issued for consultation on the 22 December 2022 running to March 2023. Whilst the update of the NPPF is at an early stage, it is noted that the consultation draft does not propose any material change to the NPPF paragraphs as identified above.

(ii) Planning Practice Guidance

3.11 The Planning Practice Guidance ('PPG'), amongst other things, considers how the challenges of climate change can be addressed through the Local Plan process. The Guidance is clear that sustainability appraisal can be used to help shape appropriate strategies in line with the statutory duty on climate change and ambition in the Climate Change Act 2003.

3.12 In the context of addressing the challenges of climate change through the Local Plan, the PPG confirms there are many opportunities to integrate climate change mitigation in the Local Plan. It provides examples for mitigating climate change by reducing emissions and this includes (Paragraph: 003 Reference ID: 6-003-20140612):

> **"Reducing the need to travel and providing for sustainable transport."**

(b) Adopted Local Plan Documents

3.13 The LPR once adopted will replace the West Berkshire Core Strategy and saved policies from the West Berkshire District Local Plan. These are reviewed in brief given they are informative in terms of how the potential for growth at the Theale Rail-Road Transfer Site has previously been taken account of.

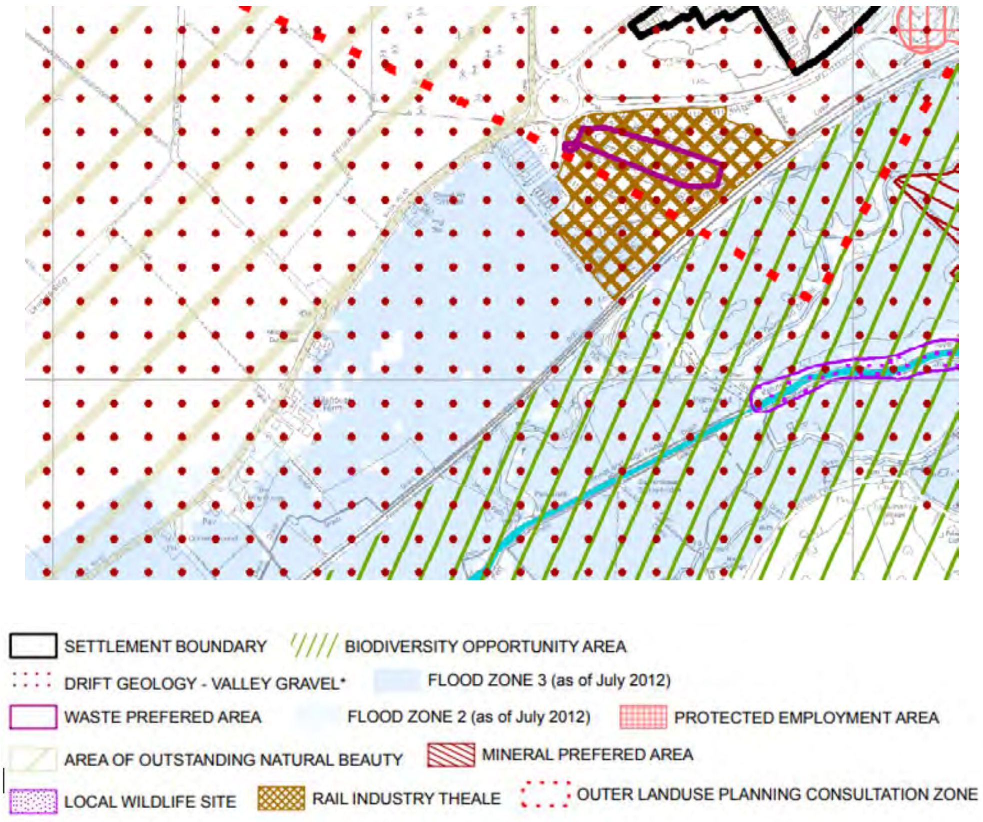
(i) West Berkshire Core Strategy (2006 -2026) Development Plan Document (Adopted July 2012)

3.14 In the Adopted Core Strategy Policies Map, extract provided at Figure 3, the Theale Rail-Road Transfer Site is identified as 'Rail Industry at Theale'.

3.15 Policy CS 13 Transportation amongst other things seeks to: facilitate sustainable travel, minimise the impact of all forms of travel on the environment and help tackle climate change.

3.16 The Core Strategy confirms that the development of the Council's Local Transport Plan ('LTP') and the Core Strategy has been a linked process. The Core Strategy confirms, at paragraph 2.13, that the Council's third LTP covers the period from April 2011 to 2026 and is an important local document which supports the delivery of the Local Plan.

Figure 3: Extract from WB Core Strategy Policies Map and Key (July 2012)



(ii) <u>West Berkshire District Local Plan 1991 – 2006 Saved Policies Written Statement (Adopted September 2007)</u>

3.17 Policy ECON.7, *Safeguarding Rail-based Industry at Theale,* is a saved Policy from the West Berkshire District Local Plan (September 2007) and states the following:

4.11 SAFEGUARDING RAIL-BASED INDUSTRY AT THEALE

4.11.1 The rail site at Wigmore Lane, Theale, is defined to include that area served by the rail link, i.e. the cement works, the coated stone treatment and distribution plant and the oil depot. These uses were permitted by the Secretary of State for the purpose of transferring goods from rail to road. It is this special use which needs to be protected due to the shortage of appropriate sites for such facilities across West Berkshire. The builders yard, house and paddock to the south of Wigmore Lane has now been included within this policy so as to provide a further opportunity for rail-served development. Any development of this site should be subject to satisfactory road access, this access should be contained within the existing rail site and not from outside.

4.11.2 Part of the site has been identified under the Berkshire Waste Local Plan as a preferred area for road to rail transfer operations, plus major recycling facilities which could include difficult and metal wastes. It is considered that these uses conform to the road to rail transfer designation, given the opportunity to transport such wastes, by rail from the site. Care must also be taken to ensure that mitigation measures are employed to limit impacts such as noise, dust and smell from waste transfer activities.

4.11.3 Policy T8 in the Structure Plan encourages road to rail transfer sites, subject to environmental and transport considerations. Any extension to the area designated under policy ECON.7 would therefore be subject to the following factors: (a) a demonstrated need for expansion of the rail-based industries; (b) the scale and intensity of the proposed development and its wider environmental impact; (c) its impact upon the existing residential properties which are in proximity, in particular, in terms of noise, traffic and visual intrusion; (d) the scale and nature of environmental and landscape improvements; (e) the provision of satisfactory access.

POLICY ECON.7 The rail site at Theale should be reserved solely for those industries which require and need a permanent and proven rail link coupled with access to the primary road network.

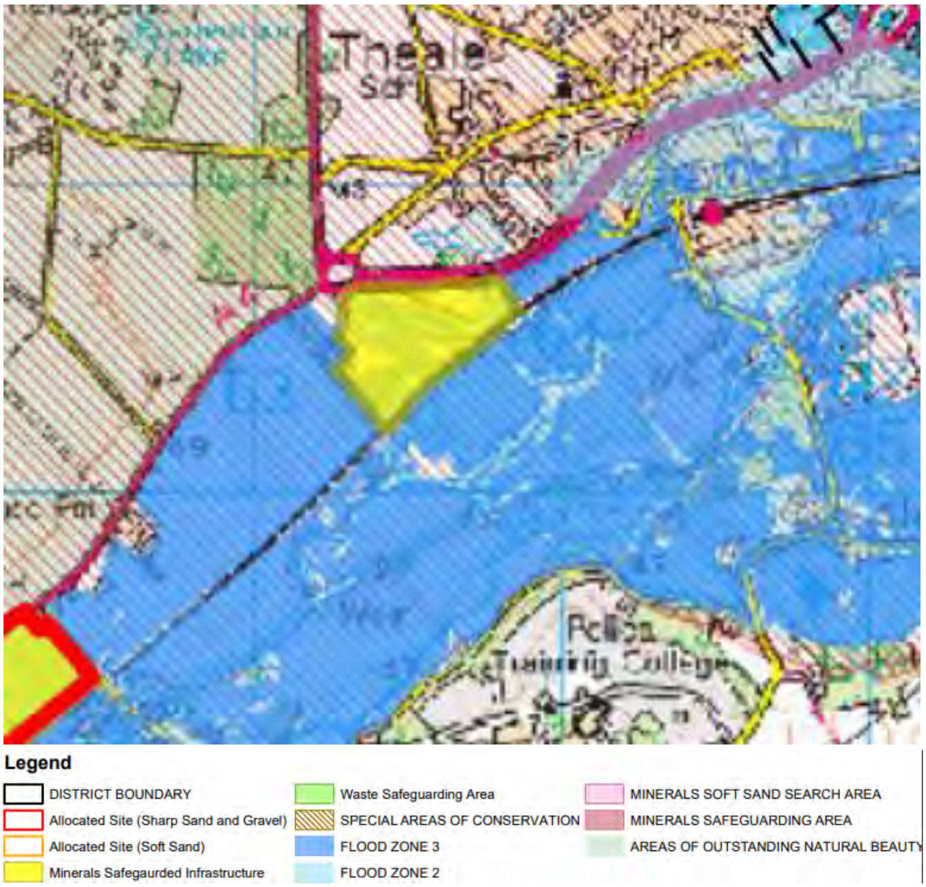
(iii) West Berkshire Minerals and Waste Plan (December 2022)

3.18 The West Berkshire Minerals and Waste Local Plan ('MWLP') was adopted on 1 December 2022.

3.19 The Policies Map identifies the full extent of the Theale Rail-Road Transfer Site as 'Minerals Safeguarded Infrastructure' as per the extract proved at Figure 4. It is noted that the land west of Wigmore Lane (land west of the defined Rail-Road Transfer Site) is located within a much wider area identified as a 'Minerals Safeguarding Area' ('MSA').

3.20 Policy 9, Minerals Safeguarding, deals first with MSAs in respect of safeguarding known mineral deposits from sterilisation by non-mineral development. The policy also specifically safeguards Minerals Infrastructures against development that would unnecessarily prevent or prejudice the operation of such infrastructure. This includes: potential, planned and existing minerals associated infrastructure, including rail sites and mineral processing plant sites. The Theale site is expressly identified as a Mineral Infrastructure Site and referenced as 'Wigmore Lane Rail Depot'. The policy details the circumstances in which non-mineral development in MSAs or affecting Minerals Safeguarded Infrastructure may be considered acceptable.

Figure 4: Extract from Minerals and Waste Local Plan Policies Map (December 2022)



3.21 In the context of Policy 9 any proposal for land west of Wigmore Lane would need to demonstrate that it does not raise issue for the operation of the existing rail site and associated minerals infrastructure/plant as well as appropriately deal with the minerals safeguarding requirement in respect of deposits. Consideration of the envisaged development in this context has been provided at Section 2 (v) of this Statement.

(c) West Berkshire Local Plan Review (Emerging Plan Documents)

(i) West Berkshire Local Plan Review Regulation 18 (Emerging Draft) Consultation (December 2020)

3.22 At Regulation 18 stage the WB LPR Draft Policy DC 31, Designated Employment Areas ('DEA') included a specific section dealing with the Theale Rail-Road site as follows:

> **Theale Rail-Road site**
>
> The rail-road transfer site at Theale is reserved solely for those industries which require a rail-road transfer facility and access to the highway network. Redevelopment for any uses not expressly for this purpose will not be permitted.

3.23 Supporting text to the draft Policy confirmed the following:

> 12.12 The rail-road transfer facility at Theale is protected through the emerging Minerals and Waste Local Plan. The facility is primarily an aggregates terminal and this is expected to continue to grow. Nonetheless, transport of consumer goods by rail continues to grow and West Berkshire and Reading are a significant consumer market. Theale is the only location which offers road-rail transfer facilities in the area. As a result, it is important to the local economy that this continues to be protected and grows.

(ii) <u>West Berkshire Local Plan Review Proposed Regulation 19 Consultation (Jan 2023)</u>

3.24 On the basis that the Theale Rail-Road site does not form a DEA the WB LPR (Reg 19) Proposed Submission draft has taken the draft policy text for the Theale Rail-Road Transfer Site out of the DEA Policy. It now forms a proposed free-standing Policy DM 43. The policy wording itself remains unchanged from Regulation 18 stage.

3.25 The supporting text to the policy has however been altered with references to 'growth' removed. Transport of consumer goods by rail is identified to be good for the economy but no statement is made in respect of the need for the site to continue to be protected and 'grow'.

3.26 For ease of reference the Regulation 19 Policy DM43 and supporting text are provided in full as follows:

> Policy DM42
>
> **Theale Rail-road Transfer Site**
>
> The rail-road transfer site at Theale is reserved solely for those industries which require a rail-road transfer facility and access to the highway network.
>
> Redevelopment for any uses not expressly for this purpose will not be permitted.

> **Supporting text**
>
> 12.100 The rail-road transfer site at Wigmore Lane, Theale, is an important infrastructure facility within the District allowing for the transfer of goods from rail to road. The facility is primarily an aggregates terminal and the Minerals and Waste Local Plan (2022-2037) safeguards the site to ensure the supply of minerals and the continued export of minerals from the District by road. Any non-mineral and waste development on the site would need to comply with Policy 9 of the Minerals and Waste Local Plan.
>
> 12.101 Nonetheless, transport of consumer goods by rail continues to be important for the local economy and the site should be protected for those industries which require a rail-road transfer facility and access to the highway network.
>
> 12.102 The extent of the rail-road transfer site is defined on the Policies Map.

3.27 From initial informal review of the amendments with WBC Planning Policy Team it would appear that the implications of the redrafting and any perceived changes in emphasis with regard to support for 'growth' were not intentional. It is understood that the changes at Regulation 19 stage were intended to bring the Policy more into line with the Minerals and Waste Plan. Certainly the amendments do not make any statement to the effect that growth is not supported and do not in themselves preclude growth of the site. Notably the importance of transport of consumer goods by rail in terms of it continuing to be important for the local economy continues to be referenced. Whilst it is appreciated that the implication of the redrafting in terms of removing references to growth may not have been fully considered they do now raise concerns with regard to the 'soundness' of the LPR for the reasons detailed at Section 4 of this Statement.

3.28 It is relevant that if transport of consumer goods, as identified by the Regulation 19 Plan as continuing to be important for the local economy, is to grow then this can only realistically be achieved if the existing facility grows. The existing freight site does not currently provide for transfer of consumer goods and primarily supports rail carriage of minerals and fuel which as confirmed by NR is itself expected to grow. Indeed, the last remaining undeveloped parcel of land (the Beftonforth land) is in the process of being brought forward for development for the transfer of aggregates.

(iii) Local Plan Review – Sustainability Appraisal (November 2022)

3.29 The Sustainability Appraisal ('SA') Objective 9 is: "*To reduce emissions contributing to climate change and ensure adaption measures are in place to respond to climate change".* The SA Sub-Objective 9(a) is*: "To reduce West Berkshire's contribution to greenhouse gas emissions".* The SA at Appendix 6 considers Draft Policy DM 43 in this context and comments that: "*The policy is unlikely to impact on any element of sustainability in relation to climate change".* In the context of this sustainability objective it is clear that support for growth of the Theale Rail-Road Transfer site would have a significantly positive impact on this element of sustainability in relation to climate change.

3.30 Growth of the Rail-Road Transfer Site at Theale would also further support the significantly positive impact on environmental sustainability already identified in the context of SA Objective 4: *"To promote and maximise opportunities for all forms of safe and sustainable travel".*

3.31 The SA does not take account of or consider the potential for growth of the Theale Rail-Road Transfer Site and therefore does not weight the environmental advantages this offers. It does not identify the positive effect that growth for the rail site would have on greenhouse gas emissions, sustainable transport and the local economy.

3.32 In the context of Policy DM 43 and the Sustainability Appraisal it is not considered that the most appropriate options for the plan have been taken forward. Support for growth of the Theale Rail-Road Transfer Site would address a wider range of SA objectives and more effectively support delivery of sustainable development in West Berkshire. The credible and reasonable alternative of expressly supporting growth for the rail site should have been considered.

(d) West Berkshire Local Transport Plan (2011-2026) and Supporting Strategies

(i) West Berkshire Local Transport Plan (2011-2026)

3.33 Paragraph 4.13 of the LTP is helpful in confirming that:

"Economic prosperity is important for health. Whilst economic growth itself has few links to promoting health, some aspects can arguably damage health such as growth in car ownership and habitualised car use and <u>an over-reliance on road transport for the movement of freight</u>." *(Our underlining)*

3.34 The LTP, amongst other things, includes the following as identified 'Local Transport Goals 2011-2026' and at Figure 5.1 directly links these to the transport issue of 'freight':

- **To support the economy and quality of life by minimising congestion and improving reliability on west Berkshire's transport networks;**
- **To maintain, make best us of and improve West Berkshire's transport networks for all modes of travel;**
- **To minimise energy consumption and the impact of all forms of travel on the environment.**

3.35 The LTP includes a specific policy on 'Freight' which confirms that:

> **Policy LTP K12**
> **Freight**
> The Council will work with its partners, businesses, and hauliers to develop more sustainable freight distribution practices that support the needs of the District's economy and minimise the impact on local communities and the environment. To achieve this, the Council will seek to manage freight movements within, to/from, and through the District by:
>
> i. Developing and promoting the West Berkshire Freight Route Network (which defines appropriate routes for HGV use) and working with partners to reduce HGV movements on inappropriate routes including in the vicinity of AQMAs
> ii. Enforcing weight, width, and height restrictions on the local highway network
> iii. Opposing any proposals for increases in permitted sizes and weight of HGVs
> iv. Encouraging sustainable freight transportation by rail or water

3.36 Supporting text to this policy is clear in further confirming the support for proposals that seek, amongst other things, to transfer carriage of goods to rail. Paragraph 7.15.6 states that:

"Although it is recognised that the vast majority of freight movements in West Berkshire are currently made by road, and are likely to remain so in the future, <u>the Council will be supportive of proposals that seek the transfer of goods to carriage by rail</u> or water. The location of the District in the national rail network highlights the potential for a large amount of through rail freight movements. This is particularly suitable for high bulk freight, such as aggregates and deep-see containers." *(our underlining).*

(ii) <u>West Berkshire Local Transport Freight Strategy (November 2014)</u>

3.37 The West Berkshire Freight Strategy, together with a number of other strategies, supports the LTP. Amongst other things it provides detail on how the Council will seek to protect existing rail freight sites and seek to further encourage sustainable distribution. Specifically the Freight Strategy Action Plan at Table 6.0, Ref FAP2 confirms:

Ref	Description	Timescale
FAP2	To use the development plan process to protect the strategic rail freight site at Theale and to encourage development at other locations which may offer opportunities for sustainable distribution.	On-going

3.38 Paragraph 3.1.4 confirms that although West Berkshire is predominantly rural in character, there are concentrations of businesses and freight generators located in and around the urban areas of Newbury, Thatcham and Theale, as well as along the A4 corridor between Thatcham and Theale. Notably the Theale Rail-Road Transfer Site, and land west of Wigmore Lane are well positioned in this context.

3.39 In considering 'Sustainable Distribution' the Freight Strategy outlines at paragraphs 4.0.1 and 4.0.2 that:

> **"The encouragement of freight by sustainable means (i.e. by rail and water) as an alternative to road would be environmentally less damaging in terms of reducing the length of road-based freight journeys on the District's road network, particularly through local communities. However, it should be noted that most rail or water based freight movements would need to start or end with a road based movement.**
>
> **LTP Policy K12 (Freight) seeks to encourage more sustainable distribution practices including the encouragement of freight transportation by rail and water. Although road freight is by the far the most dominant means of freight transport both nationally and locally there are several commodities, such as aggregates, deep-sea containers, petro-chemicals, metals, waste, coal, and bio-mass fuels that owing to their bulk can be effectively transported by rail (and due to the lack of wharf infrastructure within West Berkshire, water movements are currently more limited). However, the development of such infrastructure would be generally supported to enhance the choice of sustainable transportation infrastructure in the District."**

(iii) LTP Implementation Plan 2011-2026

3.40 The Implementation Plan sets out a number of Implementation Plan Tables arranged according to the strategy and key policy that they mainly help to deliver. This includes a table headed 'Freight' and supporting Key Policy LTP K12:Freight. This table includes Project F7, Rail/Water freight, which it is detailed seeks to encourage the use of railway and canal to transport freight, identifying Transport Policy as the Lead Team and partners involved as NR and Freight organisations.

(iv) West Berkshire Local Transport Plan (LTP4) Strategy 2024-2039 Consultation

3.41 The West Berkshire Local Transport Plant (LTP4) Strategy was issued for consultation between 8 February and 22 March 2023.

3.42 Paragraph 5.13 confirms that the LTP4 will support improving freight, including the transition to more sustainable modes.

3.43 The LTP4 Strategy, in the context of 'Plan Based Evidence and Strategy' provides an overview of strategic transport connections in West Berkshire and identified issues in this context. It confirms at paragraph 7.4 that:

> ***"The A34 provides a road link for freight between the ports on the south coast and the 'Golden Triangle' in the Midlands. It is the busiest non-motorway trunk road in the UK with 12,000 HGV flows daily; and HGV flows also now above pre pandemic levels. The A34 corridor can suffer from congestion, which could be alleviated by transferring freight onto other modes and a lack of lorry parking and facilities."****(our underlining)*

3.44 In the context of the above, amongst other matters, the draft Strategy confirms that going forward the proposals listed after paragraph 7.9 would help address the identified issues and support improved strategic transport connectivity. Under the heading of 'Support Sustainable Growth' the following proposal is specifically identified:

> ***"Theale Strategic Rail Freight Terminal"***

3.45 The above proposals is again identified and referenced at Section 9 of the LPT4 Strategy in the context of the 'Strategy for the Eastern Area'.

3.46 Identification of a 'Theale Strategic Freight Terminal' as a proposal in the draft LTP4 Strategy document on the basis that it can support improved strategic transport connectivity is welcomed and very much in accordance with National Policy requirements.

(e) Other Regional Evidence Base Documents

(i) Transport Strategy for the South East – TfSE (June 2020)

3.47 Transport for the South East ('TfSE') is the sub-national transport body for the South East of England which represents sixteen local transport authorities including West Berkshire. It was established in 2017 to determine what transport infrastructure is needed to transform the region's transport system and drive economic growth.

3.48 The TfSE Transport Strategy for the South East identifies that the key challenges to international gateways and freight relate primarily to accommodating future growth and reducing the impact of freight transport on the environment. A number of specific challenges and opportunities/responses are identified.

3.49 Challenge 5 is stated as: *"Rail freight mode share nationally is relatively low".* The responses identified include:

- Demand management policies to improve the efficiency of the transport network for road freight and to invest in sustainable alternatives.
- Implementing rail freight schemes such as electrification and gauge enhancements, to increase capacity on strategic routes and encourage modal shift from road to rail.
- Develop a Freight Strategy and Action Plan.

(ii) Freight Logistics and Gateways Strategy Full Report -TfSE (May 2022)

3.50 The TfSE Freight, Logistics and Gateways Strategy Report confirms at paragraph 2.26 that in general, rail freight in the region is constrained by three key issues:

- Capacity on major rail corridors being shared with passenger services;
- Shortage of railheads/terminals for intermodal transfers; and
- Low standards of gauge clearance.

3.51 It goes on to confirm at para 3.30 and 3.31 that:

> **"Rail freight can carry all types of goods, but prohibitive operating costs prevent the rail network from carrying a greater proportion of the region's and nation's freight. Efficiency gains must be realised (especially for strategic trips), supported by infrastructure investment, including inland intermodal terminal for handling and transferring goods between road and rail.**
>
> **Although rail freight terminals for construction materials, especially at ports and wharves on the Thames, are well placed for moving additional volumes of traffic, a shortage of intermodal terminals is one of the most significant constraints to mode shift across the Transport for the South East Region."**

(iii) Draft Strategic Investment Plan for the South East - TfSE (November 2022)

3.52 The Draft Strategic Investment Plan ('SIP') for the South East was published for consultation in June 2022 by TfSE'. A final draft of the SIP was approved (pending some small changes) by the Partnership Board on the 14 November 2022. Between November 2022 and March 2023 time has been allowed for constituent authorities to take the investment plan through their own Governance processes before it returns to the Partnership Board in March 2023. If approved it will then be submitted to Government.

3.53 The SIP provides a framework for investment in strategic transport infrastructure services, and regulatory interventions in the coming three decades. A 'Theale Strategic Rail Freight Terminal' is specifically identified as an intervention under reference O18 as follows:

Map Ref.	Intervention	Implementation Timeframe	Project stage	Next step(s)	Scheme promoters	Key delivery partners	Potential TfSE Role
O18	Theale Strategic Rail Freight Terminal	Short	Pre-SOBC	Feasibility Study	i	1,2,5,6,7,8	B, D, F

3.54 For the implementation timeframe it is confirmed that 'short-term' is defined as within the remaining years of the 2020s.

(f) Other Evidence Base Documents - Supporting Rail Freight Growth

3.55 The efficient movement of freight is critical to support growth and the environmental and economic benefits of rail over road are clear and compelling the following evidence base documents outline this further.

(i) Rail Freight Group

3.56 The Rail Freight Group ('RFG') is the representative body for rail freight in the UK. In setting out the case for the use of rail freight the RFG confirm that rail freight offers many commercial advantages to its customers, including reliability, speed and cost-effectiveness. It also benefits society as a whole by reducing harmful emissions and congestion, providing high quality jobs, and helping many regions of the UK prosper. The RFG summarise the benefits of rail freight as follows:

- **Reliability and Speed:** – Rail freight operators achieve 97% reliability on the premium services they run for retailers and, in general, rail freight can match or better road freight reliability. Freight trains continue to achieve higher speeds with heavier payloads as operators invest in better locomotives and wagons.

- **Environmental Benefits:** – Rail freight reduces CO_2 emissions by up to 76% compared to road. This helps to mitigate the effects of transport emissions on global warming.

- **Improved Air Quality**: - Rail produces up to 10 times less small particulate matter than road haulage and as much as 15 times less nitrogen oxide for the equivalent mass hauled. This benefits the nation's – especially children's health.

- **Reduced Congestion and Better Safety**: - Each freight train removes up to 76 lorries from the roads, resulting in 1.6 billion fewer HGV kilometres every year reducing congestions and accidents.

- **Regional Growth is Supported:** - Rail freight is vital for economic prosperity of ports, power stations, production centres and retail centres throughout the country.

3.57 In 2020 the RFG and UKMPG jointly produced a paper titled 'Why the UK needs more intermodal rail freight'. This outlines how in the UK, intermodal rail freight has doubled in the last 20 years and now one in four containers transported to/from a port is carried by rail. Domestic volumes have also increased as more companies recognise the benefits of using rail to move freight within Britain. A full copy of the RFG/UKMPG paper is attached at Appendix 5.

APPENDIX 5

3.58 The benefits of rail freight are economic, social and environmental. Intermodal rail freight is fast, efficient and reliable – helping business to run with lower inventory and base their operations throughout the UK. The RFG/UKMPG Paper underscores the comparative advantage of rail freight in the context of CO_2 emissions as detailed in the infographic reproduced at Figure 5.

Figure 5: Extract from RFG/UKMPG Paper – CO2 Emissions Intensity from Freight.

3.59 However, the RFP/UKMPG Paper goes on to highlight that:

- **The UK risks missing out on the potential beneftis of intermodal rail freight. Despite an encouraging long-term growth in intermodal volumes, recent years have seen a flattening of the upward trend. There is real demand for rail freight users to increase their usage. The problem is that the potential of intermodal rail freight is being constrained.**

- **The potential is clear when we look forward. Expert forecasts, as a 'base case' rather than using optimistic assumptions, project that there is sufficent demand to double again the amount of freight moved by rail in the next 15 years. That's almost an extra 20 million tonnes of freight removed from the UK's roads annually by 2033/4, equivalent to 450,000 HGV journeys saved with the assoicated emissions reductions and congestion benefits.**

3.60 Critically in identifying what is needed for growth, amongst a range of requirements identified, is the requirement that local/regional authorities **<u>should prioritise distribution facilities with rail links in local plans</u>**.

(ii) The Williams-Shapps Plan for Rail White Paper (May 2021)

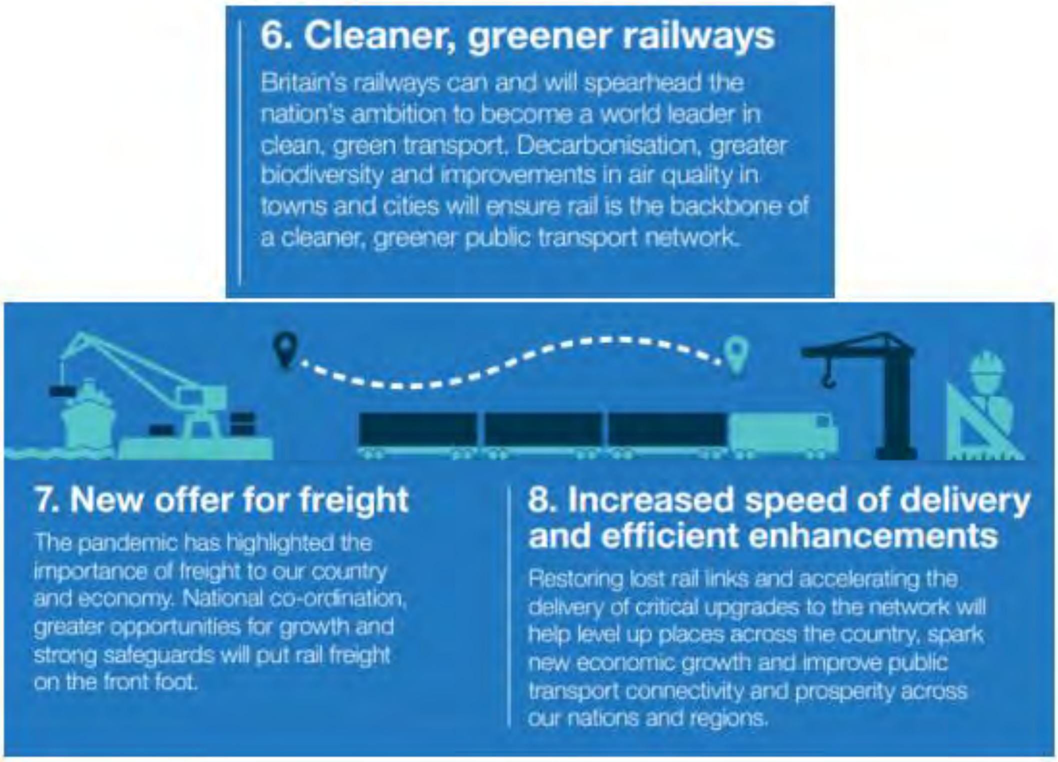
3.61 The 'Great British Railways: The Williams-Shapps Plan for Rail' White Paper (May 2021) is clear in confirming that:

> **"The Government profoundly believes in the future of railways. Without them our cities could not function, critical freight connections would be cut off, carbon emissions and pollution would rise.."**

3.62 The White Paper makes specific commitments including a modern and improved experience for freight customers and confirms that the government are '*growing the network, not shrinking it'.* It confirms the commitment to set a growth target for rail freight.

3.63 The White Paper identifies how the railways will change for the better summarising this in 10 outcomes. Outcomes 6, 7 and 8 are particularly relevant as reproduced at Figure 6.

Figure 6: Extract from Great British Railways: The Williams-Shapps Plan for Rail (May 2021)



(iii) The Transport Decarbonisation Plan and Rail Environment Policy Statement (July 2021)

3.64 The Transport Decarbonisation Plan ('the Plan') and Rail Environment Policy Statement were published on 14 July 2021 setting out plans for a cleaner, greener transport network.

3.65 The Plan recognises the important role that rail freight has to play in reducing carbon emissions, reiterating points identified in the Williams-Shapps Plan for Rail.

3.66 Given rail freights' green credentials the government is keen to continue to encourage modal-shift to rail freight and the Plan is clear again that it intends to set a specific growth target for the sector.

3.67 The Rail Environment Policy Statement itself reiterates again the environmental credentials of rail confirming that whilst most rail freight is carried by diesel trains, it remains one of the lowest carbon ways of moving goods on land. It is also clear in confirming that the government is supportive of modal shift of freight from road to rail, wherever possible, to reduce emissions from the freight sector.

(iv) The Future of Freight: A Long-Term Plan, Department for Transport (June 2022)

3.68 The 'Future of Freight – A Long-Terms Plan' was published by the Department of Transport in June 2022. Within it the Government and the privately-owned and operated freight and logistics sector state their joint ambition to build on the strong foundations established in Whitehall and across industry to develop, for the long-term, a freight and logistics sector that is cost effective, reliable, resilient, environmentally sustainable and valued by society.

3.69 In the context of one of the key deliverables "environmentally sustainable" paragraph 2.6 of the document confirms that:

> **"In 2019 HGVs contributed 16% of domestic transport Green House Gas ("GHG") emissions….. Rail freight is on average 76% more GHG efficient per freight tonne km than road freight. By 2050, the freight and logistics sector must achieve net zero while continuing to support wider environmental ambitions including air quality and habitat preservation.".**

(v) Great British Railways Transition Team Call for Evidence

3.70 The Williams-Shapps Plan for Rail ('Plan for Rail') recommended the establishment of a new, public rail body: Great British Railways ('GBR'). In this new industry structure, the rail freight industry will remain largely private sector operated, while benefiting from national coordination, new safeguards, and a rules-based access system. GBR will also have a duty to promote rail freight and new levers to secure its economic, environmental, and social benefits.

3.71 One of the core commitments for freight in the Plan for Rail (and the Transport Decarbonisation Plan) is that the Government will set a rail freight growth target, as has already been done in Scotland for the Scottish rail network. In response to the commitment to setting a rail freight growth target the Great British Railways Transition Team ('GBRTT') is developing a range of rail freight growth target options. A key part of this work is to engage with industry through a formal call for evidence which was progressed between July and September 2022.

3.72 The strategic rationale for facilitating rail freight growth is confirmed as follows:

> **"The strategic rationale for facilitating rail freight growth is predicated on the significant social, environmental, and economic benefits of rail freight, compared to road and waterways... The recent constraints on the availability of HGV drivers have served to highlight the weaknesses in the national supply chain being overly reliant on one form of transport, highlighting the strategic benefit of moving a greater proportion of freight by rail.**
>
> **A rail freight growth target will give GBR and the Freight Operating Companies (FOCs) a focal point around which the sector can unite, allowing us all to be more proactive and collaborative in stimulating rail freight growth, by attracting new customers to rail and by improving the rail freight offer for existing customers. A common sector objective will drive positive cultural, behavioural, and structural changes that will ensure more freight can be moved by rail. It will also provide a measure to ensure that Government is continually supporting rail freight growth. It should, however, not become a ceiling or limit to growth. A rail freight growth target for the rail network will complement existing and future targets set by Scottish Ministers in Scotland, and magnify the impact of rail freight growth nationwide."**

3.73 In his George Bradshaw Address, given on 7 February 2023, Transport Secretary The Rt Hon Mark Harper MP underscored once more the importance of rail freight and confirmed the Government's ongoing commitment to producing a long-term freight growth target later this year, stating:

> **"Carrying tens of billions of pounds worth of goods, we cannot overstate rail freight's untapped potential for green growth. So I intend to create a duty to ensure the new industry structure realises that potential. With a dedicated Strategic Freight Unit tasked with creating better safeguards, more national coordination and, later this year, listening to what was said earlier, setting a long-term freight growth target."**

(g) <u>Policy and Evidence Base Overview</u>

3.74 The need for logistics sites, and in this specific context for transfer of freight from road to rail, are distinct and separate from general industrial or general employment area land requirements. Ensuring the availability of such sites in the right locations is critical if goals of improving air quality, working toward carbon neutrality, road safety and reducing congestion identified across the full range of regional and national policy and evidence base documents are to be achieved.

3.75 Rail served sites or sites capable of being rail connected are a scarce and valuable resource and making sure they are appropriately safeguarded <u>and</u> are able to grow is critical to meeting key environmental and sustainability objectives.

SECTION 4: SOUNDNESS OF THE WEST BERKSHIRE PROPOSED SUBMISSION (REG 19) LOCAL PLAN

(Response Form Question 2)

4.1 The Regulation 18 consultation (December 2020) included wording which signposted the potential for 'growth' of the Theale Rail-Road Transfer Site and the importance of this. This reflects, to a large extent, the approach in the currently adopted Local Plan (Policy ECON.7 and supporting text) and accords with the adopted Local Transport Plan and is consistent with National Policy requirements.

4.2 It is understood that there was no expectation on the part of NR that the position, in terms of references to growth of the Theale Rail-Road Transfer Site, would significantly alter between Regulation 18 and Regulation 19 stage. It is acknowledged that the potential of land West of Wigmore Lane specifically to allow for expansion and growth of the existing Theale Rail-Road Transfer Site was not identified at Regulation 18 stage either by NR or the landowner. However, in the intervening period of two years since the last Regulation 18 consultation NR has been working to deliver the final parcel of land within the currently allocated 'Rail Industry Theale' site in the Core Strategy and under saved Policy ECON.7. In addition in that period NR has critically identified the clear potential that land West of Wigmore Lane offers, underpinned by policy based need and identified demand, and has been progressing early discussion, review and assessment of the potential the land offers both with WBC and the landowner Englefield Estate.

4.3 As already acknowledged, it would appear that the implications of the redrafting and any perceived changes in emphasis with regard to support for 'growth' of the Theale Rail-Road Transfer Site were not intentional. It is understood that the changes at Regulation 19 stage were intended to bring it more into line with the Minerals and Waste Plan. Certainly the amendments do not make any statement to the effect that growth is not supported and do not in themselves preclude growth of the site. Notably the importance of transport of consumer goods by rail in terms of it continuing to be important for the local economy continues to be referenced. It is appreciated that the implication of the redrafting in terms of removing references to growth may not have been fully considered. However, the removal of references to growth and the failure to expressly identify and support the potential for growth of rail freight at Theale, if not corrected, is considered to make this part of the LPR unsound.

4.4 It is entirely relevant that if transport of consumer goods, as identified by the Regulation 19 Plan as continuing to be important for the local economy, is to grow then this can only realistically be achieved if the existing Theale Rail-Road facility grows. The existing freight site does not currently provide for transfer of consumer goods and primarily supports rail carriage of minerals and fuel which as confirmed by NR is itself expected to grow. Indeed, as detailed, the last remaining undeveloped parcel of land (the Beftonforth land) is in the process of being brought forward for development for the transfer of aggregates.

4.5 Across the LPR there are also concerns that opportunities for policies to support sustainable development and specifically to encourage modal shift (to ensure the plan is positively prepared and consistent with national policy) have not been included. This again raises issues of soundness.

4.6 The NPPF is clear in the context of preparing and reviewing plans and confirms at paragraph 31 that: *"the preparation and review of all policies should be underpinned by relevant and up-to-date evidence. This should be adequate and proportionate, focused tightly on supporting and justifying the policies concerned , and take account relevant market signals".*

4.7 The relevant and up-to-date evidence base is that there is a need to ensure that expansion and growth of rail freight at Theale is supported. Critically, there are no other locations where this need could be met within the West Berkshire area and indeed for some significant distance beyond the LPR area. Land has been identified by NR with potential to accommodate expansion of rail freight provision at Theale and is being jointly proposed with the landowner. It is considered that it would be unsound if the potential for expansion of the existing Theale Transfer Site were not appropriately referenced and supported in the West Berkshire Local Plan. This would reflect how expansion of the Theale site is referenced and supported in the currently adopted Local Plan policy and supporting text and in more general terms in the Local Transport Plan. There has been no material change in circumstances since the current Local Plan and Local Transport Plan documents were adopted which would justify a different approach being taken. If anything the declaration of a climate change emergency and the role sustainable transfer of goods by rail has to play in that context only serves to underpin the increased need to ensure growth of rail freight at Theale is supported.

4.8 There is as detailed in the policy and evidence base review, at Section 3 of this Statement, a clear policy drive both at National, Regional and Local Transport Plan level (and notably in the emerging LTP4 at time of writing subject to consultation) to shift freight from road to rail (or other sustainable means of transport) and a clear imperative to support sites which can support sustainable transport of freight in coming forward.

4.9 If the LPR fails to continue the same policy approach as has been historically in place (and remains in place to date) i.e. that potential for growth is expressly identified, then it is considered to fail to accord with the requirement at Paragraph 11 of the NPPF to apply a presumption in favour of sustainable development. For plan-making this means, amongst other things, that <u>all</u> plans should promote a sustainable pattern of development. It is also considered to be an unduly inflexible approach. This inflexibility is contrary to the NPPF, paragraph 32 (d), which requires, in the context of building a strong, competitive economy, that planning policies should be flexible enough to accommodate needs not anticipated in the plan and to enable a rapid response to changes in economic circumstances.

4.10 It is relevant that in the context of promoting sustainable transport the NPPF, para 106 (c) require that planning policies should identify and protect, where there is robust evidence, sites and routes which <u>could</u> be critical in developing infrastructure to widen transport choice and realise opportunities for large scale development. At paragraph 106 (e) there is a requirement for planning policies to provide for any large scale transport facilities that need to be located in the area. This is to be read together with the requirements at paragraph 83 that planning policies should recognise and address the specific locational requirements of different sectors and for storage and distribution operations at a variety of scales and in suitably accessible locations. The LPR as currently drafted is not consistent with any of these National policy requirements.

4.11 The LPR as currently drafted is not consisted with NPPF requirements in terms of meeting the challenge of climate change (paragraphs 152-154). Neither is it consistent with wider national policy requirements in terms of encouraging modal-shift to of freight to rail in the context of the role it has to play in reducing emissions form the freight sector.

4.12 In the context specifically of promoting sustainable transport, and the soundness tests and key requirements, the LPR should be identifying and supporting sites and routes where infrastructure could be developed to widen transport choice and linked to the Local Transport Plan (adopted and emerging). The evidence base supports the fact that there are no sites in the West Berkshire area (and indeed for some significant distance beyond) where growth of rail freight provision could be accommodated other than at Theale and the clear policy need and market demand for such provision.

4.13 In non-site-specific terms the LPR policies in respect of spatial strategy, climate change and transport considerations also raise concerns in the context of the tests of soundness. The spatial strategy, climate change and transport policies should equally be consistent with National Policy requirements with regard to supporting and promoting sustainable transport.

4.14 By reference to **Response Form Question 2**, and in the absence of any wording in the LPR expressly supporting the growth of rail freight provision at Theale and wider omissions in respect of the Spatial Strategy, Climate Change Policy and Transport Policies, the LPR is not considered to meet the tests of soundness for the reasons identified above and summarised below:

- **The Plan is not positively prepared** – it does not respond to identified need and it does not facilitate sustainable development.

- **The Plan is not justified** – The Plan is not justified since it fails to be an appropriate strategy taking into account reasonable alternatives and based on proportionate evidence. The approach of not including either policy or supporting text to identify and support the growth of rail freight at Theale is not the most appropriate strategy when considered against the reasonable alternatives. There is no clear audit trail as to why this approach has been adopted and changed from earlier stages. The Sustainability Appraisal does not appear to consider how a different approach (supporting growth) would perform. As such it is not clear that the SA has been able to robustly inform the content of the LPR. The evidence points to the need to support the growth in rail freight provision both generally and in regional/local plan terms. The sound approach (and reasonable alternative) would be to at minimum provide supporting text which supports growth at Theale and/or to otherwise have this expressed within Policy text itself.

- **The Plan is not Consistent with National Policy** – the LPR is not consistent with NPPF and other relevant national policy in particular with regard to: promoting a sustainable pattern of development; meeting the challenge of climate change; supporting sustainable transport (including supporting modal shift of freight from road to rail, wherever possible, to reduce emissions from the freight sector); and considering the specific locational requirements of different sectors in suitably accessible locations. The lack of consistency with National Policy is both in terms of site specific considerations of the Theale Rail-Road Transfer Site under Policy DM 43 and supporting text and more generally in respect of: Spatial Strategy Policy SP1, Climate Change Policy SP5, and Transport and Transport Infrastructure Policies SP23 and DM42.

4.15 Specific changes sought to the Regulation 19 Local Plan Review to ensure the Plan does meet the tests of soundness are provided at Section 5 of this Statement.

SECTION 5: CHANGES REQUIRED TO MAKE THE WEST BERKSHIRE PROPOSED SUBMISSION (REG 19) LOCAL PLAN SOUND *(Response Form Question 4)*

5.1 By reference to **Response Form Question 4** changes are identified as being required to make the West Berkshire Proposed Submission Local Plan sound. Specifically, the changes are required to ensure the plan is positively prepared, justified, and consistent with National Policy as identified in the preceding section of this statement.

5.2 To address the concerns raised with regard to soundness and specifically the failure of the LPR to appropriately identify and support modal shift in the context of transhipment of freight changes are sought in the context of spatial strategy, climate change and transport policies. Additionally, in site specific terms express support for growth of the Rail-Road Transfer Site at Theale is sought. The specific changes required to make the plan 'sound' are as set out in the following Schedule of Required Changes (changes required shown in red underlined/struck through). The Schedule has been jointly drafted and agreed between NR, Beftonforth and the Englefield Estate.

Schedule of Required Changes

(a) Policy SP1, Spatial Strategy (Page 17, third para)

"Demand for travel will be managed, and accessibility to sustainable transport opportunities increased through improving choice for transport modes. Opportunities to increase and expand provision of the movement of freight by sustainable means will be supported. Existing community infrastructure will be protected and where appropriate enhanced. Infrastructure requirements will be set out in the Infrastructure Delivery Plan (IDP)"

(b) Policy SP5, Responding to Climate Change

"The principles of climate change……Depending on the nature and scale of proposals, development will be expected to satisfy the following criteria:

a. To withstand…
b. To take advantage….
c. To achieve net zero…..
d. To achieve the highest…
e. To generate and …
f. To provide for sustainable forms of vehicular and personal transport…
g. To demonstrate how opportunities to secure the sustainable movement of freight have been maximised and secured.
gh To enable….

(c) Policy SP23, Transport

"Development that generates a transport impact will be required to:

- Minimise the impact of all forms of travel……

- Improve and promote opportunities for….
- Improve travel choice and facilitate sustainable….
- Demonstrate that all options to secure modal shift from road to more sustainable transport means have been explored.
- Demonstrate good access…..”

(d) **Policy SP23 Supporting Text (new paragraph 7.50)**

“7.49 The Council has established a preferred Freight Route Network (FRN) for West Berkshire…….of their proposed development.

7.50 Encouraging modal shift from road to more sustainable modes of transport in the freight sector is a key element in helping to meet local Climate Emergency target of carbon neutrality by 2030 and reducing HGV road miles. In the West Berkshire area opportunities in this context primarily comprise sustainable freight transportation by rail and expansion of or addition to existing facilities will be supported. Rail freight enables the efficient movement of goods to/from ports, quarries and distributions centres, helping reduce the need for HGVs on roads. On average rail freight trains emit around a quarter of the CO_2 equivalent emissions of HGVs per tonne mile travelled. All development that generates significant HGV movements will be required to show that all practicable means have been explored to make use of rail as opposed to road for the transport of goods.

~~7.50~~7.51 Transport Assessments…….

(e) **Policy DM42, Transport Infrastructure**

“Proposals for new development will be expected to demonstrate the type and level of travel activity likely to be generated. In order to assist in tackling the climate emergency, this travel activity will be expected to be minimised by design of developments that support low levels of travel with a focus on local journeys that can be made sustainably and that support more sustainable freight distribution practices. Development which encourages modal shift of goods and people to more sustainable forms of transport will be supported. Developments will be required to be supported by a range of infrastructure associated with different transport modes. New development will only be supported where the relevant transport infrastructure is delivered in a timely manner. Where required….”

a. Connections and improvements ….
b. Walking, cycling and ….
c. Secure cycle and ….
d. Improvements to ….
e. Provision of real ….
f. New or improved ….
g. Improvements to ….
h. Works to ….
i. Provision of electric vehicle charging points and associated infrastructure; and
j. Measures to improve the movement of people and goods by rail.

(f) **Policy DM42, Supporting Text (paragraph 12.95)**

12.95 The development and delivery of transport infrastructure will need to contribute to the aims of Policy SP23 and……..Transport Plan. There is a need for development to assist in the provision of deliverable measures that will contribute towards modal shift to sustainable modes for travel for residents and employees of both new, and if possible, for existing communities and towards modal shift to sustainable modes for the transport of freight.

(g) **Policy DM43, Theale Rail-road Transfer Site**

"The rail-road transfer site at Theale is reserved solely for those industries which require a rail-road transfer facility and access to the highway network.

Redevelopment for any uses not expressly for this purposes will not be permitted.

Expansion of the Theale Site to provide further rail-road transfer, in particular for the transhipment of consumer goods, will be supported subject to other policies in the Local Plan."

(h) **Policy DM43, Supporting Text (para 12.101 and new para 12.102)**

12.100 The rail-road transfer site at Wigmore Lane, Theale, is an important infrastructure facility within the District allowing for the transfer of goods from rail to road. The facility is primarily an aggregates terminal and the Minerals and Waste Local Plan (2022-2037) safeguards the site to ensure the supply of minerals and the continued export of minerals from the District by road. Any non-mineral and waste development on the site would need to comply with Policy 9 of the Minerals and Waste Local Plan

12.101 Nonetheless, transport of consumer goods by rail continues to be important for the local economy and West Berkshire and Reading are a significant consumer market. Theale is the only location which offers road-rail transfer facilities in the area and there is an identified shortage of appropriate sites for such facilities across West Berkshire and the South East. ~~t~~The Theale Site should be protected for those industries which require a rail-road transfer facility and access to the network. The growth and expansion of the Theale Site to support additional and diversified transport of goods by rail will be supported in principle. Land west of Wigmore Lane is in particular identified as having the potential to accommodate expansion of the existing facility and meet identified need for the transport of consumer goods by rail. National, Local Plan and Local Transport Plan policies support modal shift from road to more sustainable means of transport subject to environmental and transport considerations.

12.102 Any extension to the area designated under Policy DM43 would be subject to other policies in the Local Plan and the following factors: (a) a demonstrated need for the expansion of the road-rail transfer site; (b) the scale and intensity of the proposed development and its wider environmental impact; (c) its impact upon existing residential properties which are in proximity, in particular in terms of noise, traffic and visual intrusion; (d) the scale and nature of environmental and landscape improvements; (e) the provision of satisfactory access.

12.10~~2~~3 The extent of the rail-road transfer site is defined on the Policies Map.

5.3 Early discussion with WBC with regard to the representations made and suggested changes would be welcomed.

APPENDICES SEPARATELY BOUND

Firstplan Ltd
Bramah House
65-71 Bermondsey Street
London SE1 3XF

T: 020 3096 7000
www.firstplan.co.uk

Part B – Your Representation

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Your name or organisation *(and client if you are an agent):*	Englefield Estate (C/o Firstplan Ltd)

Please indicate which part of the Local Plan Review this representation relates to:

Section/paragraph:	
Policy:	Policy SP1 'Spatial Strategy'; Page 17, Paragraph 3.
Appendix:	
Policies Map:	
Other:	

1. Legally Compliant

Please see the guidance notes for an explanation of what 'legally compliant' means.

Do you consider the Local Plan Review is legally compliant?

Yes	✓	No	

Please give reasons for your answer:

No comment.

2. Soundness

Please see the guidance notes for an explanation of what 'soundness' means.

Do you consider the Local Plan Review is sound?

The soundness of the LPR should be assessed against the following criteria from the National Planning Policy Framework (NPPF)

Please tick all that apply:

NPPF criteria	Yes	No
Positively Prepared: The plan provides a strategy which, as a minimum, seeks to meet the area's objectively assessed need and is informed by agreements with other authorities, so that unmet need from neighbouring areas is accommodated where practical to do so and is consistent with achieving sustainable development		✓
Justified: the plan is an appropriate strategy, taking into account the reasonable alternatives, and based on proportionate evidence		✓
Effective: the plan is deliverable over the plan period and based on effective joint working on cross-boundary strategic matters that have been dealt with rather than deferred, as evidenced by the statement of common ground	✓	
Consistent with national policy: the plan should enable the delivery of sustainable development in accordance with the policies of the NPPF		✓

Please give reasons for your answer:

Please refer to accompanying Firstplan Statement of Response, Titled: 'Response by: Englefield Estate – Land West of Wigmore Lane, Theale (March 2023)' (Ref: 22456/vw) – due to the interlinked nature of the Policies responded to the Firstplan Statement deals jointly with the following:

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- *Policy SP23 supporting text*
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- *Policy DM42 supporting text*
- *Policy DM43*
- *Policy DM43 supporting text*

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3. Complies with the Duty to Co-operate

Please see the guidance note for an explanation of what 'Duty to Cooperate' means.

Do you consider the Local Plan Review complies with the Duty to Co-operate?

Yes ✓ No

Please give reasons for your answer:

No comment.

4. Proposed Changes

Please set out what change(s) you consider necessary to make the Local Plan Review legally compliant or sound, having regard to the tests you have identified above (Please note that non-compliance with the duty to co-operate is incapable of modification at examination).

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If your representation is seeking a change, do you consider it necessary to participate at the examination hearing session(s)?

Yes	✓	No	

If you wish to participate at the oral part of the examination, please outline why you consider this to be necessary:

Response made raises significant issues with regard to the soundness of the plan if the proposed amendments are not made.

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6. Notification of Progress of the Local Plan Review

Do you wish to be notified of any of the following?

Please tick all that apply:	*Tick*
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The publication of the report of the Inspector appointed to carry out the examination	✓
The adoption of the Local Plan Review	✓

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Signature	[redacted] Firstplan OBO Englefield Estate	**Date**	02.03.2023

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Please indicate which part of the Local Plan Review this representation relates to:

Section/paragraph:	
Policy:	Policy SP5 ‘Responding to Climate Change’
Appendix:	
Policies Map:	
Other:	

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Please see the guidance notes for an explanation of what ‘legally compliant’ means.

Do you consider the Local Plan Review is legally compliant?

Yes	✓	No	

Please give reasons for your answer:

No comment.

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Effective: the plan is deliverable over the plan period and based on effective joint working on cross-boundary strategic matters that have been dealt with rather than deferred, as evidenced by the statement of common ground	✓	
Consistent with national policy: the plan should enable the delivery of sustainable development in accordance with the policies of the NPPF		✓

Please give reasons for your answer:

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3. Complies with the Duty to Co-operate

Please see the guidance note for an explanation of what 'Duty to Cooperate' means.

Do you consider the Local Plan Review complies with the Duty to Co-operate?

Yes ✓ No ☐

Please give reasons for your answer:

No comment.

4. Proposed Changes

Please set out what change(s) you consider necessary to make the Local Plan Review legally compliant or sound, having regard to the tests you have identified above (Please note that non-compliance with the duty to co-operate is incapable of modification at examination).

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	Tick
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The adoption of the Local Plan Review	✓

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Appendix:	
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Your name or organisation *(and client if you are an agent):*	Englefield Estate (C/o Firstplan Ltd)

Please indicate which part of the Local Plan Review this representation relates to:

Section/paragraph:	
Policy:	Policy SP23 'Transport' supporting text suggested new paragraph 7.50.
Appendix:	
Policies Map:	
Other:	

1. Legally Compliant

Please see the guidance notes for an explanation of what 'legally compliant' means.

Do you consider the Local Plan Review is legally compliant?

Yes	✓	No	

Please give reasons for your answer:

No comment.

2. Soundness

Please see the guidance notes for an explanation of what 'soundness' means.

Do you consider the Local Plan Review is sound?

The soundness of the LPR should be assessed against the following criteria from the National Planning Policy Framework (NPPF)

Please tick all that apply:

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Justified: the plan is an appropriate strategy, taking into account the reasonable alternatives, and based on proportionate evidence		✓
Effective: the plan is deliverable over the plan period and based on effective joint working on cross-boundary strategic matters that have been dealt with rather than deferred, as evidenced by the statement of common ground	✓	
Consistent with national policy: the plan should enable the delivery of sustainable development in accordance with the policies of the NPPF		✓

Please give reasons for your answer:

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Please see the guidance note for an explanation of what 'Duty to Cooperate' means.

Do you consider the Local Plan Review complies with the Duty to Co-operate?

Yes ✓ No

Please give reasons for your answer:

No comment.

4. Proposed Changes

Please set out what change(s) you consider necessary to make the Local Plan Review legally compliant or sound, having regard to the tests you have identified above (Please note that non-compliance with the duty to co-operate is incapable of modification at examination).

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Section/paragraph:	
Policy:	Policy DM42 'Transport Infrastructure'
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Do you consider the Local Plan Review is legally compliant?

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Please give reasons for your answer:

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Do you consider the Local Plan Review complies with the Duty to Co-operate?

Yes ✓ No

Please give reasons for your answer:

No comment.

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Please set out what change(s) you consider necessary to make the Local Plan Review legally compliant or sound, having regard to the tests you have identified above (Please note that non-compliance with the duty to co-operate is incapable of modification at examination).

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Please indicate which part of the Local Plan Review this representation relates to:

Section/paragraph:	
Policy:	Policy DM42 'Transport Infrastructure' supporting text paragraph 12.95.
Appendix:	
Policies Map:	
Other:	

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Please see the guidance notes for an explanation of what 'legally compliant' means.

Do you consider the Local Plan Review is legally compliant?

Yes	✓	No	

Please give reasons for your answer:

No comment.

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Yes ✓ No ☐

Please give reasons for your answer:

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Please indicate which part of the Local Plan Review this representation relates to:

Section/paragraph:	
Policy:	Policy DM43 'Theale Rail-Road Transfer Site'
Appendix:	
Policies Map:	
Other:	

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Please see the guidance notes for an explanation of what 'legally compliant' means.

Do you consider the Local Plan Review is legally compliant?

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Expanding Rail Freight Facilities at Theale

Report

March 2023

intermodality
transport strategy & delivery

This document contains the expression of the professional opinion of Intermodal Solutions Limited (Intermodality) as to the matters set out herein, using its professional judgment and reasonable care. It is to be read in the context of the Agreement between Intermodality and Englefield Estate Trust Corporation Limited (the "Client"), and the methodology, procedures and techniques used, Intermodality's assumptions, and the circumstances and constraints under which its mandate was performed. This document is written solely for the purpose stated in the Agreement and for the sole and exclusive benefit of the Client, whose remedies are limited to those set out in the Agreement. This document is meant to be read as a whole and sections or parts thereof should thus not be read or relied upon out of context.

Intermodality has, in preparing any cost estimates, followed methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgement and reasonable care, and is thus of the opinion that there is a probability that actual costs will fall within the specified error margin. However, no warranty should be implied as to the accuracy of estimates. Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources (including the Client, other consultants, testing laboratories and equipment suppliers etc.) upon which Intermodality's opinion as set out herein is based has not been verified by Intermodality; Intermodality therefore makes no representation as to its accuracy and disclaims all liability with respect thereto.

Intermodality disclaims any liability to the Client and to third parties in respect of the publication, reference, quoting, or distribution of this report or any of its contents to and reliance thereon by any third party.

Contents

1 Introduction

1.1 Overview

1.1.1 The movement of freight by rail has undergone significant structural change since privatisation of the former British Rail freight operations in the mid-1990's. In terms of tonnes lifted, whilst the movement of coal has fallen by over 80% as a result of Government policy changes on electricity generation, movement of other commodities by rail has grown over the same period by 30%. In terms of tonnes moved (tonne km), the two largest sectors of the rail freight market by tonnage are now containerised (intermodal) traffic and construction traffic, which account for 39% and 30% of the rail freight market respectively, and have grown by over 80% and 150% respectively between 1998/9 and 2021/2.[1]

1.1.2 Growth in rail freight usage reflects a number of factors, including a supportive public policy framework, increased competition within the rail industry as well as with road haulage, investment in locomotives, wagons, Rail Freight Interchanges (RFI) and the wider rail network itself. It also reflects wider concerns from users and operators of freight transport services about fuel price increases, road congestion, a nationwide shortage of HGV drivers and corporate Environmental, Social, and Governance (ESG) policies. Major companies such as Tesco have now embedded rail transport into their "supply chains" to reduce the previous total dependence on road haulage to move goods around the country.

1.1.3 To achieve further growth in rail traffic, one of the infrastructure constraints is the availability of interchange points between the rail and road networks. Whilst the construction sector and other bulk commodities have a relatively well-established network of "railheads", the equivalent network for intermodal services is less-developed, particularly in the South East of England, despite the high concentration of population and economic activity. Development pressures in the region have resulted in many former British Rail railhead sites being sold and/or redeveloped, with attempts to create a ring of four "Strategic" Rail Freight Interchanges (SRFI) on and around the M25 having largely failed, the Radlett (St Albans) SRFI currently the only site in the entire region with consent to create a new facility. Whilst the model of creating these larger SRFI facilities has been successful elsewhere in England (with further proposals now under development in Oxfordshire, Northamptonshire, Leicestershire, Staffordshire and Merseyside), the Government has noted the challenge of delivering more of these type of facilities in the South East.[2]

1.1.4 The parallel development of smaller Intermodal RFI (IRFI), operating with and alongside the larger SRFI, would further expand and improve access to the rail network for those companies wishing to use rail, reducing the distance between the origin and destination of the goods and the rail network. This can have a significant effect on improving the overall economics of rail-based, door-to-door movement of goods, by limiting the length and cost of road haulage at one or both ends of the rail "trunk" haul.

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[1] Office of Rail & Road Statistics
[2] National Policy Statement on National Networks (NPS), DfT December 2014, para 2.58

1.1.5 The scarcity of suitable interchange points across the South East, combined with development pressures and failure to secure planning consents, is restricting the ability of rail to intercept existing freight flows moved by road to and from the region, and the associated benefits which would accrue. These include a 70% reduction in emissions compared to road haulage, as well as the ability of a single freight train carrying containerised goods to replace upwards of 40 articulated lorry loads.[3] Attempts by Government to address the climate crisis, by (inter alia) decarbonising the transport sector, will therefore be limited unless access to the rail network can be improved, particularly in the South East.

1.2 Structure of this report

1.2.1 Englefield Estate Trust Corporation Limited ("the Estate") has commissioned this report as a result of engagement from the freight industry, which has highlighted interest in a site at Theale owned by the Estate and referenced as land west of Wigmore Lane. This has been identified as one of a limited number of sites in the South East which could provide a location for an IRFI, located alongside the existing local cluster of facilities serving the construction and fuel sectors which are identified in the current West Berkshire Local Plan, Minerals and Waste Plan and Freight Strategy.

1.2.2 Specifically this report has been commissioned to support representations being made by Firstplan Ltd on behalf of the Estate to the West Berkshire Proposed Submission (Regulation 19) Local Plan Review ("LPR"). The representations principally relate to the omission of the LPR to appropriately identify the potential for the existing Theale Rail-Road Transfer Site to expand and grow (as has previously been the case) and that this growth could be accommodated on land west of Wigmore lane.

1.2.3 This report considers the provision of IRFI sites within the South East and the role that the Theale site could play in addressing public policy and industry requirements for promoting mode shift of freight from road to rail. This draws on recent work undertaken for Great British Railways (GBR) on behalf of the Department for Transport.[4] The rest of the report is structured as follows:

- Section 2 reviews the development of SRFI and IRFI in terms of their roles, the public policy framework supporting their expansion, and key criteria for identifying suitable potential locations;
- Section 3 considers the market for intermodal rail services, and the provision of IRFI across the regions against key demographic and economic indicators, to determine the extent of "levelling up" required in some regions to address a shortfall of provision compared to other regions with a more established network of sites;
- Section 4 sets out the methodology for identifying potential suitable sites in the South East, and the relatively small number of sites emerging from the analysis;
- Section 5 considers the local context for the Theale site within the "Western Corridor" opportunity area, indicating how an IRFI at this location might improve access to the rail network for existing local companies, as well as intercept existing road-based freight flows and reduce the road miles currently associated with this traffic;
- Section 6 provides closing conclusions.

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[3] NPS para 2.35
[4] A Market Development Plan: GBR actions and activities to grow rail freight, GBR Transition Team December 2022, page 10

2 The role of Rail Freight Interchanges

2.1 Context

2.1.1 The Williams-Shapps Plan for Rail 2021 has stated (our highlighting):

> "To support a green recovery, railways need to encourage a shift away from planes, cars and lorries, [to] become the best option for long-distance travel and improve the whole journey experience. This includes…**improving freight connectivity through interchanges and creating links with freeports**. This will help rail fulfil its role as a public service that supports achieving net zero across the whole economy and transport system."[5]

2.1.2 This report is focussed on Intermodal Rail Freight Interchanges (IRFI), regional railheads whose principal flow of traffic is containerised general merchandise traffic, as opposed to bulk materials such as aggregates, biomass or waste. IRFI are also distinct from Strategic Rail Freight Interchanges (SRFI)[6], which integrate RFI facilities for intermodal, conventional wagon and express freight traffic within a surrounding distribution park as a single unified commercial development.

2.1.3 SRFI are largely focussed in and around the "golden triangle" for national distribution warehousing across the Midlands. Together the established SRFI have helped generate some 56 train movements per day each way, the equivalent of over 3,900 HGV loads, with each train averaging 328km. This equates to a reduction in Greenhouse Gas (GHG) emissions in the order of 240,000 tonnes of CO_2e per annum.[7]

2.1.4 The successful development of the small network of SRFI sites demonstrates how the value arising from the associated warehousing floorspace is sufficiently strong for the developer to offset the costs of main line rail and highway access and RFI construction. However, the SRFI model will be ultimately limited by the ability to achieve sufficient critical mass (>60 Ha) in locations geographically distinct from other I/SRFI.

2.1.5 It is acknowledged that the distinction between SRFI and IRFI is not clear-cut, with sites at Sheffield (Tinsley), Leeds (Stourton) and Manchester (Trafford Park) providing examples of IRFI which have evolved within or alongside significant areas of industrial floorspace - the latter home to 1,400 companies employing an estimated 35,000 people – but without the direct commercial development integration at sites such as DIRFT. This is not to suggest that similar IRFI could not be created or enhanced in other established industrial areas, or that IRFI are somehow of less importance or relevance to achieving modal shift for those who use or operate freight transport services.

2.1.6 The distinction is more related to the means of delivery, in terms of the ability to leverage investment and development in RFI facilities at scale, which latterly has been entirely secured through large private-sector port or distribution park developments. These have increasingly been delivered as Nationally-Significant Infrastructure Projects (NSIP) in line with the NPS, through Development Consent Orders (DCO).

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[5] Great British Railways, The Williams-Shapps Plan for Rail, DfT May 2021, page 89
[6] As defined in the Planning Act 2008 and the National Policy Statement on National Networks 2014
[7] Based on analysis of rail freight services described later in this report

2.1.7 By contrast, the ability to add or expand RFI facilities without this scale of development and investment is more constrained, and as such other delivery models are required. The wider development of intermodal rail freight requires a far broader geographical disposition of IRFI to complement the SRFI network, similar to the relationship between National and Regional Distribution Centres (NDC and RDC) within the supply chain. The 17 operational IRFI (including Tilbury and Teesport which both handle domestic and maritime traffic) handle 77 trains each way per day, the equivalent of over 5,300 HGV loads, with each train averaging 345km. This equates to a reduction in Greenhouse Gas (GHG) emissions in the order of 320,000 tonnes of CO_2e per annum.[8]

2.1.8 New IRFI sites would complement the existing network of SRFI and IRFI sites, adding new opportunities to serve regional manufacturers, suppliers and consumer markets, in areas where to date planning policy, land availability or distribution space demand/value would not provide for the larger SRFI model.

2.2 The role of SRFI and IRFI

2.2.1 Modern distribution services operate across a sequence of transport links in the supply chain, with the nodes between each link being represented by an interchange between different transport modes or vehicles (e.g. articulated lorry to rigid lorry, or ship to train), sometimes with intermediate storage at these interchange points.

2.2.2 Most logistics operators or users do not have distribution facilities adjacent to RFI, or do not generate sufficient volumes of freight per day or week to warrant their own dedicated rail freight services. This creates two major challenges in trying to encourage use of rail for freight movement:

- Firstly, road haulage is usually still needed to make trips at either or both ends of the rail haul. The road haulage adds cost and time to that of the rail haulage, which together may then constrain the size of the freight market where a competitive alternative exists to traditional "door-to-door" road haulage;
- Secondly, a "critical mass" of freight volume is needed to make rail freight services competitive against door-to-door road haulage. Without this level of regular business, trains then either cannot be operated commercially, or have to run less frequently (i.e. weekly rather than daily), to allow volumes to build up to trainload quantities. A less frequent service may then be less desirable to an end user, particularly one relying on daily replenishment for a production line or store network.

2.2.3 For rail to maximise its competitiveness, these two challenges need to be addressed, by eliminating or minimising the time / distance of road haulage needed at one or both ends of the rail haul, and/or by maximising the volume of freight available every day for movement by rail.

2.2.4 The larger Strategic RFI are distinguished from other RFI by virtue of:

- The development model, involving >60 Ha of land and at least 2 million sq ft of floorspace wrapped around and integrated with RFI facilities as a single investment, compared to standalone RFI with little or no associated floorspace and investment leverage;
- Location, typically at the intersection of major railway and highway networks on the edges or between main population centres, as opposed to mainly inner-city RFI sites; and

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[8] Based on analysis of rail freight services described later in this report

- Number of sites – 8 SRFI are operational, with at least 8 further sites currently being commissioned, under construction or proposed, contrasting with around 26 operational IRFI (excluding ports handling exclusively traffic over the quayside) and several hundred other RFI for bulk commodities such as aggregates;
- Number of trains – the SRFI each handle an average of 7 trains per day, compared to IRFI which handle an average of 4½ trains per day.

2.2.5 The integration by SRFI of warehousing and road/rail interchange facilities into a single site and commercial development model has been demonstrated to help increase the use of rail transport for movement of freight, and by so doing, minimise the level of road transport activity that would otherwise be involved. SRFI allow rail to be better integrated into distribution networks (also known as "supply chains") which have previously operated as road-only networks.

2.2.6 Such developments increase the level of rail-served floorspace available to business wishing to occupy such facilities in the local area. They also help consolidate local freight traffic activity into that needed to make trainload rail freight services, bringing together traffic from on-site occupiers as well as from other local companies in the hinterland, who may not wish to (re)locate to site, but who would still wish to have access to the rail network.

2.2.7 The occupiers at these established SRFI include logistics companies and retailers who would otherwise locate at road-served distribution parks for NDC and RDC facilities. As anticipated by Government policy, the first companies to occupy warehouses included those with little or no use of or exposure to rail freight services (e.g. Eddie Stobart and Tesco at DIRFT). Over time, again as anticipated by Government policy, an increasing number of occupiers on site and in the surrounding hinterland have started using rail on a regular basis. Rail services are used to connect SRFI to the ports and mainland Europe, as well as between SRFI and other IRFI.

2.2.8 In terms of locations, 4 of the 8 established SRFI (plus 2 further sites consented and another 1 in planning) are based in the Midlands, reflecting the concentration of NDC facilities in the optimal geographic position for undertaking this role. The remaining operational SRFI are based in Scotland and the North of England, providing locations more tailored towards regional distribution and associated RDC. The expanding network of SRFI therefore includes sites with national and/or regional distribution activities.

2.2.9 The profile of traffic between each SRFI also varies, in terms of intermodal, conventional[9] and other traffic from domestic, maritime (i.e. ports) and European sources. SRFIs handle a mixture of intermodal and conventional wagon services, with intermodal accounting for around 95% of traffic, in part due to the more specialist nature of conventional wagon operations.

2.2.10 Whilst most of the SRFI developed in the 1990's were originally created primarily for European intermodal and conventional services, more than 20 years on the pattern of services has evolved in a different way than originally anticipated. There are considerable differences between SRFI, even for those within the same region. As an example, DIRFT's primary traffic is domestic intermodal (78% of daily trains), with the balance in maritime and international intermodal services and conventional wagon services, compared to Hams Hall, Birch Coppice and East Midlands Gateway which serve entirely maritime intermodal services.

[9] Conventional wagons do not carry freight in separate containers, but either in or on the wagon itself

2.2.11 Figure 1 below shows the evolution of rail traffic from the existing operational SRFI, noting the speed at which the latest SRFI at iPort and EMG have grown services, compared to first-generation SRFI.

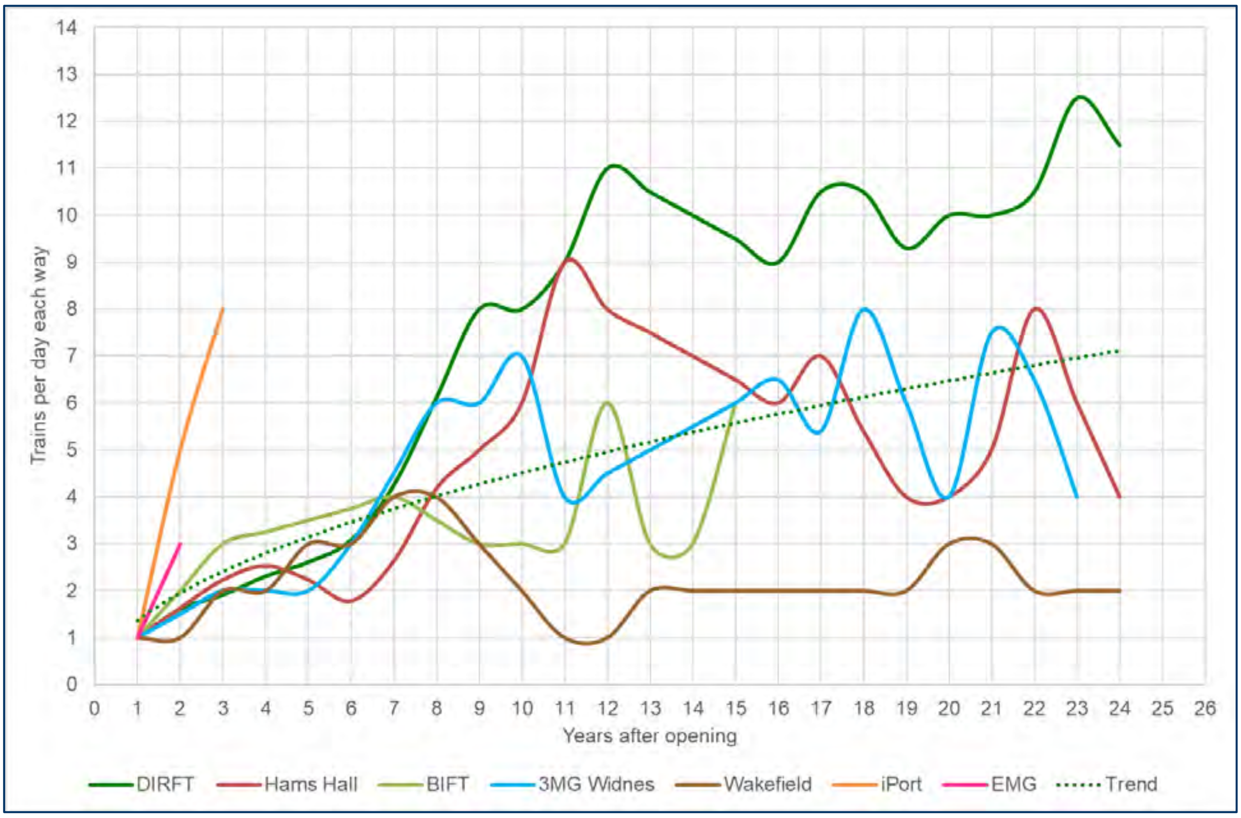

Figure 1 Evolution of rail freight traffic through operational SRFI in England

2.2.12 In addition, consents have been granted for two more SRFI in and around the Midlands, at Northampton Gateway (6 million sq ft) and at West Midlands Interchange (Cannock, 8 million sq ft).

2.2.13 Appendix B shows the current status of intermodal interchange sites in GB. It is apparent that the SRFI have to date reflected areas of demand for larger NDC/RDC floorspace, particularly pronounced along the M1 corridor (DIRFT, Northampton Gateway, East Midlands Gateway, iPort) and around the "Golden Triangle" centre of national distribution in the Midlands (Hams Hall, Birch Coppice, West Midlands Interchange, Hinckley).

2.2.14 The established SRFI development model is dependent on a critical mass of demand for, and supply of, distribution floorspace, not only as the catalyst for generating rail freight traffic, but also for generating sufficient income from the floorspace to fund the significant costs of the rail and road connections to the transport network. It is notable that, whilst the original "freight village" schemes conceived in the 1980's and 1990's by public and private promoters to link to the Channel Tunnel had relatively small footprints of 2-5 million sq ft, the trend in recent years has been for SRFI schemes to expand out to more than 5 million sq ft of floorspace. This in part reflects the entry costs to connect into the rail and road networks.

2.2.15 Whilst the focus of the NPS is intentionally geared towards the promotion of larger SRFI as nationally-significant infrastructure projects (NSIP), the NPS acknowledges that the number of suitable sites for SRFI will be limited[10] and that there is a role for existing/expanded local terminals as well.[11]

2.2.16 SRFI and RFI have developed alongside each other without material attrition of intermodal traffic between sites, with no pre-existing sites forced to close as a consequence. Local IRFI have been developed in recent years, largely on existing sites (e.g. Masborough and Tinsley) in proximity to SRFI (e.g. iPort) to serve particular operator / customer requirements.

2.2.17 Most of the sites are in relatively close proximity, each of the "binary pairs" of Garston and Ditton, BIFT and Hams Hall, Hams Hall and Lawley Street, Leeds Stourton and Wakefield Europort, Doncaster Railport and iPort being within 16 km of each other. In the case of Trafford Park and DIRFT, 2-3 IRFI are co-located within each site, but each having distinct groups of rail services and customers.

2.2.18 The catchment areas of SRFI and IRFI can vary considerably, the evidence from the Prologis survey at DIRFT I suggesting most traffic delivered by rail is concentrated within a relatively small catchment area (25 km). Recent discussions with Maritime Transport at the East Midlands Gateway SRFI suggest the catchment area around the interchange was initially up to 100 km, which subsequently fell to below 30 km, similar to the DIRFT I site.

2.2.19 It is apparent that the shorter the onward road journey to/from an interchange, the more competitive the overall door-to-door intermodal service will be against road-only haulage. The extent to which the "stem" mileage by road impacts on overall costs will to an extent be dependent on the overall length of haul. At the extremes, the RFI at Inverness receiving Tesco containers by rail from DIRFT (790 km by rail) has a catchment covering stores across the Far North of Scotland, whereas the Tesco facility at DIRFT receiving containers of inbound supplies from London (160 km) has a catchment limited to warehousing located within a few kilometres of the railhead.

2.2.20 Yet the lack of substantive proposals for further SRFI in the North East, East of England, South West, Wales and the rest of Scotland reflects the various challenges of securing planning consent, competition against other higher-value uses, lower demand for floorspace, or the ability to consolidate demand into sites in excess of 60 Ha offering more than 2-5 million sq ft. The ability to leverage additional intermodal rail services and associated mode shift in these areas is therefore constrained as a consequence. Levelling up provision of facilities in these "undiscovered" regions is therefore likely to require a development models, including those without the quantum of warehousing and investment typically associated with SRFI.

2.3 Public policy development

2.3.1 The turnaround in intermodal traffic moved by rail since privatisation reflects both the substantial private-sector and public-sector investment, as well as the evolving public policy framework. These policies have created conditions favourable to the planning and development of rail freight services and infrastructure, to which industry has responded with further investment and traffic captured to rail. The policies include:

a) A New Deal for Transport: Better for Everyone, DTLR 1998: Sought a real increase in the use of rail freight, through measures including strengthened planning arrangements to secure integration between transport and land use planning, with revised planning guidance to facilitate more freight to be moved by rail;

[10] Para 2.56
[11] Paras 2.43 and 4.84, Table 4

b) A New Deal for the Railways, DTLR 1998: Reiterated A New Deal for Transport, seeking to develop targets for both the freight and passenger railway in order to secure the maximum benefit from the rail network. Government would ensure that freight was never again turned away from the rail network. The railway as a whole would in future be at the centre of decisions on transport planning and operation;

c) Sustainable Distribution, DETR 1999: The policy stated that better utilisation of the railway had a vital role to play in building a sustainable distribution system. When intensively used, railways could offer a substantially more energy-efficient means of distribution and help to reduce congestion on the road network, with a better safety record. Reiterated the Government's desire to see more freight moved by rail;

d) Transport 2010, The 10 Year Plan, DETR 2000: Further developed the themes of the previous policies into quantifiable targets, and again re-affirmed support for rail freight;

e) European transport policy for 2010: time to decide, European Commission 2001: The White Paper set out policy guidelines to promote modal switch from road to rail, inland waterway and maritime networks, including measures to promote greater intermodality between modes;

f) SRA Strategic Agenda, 2001: The Strategic Rail Authority (SRA), whose responsibilities were subsequently incorporated into DfT and Network Rail, responded to the Government's 10 Year Plan for transport with a Strategic Agenda to set the framework for the delivery of the rail component of the 10 Year Plan. The agenda adopted the "challenge of freight" as one of its nine guiding principles. The agenda highlighted the decline in British heavy industry as putting a limit on further growth in the bulk sector and concluded that the focus of the strategy must be placed on switching non-bulk traffic from road to rail, particularly but not only, for traffic to and from Britain's major ports or the Channel Tunnel;

g) SRA Freight Strategy, 2001: This document developed the objectives of the Strategic Agenda, providing a detailed strategy designed to promote the development of rail freight. It reiterated previous Government pronouncements, highlighting the benefits of rail freight, particularly with regard to reducing congestion and bringing about environmental improvements, notably but not only, via reductions in CO_2 emissions. The introduction to this strategy highlighted the growth target for rail freight and refers to the application of two transport models which forecast the potential for growth against various scenarios;

h) PPG13 Transport, 2001: Since replaced by the National Planning Policy Framework, PPG13 set out the Government's priorities for the development of transport, highlighting the key role of land use planning in delivering an integrated transport strategy. The document identified key objectives and detailed guidance, including the promotion of more sustainable transport for both people and moving freight. In order to deliver these objectives, local authorities were advised that in the preparation of development plans, consideration should be given to a series of factors that included a need to protect sites and routes which could be critical in developing infrastructure, transport choices for both passengers and freight movements. Required the land use planning system to promote sustainable distribution, including where feasible, movement of freight by rail.

2.3.2 In 1999 the Government launched a long-term strategy to achieve more sustainable distribution of goods, in part by encouraging a greater shift of freight movement from road to rail and other modes. In helping to facilitate this, the role of major freight interchanges was recognised. The Government noted the need for a clear, national policy framework within which the future development of these major freight interchanges could be planned and considered.[12]

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[12] Para 5.17

2.3.3 In response, the SRA produced a strategy focussed on promoting larger SRFI developments. These were seen as critical in helping expand the use of rail into the largest untapped sector of the freight market (general merchandise), which latterly had been lost to growing post-war expansion of the motorway network and road haulage.

2.3.4 More recently, the NPS has reiterated the need for more interchanges. Whilst the NPS focusses on nationally-significant SRFI, the principles of the policy are relevant to other RFI as well. The key components include (our highlighting / sequence):

> 2.42 **The logistics industry**, which directly employs over two million people across more than 190,000 companies generating over £90 billion annually, **underpins the efficient operation of most sectors of the wider national economy**. Over recent years, **rail freight has started to play an increasingly significant role in logistics and has become an important driver of economic growth**.
>
> 2.43 For many freight movements rail is unable to undertake a full end-to-end journey for the goods concerned. Rail freight interchanges (RFI) enable freight to be transferred between transport modes, thus allowing rail to be used to best effect to undertake the long-haul primary trunk journey, with other modes (usually road) providing the secondary (final delivery) leg of the journey.
>
> 4.83 Rail freight interchanges are not only locations for freight access to the railway but also locations for businesses, capable now or in the future, of supporting their commercial activities by rail. Therefore, **from the outset, a rail freight interchange (RFI) should be developed in a form that can accommodate both rail and non-rail activities**.
>
> 2.53 The Government's vision for transport is for a low carbon sustainable transport system that is an engine for economic growth, but is also safer and improves the quality of life in our communities. **The Government therefore believes it is important to facilitate the development of the intermodal rail freight industry**. **The transfer of freight from road to rail has an important part to play in a low carbon economy and in helping to address climate change**.
>
> 2.45 The logistics industry provides warehousing and distribution networks for UK manufacturers, importers and retailers - currently this is predominantly a road-based industry. However, the users and buyers of warehousing and distribution services are increasingly looking to integrate rail freight into their transport operations with rail freight options sometimes specified in procurement contracts. **This requires the logistics industry to develop new facilities** that **need to be located alongside the major rail routes, close to major trunk roads as well as near to the conurbations that consume the goods**. In addition, **the nature of that commercial development is such that some degree of flexibility is needed when schemes are being developed**, in order to allow the development to respond to market requirements as they arise.

2.3.5 In recent years, the unprecedented growth in intermodal traffic moved by rail has been facilitated by expansion of interchange facilities. Around the coast, the major ports of Felixstowe, Southampton and London Gateway have invested in new quayside RFI facilities. In 2017, Felixstowe moved a record-breaking 1 million TEU[13] by rail, and is now working with Network Rail to expand rail traffic throughput further, up to 47 trains per day in and out of the port. The port noted at the time:

[13] Twenty-Foot Equivalent Unit, a measure of container traffic throughput

> This new milestone for the port reflects the dedication of our workforce and the excellent relationships we have developed with all the rail freight operators at the port. Rail is an increasingly important differentiator for shipping lines as well as importers and exporters and we are able to offer them a greater number of rail services to more destinations, more often, than any other port. Rail is also a key factor in reducing the environmental impact of transport and helps reduce road congestion.
>
> We are continuing to invest heavily in rail infrastructure at Felixstowe and are currently working with Network Rail on capacity enhancements to the Felixstowe Branch Line. This scheme complements the investment we have made in rail capacity at the port and will allow us to offer an even greater range of sustainable distribution option to our customers. Over 100 million HGV miles per year [160 million km] are already saved by using rail freight from Felixstowe and we look forward to that figure increasing significantly in future.[14]

2.3.6 In parallel, investment has also been made in the network of existing IRFI (mainly BR-era inner-city rail terminals), as well as a small number of new, larger SRFI. The NPS states that there is a compelling need to expand the SRFI network, but rationalisation of rail freight facilities during the last 50 years has meant that some areas either no longer have any interchange facilities, or have "legacy" sites which often suffer from poor location, accessibility, capacity or facilities. Independent research by Sheffield Hallam University in 1999 (Rail Freight Growth and the Land Use Planning System) noted the absence of sites (our highlighting):

> Finding sites for the larger terminals and freight villages within existing urban areas is very difficult. Where there are existing rail freight facilities, as at Willesden in north London, there is usually insufficient space, and disused facilities will probably have been sold on and developed.
>
> **What is required is large sites on the edge of metropolitan areas at points where the rail network intersects with the trunk road network: these factors combine to mean that suitable sites can often only be found outside existing urban areas, and such locations may well be subject to green belt policies and/or other restrictive planning policies.**
>
> There will only be a limited number of rail accessible sites in a local authority area that have potential for rail freight. The priority for such sites must be to retain/secure rail freight development on them, and this should override other demands such as the need to develop housing on brownfield sites, or to retain low grade farmland for agriculture as part of an urban containment strategy.

2.4 Key criteria for RFI development

2.4.1 Building on the experience of sites such as the case studies shown above, Table 1 below sets out the key criteria in the NPS for SRFI, the column for IRFI indicating where the two types differ in scope and in scale:

[14] Press release

Table 1 NPS-based criteria for rail freight interchanges

Criteria	SRFI	IRFI
At least 60 Hectares situated in England	✓	Optional
Appropriately located relative to the markets they will serve, which will focus largely on major urban centres, or groups of centres	✓	✓
Part of the railway network in England	✓	✓
Located alongside the major rail routes, in particular the Strategic Rail Freight Network	✓	✓
Located on a rail route with a gauge capability of W8 or more, or capable of enhancement to a suitable gauge	✓	✓
Capable of handling 775 metre trains with appropriately configured on-site infrastructure and layout, minimising the need for on-site rail shunting and provide for a configuration which, ideally, will allow main line access for trains from either direction	✓	Optional
Close to major trunk roads	✓	Optional
Capable of accommodating rail-served warehousing, container handling facilities, manufacturing and processing activities	✓	Optional
Capable of handling consignments of goods from more than one consignor and to more than one consignee	✓	✓
Capable of handling four trains per day and, where possible, be capable of increasing the number of trains handled	✓	Optional
Capable of providing a number of rail connected or rail accessible buildings for initial take up, plus rail infrastructure to allow more extensive rail connection within the site in the longer term	✓	Optional
The initial stages of the development must provide an operational rail network connection and areas for intermodal handling and container storage	✓	✓
It is not essential for all buildings on the site to be rail connected from the outset, but a significant element should be	✓	Optional
Availability of workforce	✓	✓

2.4.2 In addition to these high-level, policy-driven criteria, the ideal practical features of IRFI which will assist in their delivery include:

- Availability of / proximity to an existing main line connection, as a new signalled main line connection can cost upwards of £5-15m to install;
- Access to the main line without requiring grade-separation (i.e. flyovers or diveunder junctions), to avoid the costs and potential environmental impact of the structures. This suggests connections into single- or double-track formations to avoid disruptive ladder junctions across multiple fast/slow lines;
- Access to space in the timetable, to ensure that the site can develop sufficient throughput in trains and intermodal units to achieve a commercially-sustainable operation;
- Sufficient level topography to enable a train of the desired length to be berthed, for handling equipment and articulated HGVs to be able to manoeuvre (16m minimum turning circle for HGVs, similar for reachstackers handling 13.7m containers), and for intermodal units to be stored;
- Well-drained site outside of medium and high-risk flood zone areas;

- Remote/screened from major centres of residential development, with highway access to the trunk road network which avoids passing through residential areas, and can accommodate the anticipated level or HGV traffic;
- Remote from sensitive areas (e.g. Sites of Special Scientific Interest, Areas of Outstanding Natural Beauty);
- Utility connections (power and water), where possible with sufficient installed capability to facilitate future installation of electrically-powered handling equipment and vehicles.

3 Market analysis

3.1 The market for intermodal rail freight

3.1.1 To understand the potential level of future demand for IRFI across the regions, consideration needs to be made of the overall market prospects for intermodal freight, as well as observations on any relationship between current intermodal rail services across the regions and key indicators in each region such as population, warehousing and freight traffic.

3.1.2 In terms of overall growth in intermodal traffic, the share of the total rail freight market has grown significantly between 1998/9 and 2021/2 from 27% to 39% and is now the single largest component. Tonnes moved have increased from 3.53 to 6.5 billion tonne km over the same period.[15]

3.1.3 To set this in the wider context, Appendix A shows a breakdown of the current road freight market by commodity and average length of haul. With intermodal services demonstrating viability from at least 145km (and sometimes as little as 35km), those sectors of the road freight market most likely (but not exclusively) to be of relevance to intermodal services and IRFI, in terms of length of haul and/or type, are shown highlighted. The target sectors account for 140 million tonnes and 219 billion tonne km (the latter 33 times the size of the current intermodal rail market), suggesting significant room for growth where competitive services and IRFI can be provided.

3.1.4 Network Rail has stated the following in relation to forecasts:

> Industry established and endorsed forecasts by the consultants MDS Transmodal (MDST) indicate that very strong long-term growth in demand for rail freight services should be expected between now and 2043/44, even when allowing for a wide range of possible market scenarios. These scenarios included factors that favour, and disfavour rail compared to road and considered both low and high market growth. The study forecast the tonnage of rail freight per commodity sector for 2033/34 and 2043/44, using 2016/17 as the baseline year… All modelled scenarios depict growth in the rail freight sector. However, the MDST study found that the two most considerable growth markets for rail freight are Intermodal and Construction materials…
>
> Established rail freight forecasts were developed prior to the 2019 legislation [on GHG targets] and therefore do not account for this impact. This only adds to the expectations of growth, as a step change in rail's modal share of surface freight appears essential for the net-zero commitment to be upheld.
>
> The forecasts depict unconstrained rail freight growth and provide a useful starting point for understanding the requirement for daily trains and hourly paths on any given section of railway geography. However, a forecasting model will never be able to precisely reflect actual traffic volumes and all the market opportunities or changing consumer trends that will impact the rail freight sector. The GB Freight Model, used in the MDST forecast report, did not capture entirely new market entrants, traffic derived from significant civil engineering schemes or the impact new terminal developments may have on future traffic flows. As well as changing consumer trends and expectations, these all represent opportunities to realise rail freight growth beyond what is displayed in the industry endorsed forecasts.[16]

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[15] Source Office of Rail & Road statistics
[16] Freight Strategy, Network Rail, December 2021, page 17

3.2 Regional SRFI/IRFI provision

3.2.1 Table 2 below sets out comparative statistics for the various regions of GB, of relevance to the development and operation of RFI for intermodal services, whether integrated into SRFI developments or as other standalone IRFI sites. Note the table only accounts for operational sites at the time of the survey:

Table 2 Regional indicators

Region	Area	Population	Warehousing	Road freight lifted	Road freight moved	RFI on SRFI sites	Other IRFI	Total RFI
	Million Ha	Million	Million sq ft	Million tonnes	Million tonne km			
North East	0.9	2.7	18	72	9,807	0	1	1
North West	1.5	7.3	80	230	30,948	1	4	5
Yorkshire & Humber	1.6	5.5	62	217	27,186	2	5	7
East Midlands	1.6	4.8	117	229	28,988	4	1	5
West Midlands	1.3	5.9	84	231	29,340	2	3	5
East	2.0	6.2	24	238	29,694	0	1	1
London	0.2	8.9	28	124	10,369	0	1	1
South East	1.9	9.1	83	222	26,002	0	0	0
South West	2.4	5.6	29	161	20,375	0	0	0
Wales	7.8	3.1	5	91	11,149	0	1	1
Scotland	2.0	5.4	21	134	18,842	2	6	8
Total	**23.2**	**64.6**	**551**	**1,949**	**242,700**	**11**	**25**	**36**
Source	*ONS 2019*	*ONS 2019*	*Savills 2021*	*DfT 2019*	*DfT 2019*	*IMT*	*IMT*	*IMT*

3.2.2 The relationship between these sites and the respective regional population centres is shown graphically on the map in Appendix C. It is apparent from the map that several population centres in the North East, East, London, the South East and the South West have little or no operational RFI at present.

3.2.3 The ratios between the statistics in Table 2 are then set out in Table 3 below. The higher the ratio (or where no SRFI/RFI exists), the smaller the interchange provision and the higher the potential untapped traffic. This is particularly the case in the South East and South West:

Table 3 Ratios between number of operational I/SRFI and regional indicators

Region	Ratio per operational SRFI or IRFI				
	Area (million Ha)	Population (million)	Warehousing (million sq ft)	Road freight lifted (million tonnes)	Road freight moved (million tonne km)
North East	0.87	2.7	18.0	72.0	9,807
North West	0.30	1.5	16.0	46.0	6,190
Yorkshire & Humber	0.22	0.8	8.9	31.0	3,884
East Midlands	0.32	1.0	23.4	45.8	5,798
West Midlands	0.26	1.2	16.8	46.2	5,868
East	1.96	6.2	24.0	238.0	29,694
London	0.16	8.9	28.0	124.0	10,369
South East	-	-	-	-	-
South West	-	-	-	-	-
Wales	0.26	3.1	5.0	91.0	11,149
Scotland	0.68	0.7	2.6	16.8	2,355

3.3 Regional intermodal services against key indicators

3.3.1 The pattern of intermodal services to and from I/SRFI was analysed for a mid-week timetable in Q1 2022. The analysis excluded the major deepsea ports (Felixstowe, London Gateway, Southampton, Liverpool), focussing on all the inland I/SRFI, plus “hybrid” IRFI at Tilbury, Teesport and Grangemouth which handle a mixture of maritime and domestic intermodal services and, in the case of the latter, act as “inland” IRFI.

3.3.2 The sample (Table 4 below) accounted for 133 trains each way, with 75% deepsea, 25% domestic and 2% Channel Tunnel. Services operated over distances from 35 km (Mossend <> Grangemouth) up to 678 km (Coatbridge <> London Gateway), averaging 340 km. In terms of distribution between sites, the developed regions have an average of 6 trains per day across each of the operational I/SRFI sites.

Table 4 Intermodal services to inland I/SRFI and selected port IRFI (trains/day each way)

Region	Domestic Intermodal	Maritime Intermodal	Channel Tunnel Intermodal	Total
North East	2	6	0	8
North West	0	22	1	23
Yorkshire & Humber	1	27	0	28
East Midlands	11	8	2	21
West Midlands	0	20	0	20
East	4	1	0	5
London				
South East				
South West				
Wales	1	3	0	4
Scotland	14	8	0	22
Total	**33**	**95**	**3**	**131**

3.3.3 Table 5 below then uses the same regional indicators as above to determine ratios against rail services, the difference between developed and undeveloped regions is similarly stark for London, the South East and South West. The average ratios for the more developed regions (last row of Table 5) between the number of trains and key indicators, then provide an indicative order of magnitude for assessing the potential equivalent provision for the less developed regions overleaf.

Table 5 Ratios between number of intermodal services and regional statistics

Region	Ratio per daily intermodal rail service			
	Population (million)	Warehousing (million sq ft)	Road freight lifted (million tonnes)	Road freight (million tonne km)
North East	0.33	2	9	1,226
North West*	0.32	3	10	1,346
Yorkshire & Humber*	0.18	2	7	906
East Midlands*	0.23	6	11	1,380
West Midlands*	0.30	4	12	1,467
East	0.20	5	48	5,939
London	-	-	-	-
South East	-	-	-	-
South West	-	-	-	-
Wales	0.25	1	23	2,787
Scotland*	0.27	1	6	856
Average (across developed regions*)	**0.25**	**3.3**	**9.2**	**1,191**

3.3.4 If the above ratios from the more developed regions (last row of Table 5 above) are then applied to the less developed regions, the equivalent number of services and IRFI would be as shown in Tables 6 and 7 below. In terms of the equivalent number of IRFI to accommodate this traffic, the ratio from the operational IRFI (4½ trains per IRFI on average) has been used:

Table 6 Equivalent intermodal rail services for less developed regions

Region	Current rail services	Equivalent rail services per day relative to				Average of a)-d)
		a) Population	b) Warehousing floorspace	c) Road tonnes	d) Road tonne km	
North East	8	10	6	8	8	8
East	5	24	7	26	25	21
London	0	35	9	13	9	16
South East	0	36	26	24	22	27
South West	0	22	9	17	17	16
Wales	4	12	2	10	9	8
Total	**17**					**98**

Table 7 Equivalent IRFI for less developed regions

Region	Current IRFI	Equivalent IRFI @ 4½ trains per IRFI (based on average of a)-d) above)
North East	1	1.8
East	1	4.6
London	1	3.7
South East	0	6.0
South West	0	3.6
Wales	1	1.8
Total	**17**	**21.5**

3.3.5 In comparing those regions with well-developed services and interchanges against those with less-developed provision, a range of possible outcomes can be determined as shown in Table 8 below:

Table 8 Low, Medium and High scenarios for less-developed regions

Trains per day	Low (do-nothing)	Medium (50% of potential)	High (100% of potential)
North East	8	8	8
East	5	13	21
London	0	8	16
South East	0	13	27
South West	0	8	16
Wales	4	6	8
Total	**17**	**46 (170%)**	**98 (476%)**
Additional long-distance HGV loads removed per annum	-	+0.6 million	+1.6 million
Additional tonnes of CO_2e of GHG saved per annum	-	+149,000	+416,000
Additional rail tonne-km per annum	-	+3.0 billion	+8.4 billion

3.3.6 It is worth noting that the above analysis is not intended to provide a robust, forensic forecast of out-turn traffic levels, but instead attempts to estimate the order of magnitude scale of latent market potential in the less developed regions, based on that observed in the more developed regions.

3.3.7 In terms of the implications for particular regions, note that 75% of current intermodal rail services operate to and from the major deepsea ports located in the East and South East regions. The ability for these regions to secure a significant proportion of maritime intermodal traffic to rail will relate to the proximity to these ports. That said intermodal services operate over distances as low as 35-160 km, either as part of multi-site operations (e.g. Mossend > Grangemouth > Aberdeen, DIRFT > iPort > Teesport) or where sufficient volume permits (e.g. DIRFT to Tilbury and Wentloog). Recently-launched services now link the ports of Southampton and London Gateway (187 km) and the port of Seaforth with the East Midlands Gateway SRFI (150km). It is also worth noting that DIRFT, the largest of the SRFI, has only 1-2 maritime intermodal services of the 14 operated, demonstrating that not all (S)RFI will necessarily involve maritime intermodal services.

3.3.8 In terms of domestic intermodal services, the scale of population density and challenges with the strategic highway network in the Greater South East, combined with the evidence from Tesco (with a 30% share of the GB grocery market) moving goods over the relatively short distance between DIRFT and Tilbury, suggests considerable potential for other general merchandise traffic (see Appendix A).

3.3.9 In conclusion, the scale of existing I/SRFI provision across more developed and mature regions of GB, within a significantly larger equivalent road freight market as indicated in Table 2, provides a reasonable basis for determining an appropriate scale of opportunity and provision for the less developed regions.

4 Alternative site assessment

4.1 Methodology

4.1.1 A national review of potential IRFI was undertaken in Spring 2022, as part of a separate assignment for Great British Railways (GBR), prior to involvement with the Theale project. This worked through a sequence of a) existing operational sites, b) non-operational sites with existing main line connections, c) sites with previous main line connections, and d) other sites with potential merit in terms of location and accessibility by rail. The overall objective was to identify a future pipeline of sites able to provide additional capacity in the event of existing I/SRFI facilities being exhausted, and/or where no material capacity exists at present to serve particular regions or sub-regions (e.g. the South West or South East).

4.1.2 Those sites which passed the initial identification and sifting process were then assessed against a number of key criteria, namely:

- Site topography –overall levels / gradients across the site (rail needing relatively flat sites);
- Rail topography – extent to which rail access was constrained by cuttings or embankments;
- Rail loading gauge (W6-W12) – the larger the gauge, the greater the range of rail service options;
- Rail route availability (RA1-RA8) – the larger the availability, the greater the wagon payload;
- Rail main line connection – existing, previous or no previous connection;
- Highway topography – extent to which road access could be achieved between railway and highway;
- Nearest highway access – capability of local highway network to accommodate HGV traffic at scale;
- Flood risk – extent to which sites might be affected by flooding;
- Maximum site length – RFI will need to accommodate trains 450 – 775m clear of the main line;
- Maximum site width – sufficient to accommodate the sidings and handling area (typically >30m);
- Maximum site extent – a view on how far a site could be assembled around other uses / boundaries;
- Nearest settlement – how close would potential residents be (and be potentially concerned);
- Electricity Transmission Lines – the presence of high-voltage lines could fetter crane operations;
- Local Plan allocation / status – extent to which RFI development would align with local plan policies;
- Current usage – how far might existing uses / users complement or conflict with RFI development.

4.2 Regional assessment

4.2.1 From an original longlist of over 600 sites nationally, the high-level search for suitable locations for IRFI identified only 24 sites following the first sift, with only 4 of these identified within the South East, namely:

- Northfleet (Kent);
- Salfords (West Sussex);
- Crawley Goods Yard (West Sussex);
- Theale (Berkshire).

4.2.2 This provides an indication of the scale of the challenge, as recognised by the Sheffield Hallam research nearly 25 years ago (section 2.3 earlier), as well as more recently in the NPS.[17]

[17] Paras 2.56, 2.58, 5.172

5 Theale and the Western Corridor: the local context

5.1 Overview

5.1.1 The national assessment of potential IRFI locations (Section 4) was undertaken from a GBR perspective, the emphasis being on sites where Network Rail already provided sufficient land and operational main line connections to enable GBR, as the proposed successor body to Network Rail, to be able to deliver IRFI without recourse to third-party land and funding. On this basis the Theale site, which would require third-party land, and being located in a high flood risk zone with potential planning policy conflicts, was considered unlikely to be deliverable by GBR.

5.1.2 The GBR assessment did, however, note that the location already had an existing third-party multi-role rail-linked site, was situated alongside a core route of the Strategic Freight Network (see below) and close to M4. The assessment referenced potential local authority support, based in part on the content in the West Berkshire Freight Strategy (see below) and on feedback from Network Rail referencing positive engagement between the Chartered Institute of Logistics & Transport (CILT) and West Berkshire Council. The assessment concluded that scope existed to create an intermodal facility, subject to land availability and flood risk mitigation.

5.1.3 NR has subsequently engaged with the Estate with a view to investigating the key potential that land in the Estate's ownership offers to secure modal shift from road to rail and meet identified market demand for further rail served facilities in this location. As a result Network Rail and the Estate are working jointly to review development options for the land west of Wigmore Lane, in particular in terms of operationally-suitable options for the delivery of necessary rail siding infrastructure. The proposals are at an early stage, and at the appropriate time will need to be reviewed via pre-application consultation with West Berkshire, and be subject to detailed design development and full assessment as part of a formal planning application.

5.1.4 Our work within the rail freight sector over the past 21 years also highlighted the frustration amongst train operating companies and their end customers to identify suitable sites across the South East in general and the Reading area in particular. An example in recent years has been the searches undertaken during 2013 and 2016 for an IRFI to serve Regional Distribution Centres in Reading and Basingstoke, on behalf of a major logistics operator and their retailer customers. Despite covering an area extending out as far as Appleford to the north, Swindon to the west, Micheldever to the South and Slough to the east, we were unable to find any sites meeting the end customer requirements for proximity and operational readiness. The traffic therefore continues to be moved to and from the local area by road throughout, with the associated disbenefits across the road network.

5.2 West Berkshire Council Policy framework

5.2.1 The Waste & Minerals Local Plan Policy 9 seeks to safeguard the existing aggregate rail depots, specifically the adjacent site at Wigmore Lane Rail Depot.

5.2.2 The Local Transport Plan Freight Strategy notes that:

The encouragement of freight by sustainable means (i.e. by rail and water) as an alternative to road would be environmentally less damaging in terms of reducing the length of road-based freight journeys on the District's road network, particularly through local communities. However it should be noted that the most rail or water based freight movements would need to start or end with a road based movement.

LTP Policy K12 (Freight) seeks to encourage more sustainable distribution practices including the encouragement of freight transportation by rail and water. Although road freight is by the far the most dominant means of freight transport both nationally and locally there are several commodities, such as aggregates, deep-sea containers, petro-chemicals, metals, waste, coal, and bio-mass fuels that owing to their bulk can be effectively transported by rail (and due to the lack of wharf infrastructure within West Berkshire, water movements are currently more limited). However the development of such infrastructure would be generally supported to enhance the choice of sustainable transportation infrastructure in the District.

There are also rail freight aggregates and petroleum distribution terminals located at Wigmore Lane, Theale. The Council recognises the important economic value of this strategic rail freight site and will seek through planning policies as part of the development plan process to ensure that it is protected against unsuitable development….

West Berkshire will work with Network Rail to ensure that any further changes to rail infrastructure take into account any potential rail freight use and work with rail operators and local businesses to monitor and support proposals for reinstating freight access should opportunities arise.

Details on how the Council will seek to protect existing rail freight sites and seek to further encourage sustainable distribution are included in the Action Plan (*FAP2: To use the development plan process to protect the strategic rail freight site at Theale and to encourage development at other locations which may offer opportunities for sustainable distribution*).[18]

5.3 Site assessment

5.3.1 The potential for an IRFI on land west of Wigmore Lane at Theale is based on the following combination of factors:

- Interest from Network Rail, GBR, logistics and train operators and their customers in the location, which has previously featured in site searches for IRFI, for new opportunities to divert existing freight traffic flows to rail, which remain frustrated and the traffic remaining entirely on the road network throughout;
- The West Berkshire Local Plan policy framework, which *inter alia* encourages freight transportation by rail, supports the development of sustainable transportation infrastructure in the District, and acknowledges the important economic value and need for protection of the existing strategic rail freight site at Theale, working with Network Rail, rail operators and local businesses to monitor and support proposals for reinstating freight access should opportunities arise;
- Strategic rail network access: in 2009 The Department for Transport created a "Strategic Freight Network" (SFN), a collection of key rail routes across Great Britain linking key origins and destinations which would provide the focus for a rolling programme of network enhancements in areas such as loading gauge (height and width of trains and their loads), train weight, length and network capacity.

[18] West Berkshire Local Transport Plan, Freight Strategy, West Berkshire Council November 2014, paras 4.0.1-4.1.5

The SFN is divided into "core" and "diversionary" routes. The section of main line passing the Theale site is on or core route of the SFN (Appendix B);

- Strategic highway access: the site is located alongside the A4 and is less than 3km from the M4 motorway junction 12, the A4 being largely dual-carriageway between the two locations. The A4 also forms part of the West Berkshire Freight Route Network;[19]

- Railway loading gauge: the rail network is divided into a series of route sections with varying loading gauge height / width profile for freight traffic, ranging from the smallest (W6A) to the largest (W12). For intermodal traffic, a loading gauge of at least W8 is desirable to allow containers to be carried by rail. The section of main line passing the Theale site is already cleared to the maximum W12 loading gauge, which extends through to other parts of the country via Oxford or London;

- Train length and weight: the main line passing the site is already classified as a diversionary route for container trains operating between Southampton and the rest of the country, the trains operating at up to their maximum (775m) length. The route is also used by "jumbo" aggregate services from the Mendip quarries with trains of up to 4,400 tonnes in weight, far in excess of that required for the 1,235 – 1,800 tonne trains typically associated with intermodal services;

- Electrification: the main line tracks passing the site are already electrified with the 25kV ac overhead system, allowing "dual mode" locomotives (i.e. those able to operate on both electric and diesel power supplies) to be capable of reaching Theale from the Great Western Main Line on electric power, switching to diesel for the short final leg between the main line and site;

- Topography: the site is broadly level with the main line and A4, the main line being slightly elevated relative to the site itself;

- Proximity to market: the IRFI would unlock rail access to existing (and future) freight operators and users in the surrounding area, linking the site with the rest of the country and mainland Europe via the Channel Tunnel. Major distribution centres within a 25km radius of the site include:

    - Reading: Tesco (itself a major user of intermodal rail services), Argos, Amazon, IKEA, DHL, UPS;

    - Theale: Amazon (DRG1 and DRG2);

    - Thatcham: M&S, Harrods and GXO;

    - Didcot: ASDA, Tesco;

    - Basingstoke: Sainsburys;

    - Bracknell: Waitrose.

- Future prospects: the site sits at the western end of a cluster of economic activity and industrial floorspace, which one property agency describes as the "Western Corridor," who reported in 2022 that occupier demand for warehousing remained elevated. Some 6.0 million sq ft of industrial and logistics floorspace was taken up in the Western Corridor in 2021, the second highest year on record. Void rates across the Western Corridor were low, with available supply continuing to fall and reaching a record low

[19] West Berkshire Local Transport Plan, Freight Strategy, West Berkshire Council November 2014, Appendix A

of 3.9 million sq ft at the end of 2021.[20] A separate report from 2022 also highlighted the lack of warehousing space in the Reading area.[21] This latent demand is therefore expected to be satisfied by more third-party development in the surrounding area, creating more distribution activity and potential for rail services to move goods to and from the local area.

5.3.2 It is acknowledged that the proposed site sits within an area of high flood risk, as do the existing multiple users of the existing Wigmore Lane facilities for aggregates and petroleum products on the adjacent site, who have successfully operated for many years at this location. Achievement of suitable mitigation measures to protect not only the site itself, but also for the existing Wigmore Lane site and surrounding areas, will be an important consideration for the allocation and development of an IRFI at this location.

5.3.3 Against the key criteria identified in Table 1 previously, the site achieves a high level of alignment:

Figure 4 Theale site against key IRFI site criteria

Criteria (* relates primarily to larger SRFI)	IRFI
At least 60 Hectares situated in England*	Site has sufficient land with level topography to accommodate and handle 775m length intermodal trains
Appropriately located relative to the markets they will serve, which will focus largely on major urban centres, or groups of centres	Site is within 3km of the M4 motorway and within the catchment of major centres of population and economic activity centred on Reading
Part of the railway network in England	Site is adjacent to an existing operational multi-user RFI handling bulk commodities
Located alongside the major rail routes, in particular the Strategic Rail Freight Network	Adjacent main line is SFN core route
Located on a rail route with a gauge capability of W8 or more, or capable of enhancement to a suitable gauge	W12 loading gauge on main line
Capable of handling 775 metre trains with appropriately configured on-site infrastructure and layout, minimising the need for on-site rail shunting and provide for a configuration which, ideally, will allow main line access for trains from either direction	Site has sufficient land to handle 775m length trains with minimal shunting required. Adjacent Network Rail sidings at Theale provide access in both directions and can accommodate 775m length trains
Close to major trunk roads	Adjacent to A4 and within 3km of M4 Junction 12
Capable of accommodating rail-served warehousing, container handling facilities, manufacturing and processing activities	Not applicable – surrounding catchment area already offers existing and expanding floorspace for warehousing and associated activities
Capable of handling consignments of goods from more than one consignor and to more than one consignee	Yes
Capable of handling four trains per day and, where possible, be capable of increasing the number of trains handled*	Site has sufficient land available to allow for sidings and hardstanding capable of processing 4 trains per day
Capable of providing a number of rail connected or rail accessible buildings for initial take up, plus rail infrastructure to allow more extensive rail connection within the site in the longer term*	Not applicable – surrounding catchment area already offers existing and expanding floorspace for warehousing and associated activities
The initial stages of the development must provide an operational rail network connection and areas for intermodal handling and container storage*	The proposed IRFI would by definition have an operational rail network connection and areas for intermodal handling and container storage

[20] https://www.jll.co.uk/en/trends-and-insights/research/western-corridor-report-spring-2022
[21] https://orderwise.co.uk/blog/revealed-the-uk-locations-with-the-least-available-warehouse-space/

Criteria (* relates primarily to larger SRFI)	IRFI
It is not essential for all buildings on the site to be rail connected from the outset, but a significant element should be	Not applicable – surrounding catchment area already offers existing and expanding floorspace for warehousing and associated activities
Availability of workforce	Over 48,000 people live within 5km of the site[22]
Availability of / proximity to an existing main line connection	The site could be connected into the existing sidings serving the current Theale RFI facilities
Access to the main line without requiring grade-separation	The connection into the existing sidings at Theale would then permit at-grade access to the main line in both directions of travel
Access to space in the timetable	The main line timetable has the capability to accommodate additional freight services
Sufficient level topography / length / width HGVs	The site extends far in excess of that required to handle 775m length trains and associated activities
Well-drained site outside of medium and high-risk flood zone areas	The site, and the existing multiple RFI facilities, are situated within an area of high flood risk, and would therefore require suitable mitigation measures
Remote/screened from major centres of residential development, with highway access to the trunk road network which avoids passing through residential areas, and can accommodate the anticipated level or HGV traffic	The indicative site boundary would be within 200 metres of a group of properties on Wigmore Lane (which abut the existing RFI facilities) and individual properties facing onto the A4. The proposed highway access would be centred between these latter properties, providing direct access to the A4, with no access to Wigmore Lane. The capacity of the A4 has been assessed separately as part of the proposals
Remote from sensitive areas (e.g. Sites of Special Scientific Interest, Areas of Outstanding Natural Beauty);	The area to the north of the A4 is designated AONB, to the south of the main line as a Biodiversity Opportunity Area, and the site is located within the Kennett Lower River Valley Landscape Character Assessment area. Development of the site would need to reflect and minimise impacts on these adjacent areas
Utility connections (power and water)	The site is capable of being connected to mains electricity and water supplies

5.4 Indicative layout and operations for the IRFI

5.4.1 The proposed IRFI (see illustrative layout in Appendix E) would follow the established pattern of design, development and use, key features including:

- A level area of hardstanding enclosed by security fencing to prevent unauthorised access (concrete pad currently envisaged as circa 750m length and minimum 30m in width);
- Main line access could be provided via the existing complex of freight sidings serving the Wigmore Lane site immediately to the east;
- Highway access direct from the A4 into the site from the north;
- Sidings within the site capable of accommodating 1-2 x 775m length trains simultaneously;

[22] https://www.freemaptools.com/find-population.htm

- Portable modular buildings providing gatehouse / office / amenities for staff and visitors;
- Container handling equipment, typically “reachstacker” units (see title page);
- Temporary container storage stacking up to 3-4 high (9-12m);
- Lighting columns, typically up to 18m in height around the perimeter, with directional lighting to minimise light spill onto adjacent areas.

5.4.2 In terms of operations, a typical cycle would involve HGVs arriving from the A4 in advance of their allotted time slot to collect or deliver a container. The HGVs would be checked in at the gatehouse to confirm the correct credentials, before being directed to a parking slot within the site. HGVs would then be called forward to an agreed location within the site where containers would be unloaded or loaded as required. In parallel, trains would arrive and depart from the sidings according to available space within the main line timetable. IRFI typically operate from Sunday evenings / Monday mornings through to Saturday lunchtimes, although it is anticipated that, subject to customer requirements (especially retailers), in some cases the IRFI would operate throughout the weekend period as well.

6 Conclusions

6.1 Addressing regional imbalances in provision of Intermodal Rail Freight Interchanges

6.1.1 The Williams-Shapps Plan for Rail 2021 noted the need to improve freight connectivity through interchanges and creating links with freeports, to help the rail industry support achieving net zero across the whole economy and transport system.

6.1.2 A small but growing number of Strategic Rail Freight Interchanges (SRFI) have been successfully developed over the last 30 years, mostly using private-sector funding. These have all achieved the objective of national policy as set out in the Government's NPS and Rail Freight Strategy 2016, creating growth points for rail freight from a critical mass of distribution floorspace, at strategic intersections between the road and rail networks. The floorspace also generates commercial value, which can address the significant upfront costs of the installing the road and rail network connections and interchange facilities. However, the SRFI model will be ultimately limited by the ability to achieve sufficient critical mass in locations geographically distinct from other SRFI or IRFI.

6.1.3 By contrast, the ability to add or expand RFI facilities without this scale of development and investment is more constrained, and as such other delivery models are required. The wider development of intermodal rail freight requires a far broader geographical disposition of IRFI to complement the SRFI network, similar to the relationship between National and Regional Distribution Centres (NDC and RDC) within the supply chain. The existing operational IRFI handle rail freight traffic equivalent to over 5,300 long-distance HGV loads, equating to a reduction in GHG emissions in the order of 320,000 tonnes of CO_2e per annum.

6.1.4 Great British Railways, as the Government's intended successor organisation to Network Rail, considers that the wider development of intermodal rail freight requires a far broader geographical disposition of IRFI to complement the SRFI network, in areas where to date planning policy, land availability or distribution space demand/value would not support the developer-led SRFI model. Those regions where the level of I/SRFI provision and/or associated intermodal traffic falls below more established regions are the North East, East of England, South East, South West and Wales.

6.1.5 The assessment of intermodal rail services in more developed regions of the UK (e.g. the Midlands), suggests the scale of equivalent latent demand in less-developed regions, including the South East, could be in the following order of magnitude:

- 81 trains per day (the equivalent of 61% of existing intermodal services), equating to;
- 1.6 million long-distance HGV loads removed from the highway network;
- 8.4 billion net tonne km moved by rail, the equivalent of 126% of existing intermodal traffic levels;
- 416,000 tonnes CO_2e of GHG saved per annum, compared to using road for the same journeys.

6.1.6 For the South East in particular, the analysis suggests the share of the above untapped demand could be in the order of 27 trains per day, or the equivalent of 6 x IRFI where currently none exist. However, a high-level nationwide search for suitable locations, from an initial longlist of over 600 sites, identified only 4 potential candidate sites in the South East.

6.1.7 Of these, Theale has been identified as the only site capable of serving the western end of the region. Government has acknowledged the wider challenge of developing facilities for rail freight within the South East, with only one of the original 4 SRFI envisaged around the M25 ultimately being taken forward and securing planning consent. Sites such as Theale are therefore of critical importance for realising public policy commitments to transport decarbonisation and freight mode shift, as for those operators and users of freight services wishing to reduce dependence on road haulage for operational, commercial and environmental reasons.

6.1.8 The number of candidate sites for IRFI across the South East, as one of the largest concentrations of economic and freight transport activity in the country is extremely limited. The structure of the existing and emerging West Berkshire Local Plan policy framework and Local Transport Plan seeks to protect the existing rail facilities at Theale, and encourage more rail freight transportation and infrastructure. Therefore, with the interest now being shown in the site by the rail and freight industry, the LPR should ensure that it appropriately supports growth for rail freight facilities at Theale, specifically on land west of Wigmore Lane.

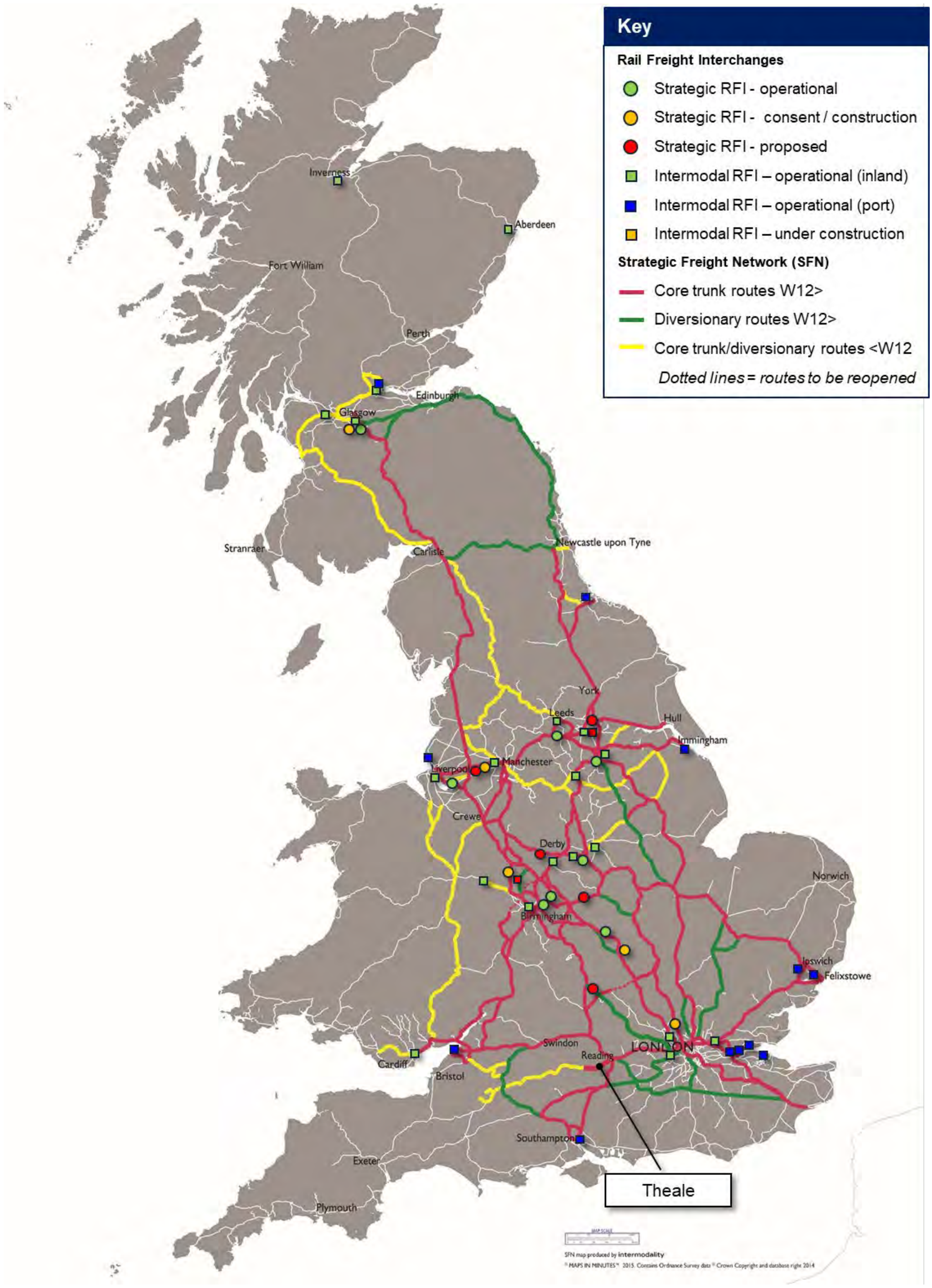
Appendices

Appendix A Road freight market breakdown with target sectors

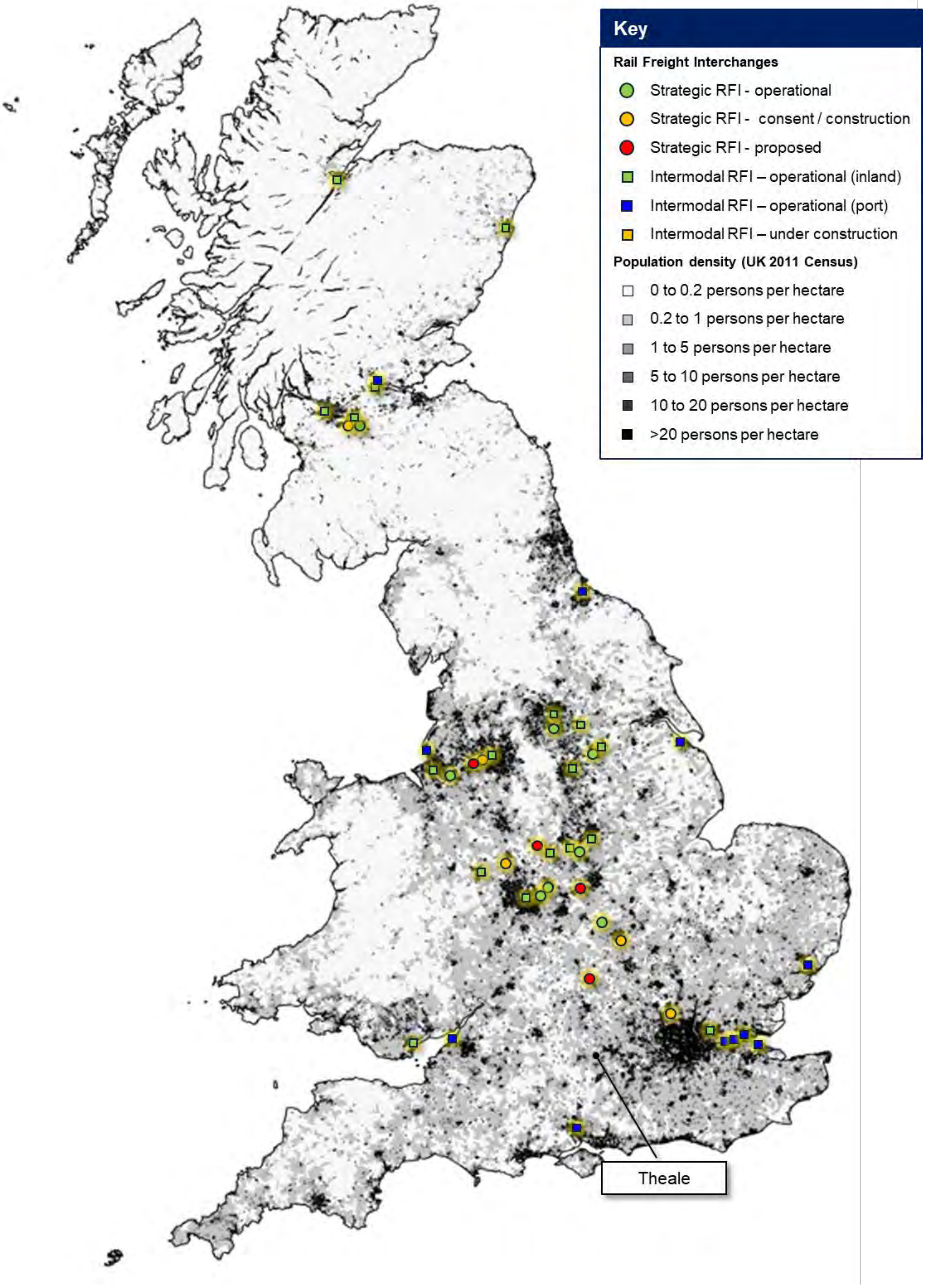
Source DfT 2020

Commodity	Million tonnes lifted by road	Billion tonne km moved by road	Average length of haul (km)
Agricultural products, of which:	92	11.8	128
Other fresh fruit and vegetables	12	1.9	162
Coal and lignite	2	0.4	192
Metal ore and other mining and quarrying	155	11.0	71
Food products, inc. beverages and tobacco, of which:	261	35.2	135
Meat, raw hides and skins and meat products	5	0.8	166
Fish and fish products, processed and preserved	2	0.5	254
Fruit and vegetables, processed and preserved	3	0.5	164
Animal and vegetable oils and fats	1	0.2	218
Beverages	37	5.6	151
Textiles and textiles products, leather and leather products	10	1.4	137
Wood products, of which:	48	6.6	138
Pulp, paper and paper products	21	3.3	155
Printed matter and recorded media	4	0.7	163
Coke and refined petroleum products	36	3.4	95
Chemical products, of which:	49	6.7	137
Nitrogen compounds and fertilizers (except natural fertilizers)	2	0.3	160
Basic plastics and synthetic rubber in primary forms	7	1.1	163
Glass, cement and other non-metallic mineral products	143	11.2	78
Metal products	28	3.6	129
Machinery and equipment, of which:	32	4.2	131
Domestic appliances (white goods)	12	1.8	149
Office machinery and computers	1	0.1	104
Transport equipment	29	3.7	128
Furniture and other manufactured goods, of which:	11	1.7	153
Furniture and furnishings	9	1.4	160
Waste related products	183	12.5	69
Mail and parcels, of which:	42	6.0	144
Parcels and small packages	27	4.0	149
Empty containers, pallets and other packaging	20	2.5	123
Household and office removals and other non-market goods	43	3.0	69
Groupage	230	25.3	110
Unidentifiable goods	27	3.6	133
All commodities	1,440	153.8	
Highlighted commodities over 145km average length of haul	140	219	
Share of total road freight market	10%	14%	

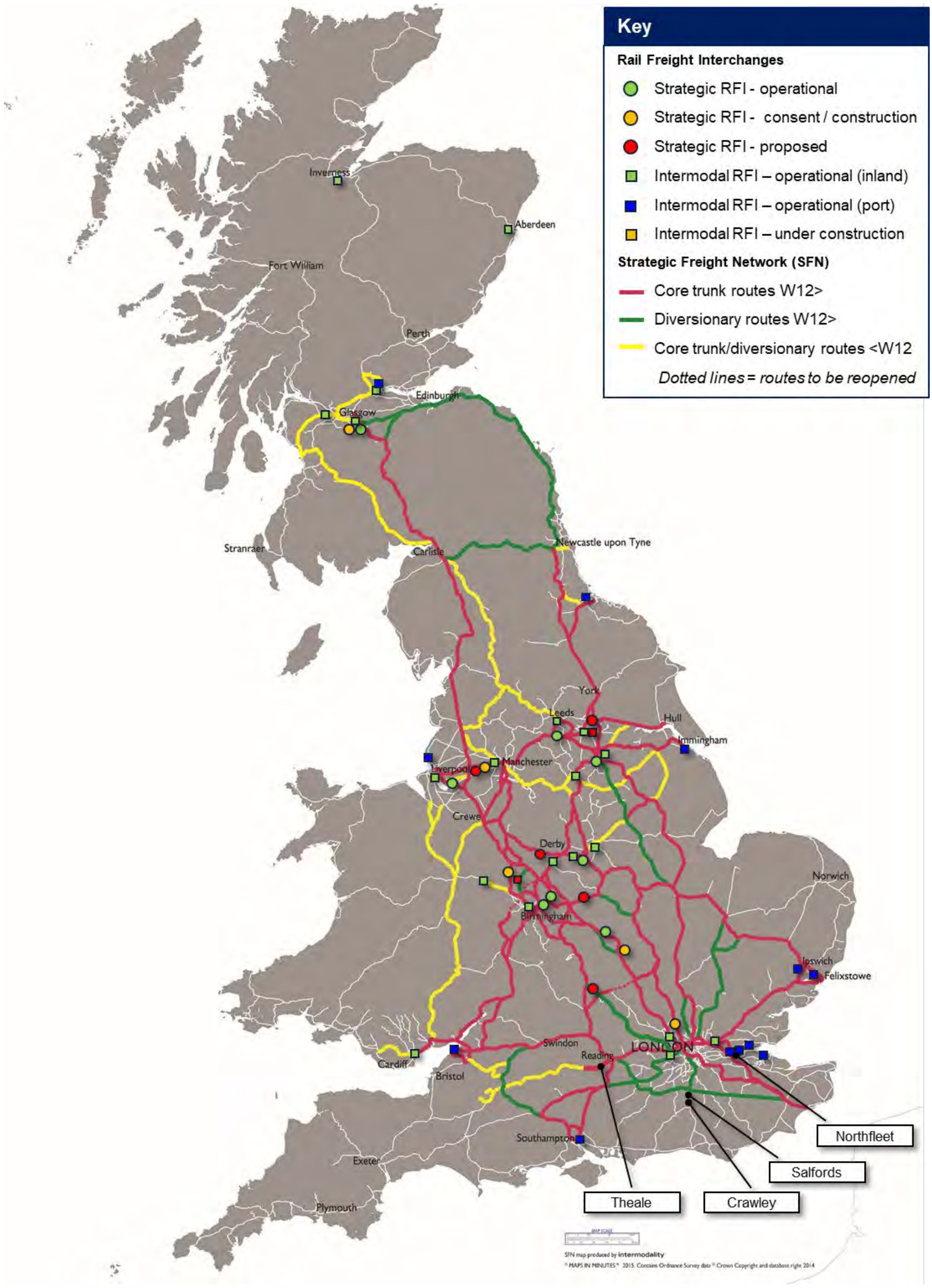
Appendix B **Intermodal / Strategic RFI with Strategic Freight Network**



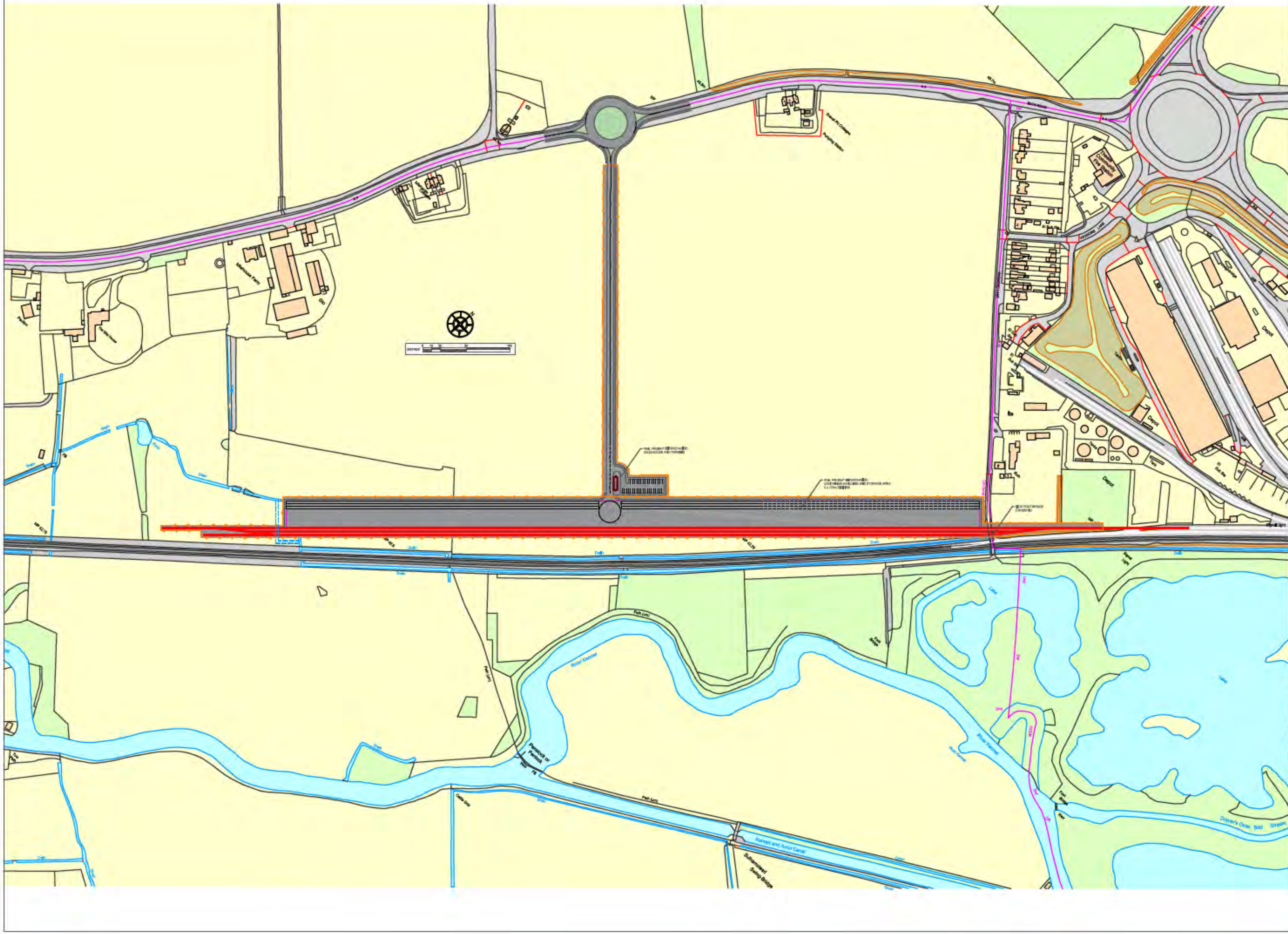
Appendix C **Intermodal / Strategic RFI with population density**



Appendix D Intermodal RFI sites identified in the South East



Appendix E Illustrative site plan



NOTES:

Chainages, levels and co-ordinates are show in metres. All other dimensions are in millimetres, unless otherwise stated. All clearances and track intervals are quoted to running edge (RE).

This design is based on survey data. Variations to the existing arrangement may have occurred since the survey was completed.

North point is to an approximate orientation.

Track gauge to be nominal 1435mm, unless otherwise stated.

Clearance Point = Fouling Point (1970mm) + 5890mm.

This drawing indicates indicative alignments only, specific work limits are to be confirmed by third parties following option selection.

The installation methodology, staging requirements and track access should be confirmed prior to any design development.

PLAN KEY:

Note not all symbols may be used on the associated plan

Black – Existing or unchanged
Blue - Modified or to be moved
Green – Redundant or to be removed
Red - Proposed or additional
Pink - works by others/Temporary Works

CP Clearance Point
FP Fouling Point

SITE LOCATION:

ELR: BHL
Chainage(s): Mileposts 41 to 43

P01.01	Draft Submission	NTG	23/01/2023
Rev	Amendments	Reviewed by	Date

Status: DRAFT work in progress

Client: ENGLEFIELD ESTATE

Project: THEALE RAIL FREIGHT INTERCHANGE

Title: Illustrative General Arrangement Drawing — Sheet 1 of 1

Project	Originator	Volume	Level	Type	Role	Number
200307	IMT	XXX	XX	DRG	EMP	00001

Informal project reference: 200307
Suitability / Suitable for: S0 - Work in Progress
Scale: Refer to scale bar — Created: 23/01/2023 — Revision: P01
Project Lead: NG — Drawn: NG — Checked: — Reviewed: — Approved for Issue:

intermodality
transport strategy & delivery

Sheet Size A1 841mm x 594mm
Drawing Template 23/01/23

Intermodality
Tel: 0845 130 4388
Email: info@intermodality.com
Web: www.intermodality.com

i-Transport LLP
85 Gresham Street, London, EC2V 7NQ

Tel: 020 3705 9215

Technical Note

Project No: ITL18507
Project Title: Land West of Wigmore Lane, Theale
Title: Transport Note
Ref: NM/DF/ITL18507-001A TN
Date: 24 February 2023

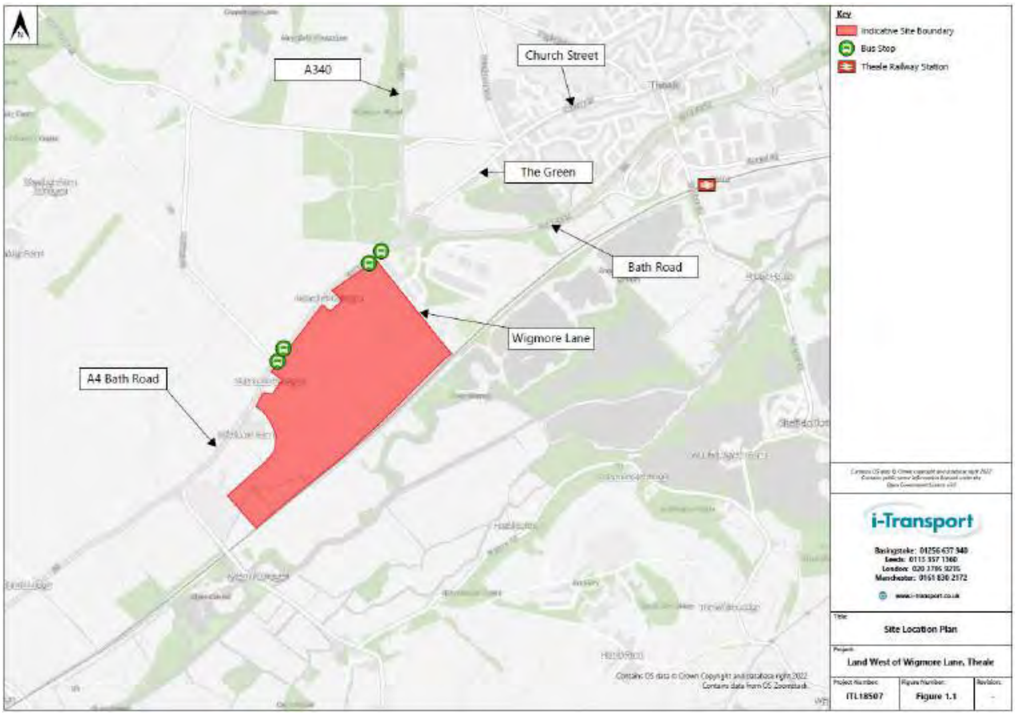
SECTION 1 Introduction

1.1 Overview and Background

1.1.1 Firstplan Ltd is making representations on behalf of the Englefield Estate to the Regulation 19 Consultation for the emerging West Berkshire Council (WBC) Local Plan Review (LPR). The representations principally relate to the LPR's omission to appropriately identify the potential for growth and expansion of the existing Theale Rail-Road Transfer Site onto land west of Wigmore Lane.

1.1.2 The site, referenced as 'Land west of Wigmore Lane', is currently open agricultural land, with frontage to the A4 Bath Road to the north and Wigmore Lane to the east. The Great Western Railway (GWR) line forms the southern boundary. A site location plan is included as **Figure 1.1** with an extract included overleaf.

Image 1.1: Site Location Plan



1.1.3 Network Rail ('NR') has approached Englefield Estate with a view to investigating the key potential that land in their ownership offers to secure modal shift from road to rail and meet identified market demand for further rail served facilities in this location. Specifically, the land west of Wigmore Lane, in the ownership of the Englefield Estate, has been identified as one of only four candidate sites in the Southeast able to accommodate an Intermodal Rail Freight Interchange ('IRFI'). Indeed, the Theale site has been identified as the only site capable of serving the western end of the region.

1.1.4 Network Rail and Englefield Estate are working jointly to review development options for the land west of Wigmore Lane, in particular in terms of operationally suitable options for the delivery of necessary sidings infrastructure. The proposals are at an early stage and at the appropriate time will need to be reviewed via pre-application consultation with West Berkshire, be subject to detailed design development and full assessment as part of a formal planning application submission.

1.1.5 It is proposed to create a new rail sidings at the site. This is likely to be via a connection to the existing rail head at the Theale Depot, although a connection could potentially be provided to the main line. A new road connection to the A4 Bath Road would be provided. The site would operate as an IRFI where freight is exchanged between road transport and rail.

1.1.6 To facilitate understanding of the proposals and initial assessment for the purposes of the LPR consultation response, an Illustrative Site Plan has been produced by Intermodality (the Estate's appointed rail freight consultant) which demonstrates one option for how the proposed IRFI could come forward. Key features include:

- A level area of hardstanding enclosed by securing fencing to prevent unauthorised access (concrete pad circa 700m in length and minimum 30m in width);
- Main line access which could be provided via the existing complex of freight sidings serving the Wigmore Lane site immediately to the east;
- Highways access direct from the A4 into the site from the north;
- Sidings within the site capable of accommodating 1-2 x 775m length trains simultaneously;
- Portable modular buildings providing gatehouse and ancillary office/amenities for staff and visitors;
- Container handling equipment, typically "reachstacker" units;
- Temporary container storage stacking up to 3-4 high (9-12m); and
- Lighting columns, typically up to 18m in height around the perimeter, with directional lighting to minimise light spill onto adjacent areas.

1.1.7 It is not proposed to link the site to the existing Theale Depot (other than by rail) and it would be proposed to operate as a standalone facility.

1.1.8 The WBC HELAA[1] (*site ref: SUL5*) previously discounted the site for flood and landscape reasons however it detailed that the site was deliverable in transport terms. It should also be noted that Network Rail is supportive of the site as a rail freight interchange and note that no other locations within WBC are suitable for this use.

1.2 Scope and Structure of this Note

1.2.1 This note has been prepared to accompany the representations being made by Firstplan Ltd. It assesses the site, at a high level, against the three key transport tests for development detailed at paragraph 110 of the National Planning Policy Framework (NPPF), namely:

- Will the opportunities for sustainable travel be appropriately taken up given the type of the development and its location?

[1] Housing and Employment Land Availability Assessment

- Will safe and acceptable access be provided for all users?
- Will the residual traffic impacts be acceptable?

1.2.2 In addition, paragraph 110 of the NPPF refers to the need for the design of streets, parking areas and other transport elements to reflect national guidance (including the National Design Guide and the National Model Design Code). Whilst not addressed specifically within this note, the need for the development to reflect national guidance will be seen as a 'golden thread' throughout all elements of the scheme.

1.2.3 The above NPPF tests outlined at paragraph 1.5 are addressed at Sections 2, 3 and 4 of this note, with a conclusion provided at Section 5.

SECTION 2 Existing Conditions and Sustainable Travel

2.1 Local Highway Network

2.1.1 The A4 Bath Road provides the northern site frontage and is a 9.3m wide single carriageway subject to the national speed limit (60mph). There is streetlighting in place on the northern side of the carriageway.

2.1.2 To the west the A4 Bath Road provides a route to Newbury via Thatcham and to the east connects with the A340, The Green, and Wigmore Lane via a 5-arm roundabout. The A340 and The Green provide local routes to Pangbourne and Theale village respectively, whilst to the east of the roundabout the A4 Bath Road provides a route to the M4 as a dual carriageway.

2.1.3 Wigmore Lane provide access to the existing rail freight sidings at Theale, Theale Fire Station and a handful of residential properties along the western site frontage where Wigmore Lane becomes private. Wigmore Lane continues to route southwards and ceases at the GWR line, albeit pedestrian provision continues southwards over the railway via a level crossing.

2.2 Walking

2.2.1 There is a 1.5m wide footway running along the northern side of the A4 Bath Road along the site frontage. It routes to the A4 Bath Road / Wigmore Lane / A340 / The Green roundabout to the east and continues to Aldermaston Wharf to the west. On occasion the footway is segregated from the carriageway via a grass verge and there is regular street lighting in place.

2.2.2 A direct pedestrian connection links the A4 Bath Road to Wigmore Lane immediately to the north of the site with a pedestrian refuge island in place (with associated dropped kerbs and tactile paving) to facilitate crossing of the A4 Bath Road (shown at **Images 2.1** and **2.2** overleaf). Wigmore Lane is a designated Public Right of Way (PRoW) which provides a pedestrian route southward towards the GWR line (further detail is provided at paragraph 2.2.4). The pedestrian refuge island also provides a suitable crossing point for users of the Wigmore Lane bus stops.

2.2.3 A footway connection with defined crossing points is provided around the northern side of the A4 Bath Road / Wigmore Lane / A340 / The Green roundabout. This connects the A4 Bath Road (western arm) to The Green where the footway continues providing a walking route into Theale Village.

Image 2.1: Pedestrian Connection to Wigmore Lane

Source: Consultant's Photographs (January 2023)

Image 2.2: Pedestrian Refuge Island at Wigmore Lane

Source: Consultant's Photographs (January 2023)

Public Rights of Way (PRoWs)

2.2.4 There are a number of PRoWs within close proximity of the site, as shown at **Figure 2.1** (replicated as **Image 2.3** for reference), including Wigmore Lane. No formal footways are in place on Wigmore Lane, but it serves as a shared surface providing a pedestrian route from the A4 Bath Road to the GWR line. An onward connection to PRoWs to the south of the GWR line in the vicinity of the River Kennet is provided by an uncontrolled, gated level crossing (see **Image 2.3**).

2.2.5 The crossing is rated as 'C4' under Network Rail's risk assessment scoring system[2]. This indicates a relatively high risk crossing for both the collective[3] and individuals[4], however no incidents have been recorded.

Image 2.3: Uncontrolled GWR Level Crossing

Source: Consultant's Photographs (January 2023)

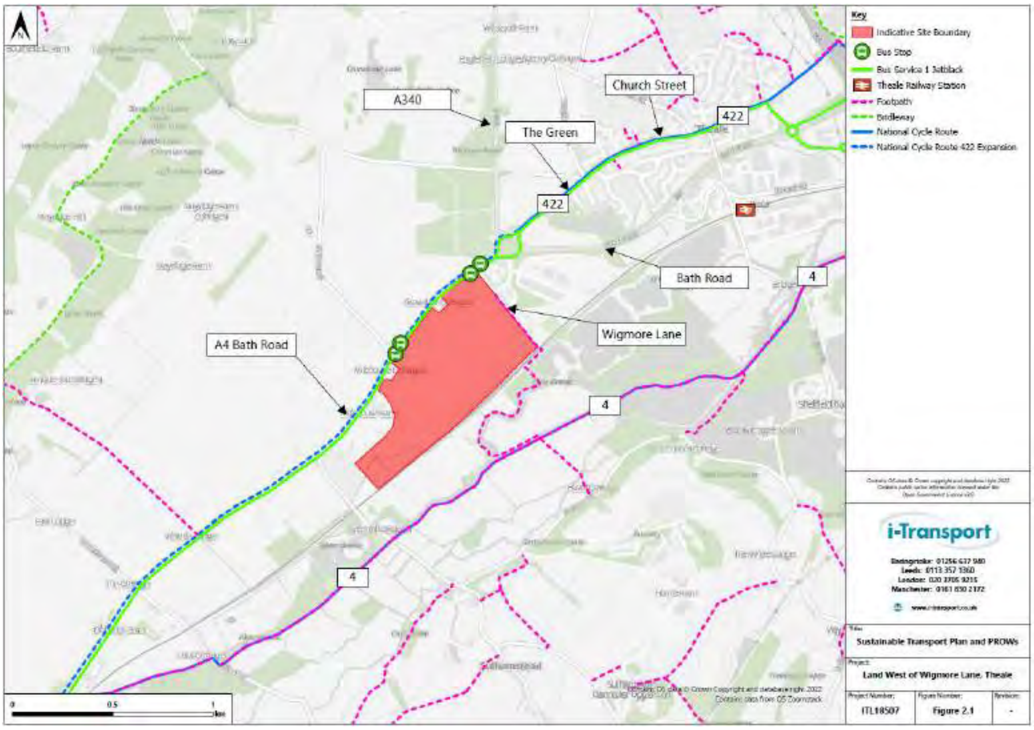
[2] https://www.networkrail.co.uk/communities/safety-in-the-community/level-crossing-safety/

[3] Scored from 1 – 13 with 1 the highest value and 13 the lowest value. Collective risk applies to all users (including railway staff and passengers).

[4] Scored from A – 4 with A the highest value and M he lowest value. Individual risk just applies to those crossing the railway.

2.2.6 There is a network of predominately functional PRoWs providing access to facilities and destinations within Theale. These are primarily toward the north of Theale.

Image 2.4: Sustainable Transport Plan and PROWs



2.3 Cycling

2.3.1 The Green is designated as National Cycle Network Route 422 (NCN422) which is a newly opened long-distance cycle route to from Theale to Ascot. The cycle route runs through key local settlements including Reading and Bracknell. Further expansion of the NCN422 is also proposed to Newbury along the A4 Bath Road including along the site frontage. This route will decrease the cycle time between the site and Theale's village centre to approximately five minutes.

2.3.2 The National Cycle Network Route 4 (NCN4) is a long-distance cycle route between The City of London (Greenwich) from the east and Bristol in the west. The NCN4 is most easily accessible from the SULH/1/2 footpath, approximately 1.2km south of the site from the northern boundary with Wigmore Lane via the footpaths SULH2/2 and SULH/2/1

2.3.3 The site is well located to existing cycle routes which provide good connections to key settlements in the vicinity of the site. The expansion of the NCN422 route along the site frontage will further improve this connectivity.

2.4 Public Transport

Bus

2.4.1 The nearest bus stops to the site are located on the A4 Bath Road at Wigmore Lane to the north east of the site and at Bostock Lane to the north west of the site (identified as the 'Milehouse Cottages' stop). These stops are well within 400m walking distance from the site and are easily accessible.

2.4.2 All four bus stops are 'offline' and are identifiable via a flagged pole with timetabled information. There are no bus shelters or waiting facilities in place, save for some hardstanding. A pedestrian refuge island provides crossing facilities at the Wigmore Lane bus stops but it should be noted that there are no crossing facilities for the Milehouse Cottages bus stops.

2.4.3 The bus stops are served by the '1 jetblack' bus route, with the route, destinations and typical frequency detailed at **Table 2.1**. The bus stops and route are also shown on **Figure 2.1**.

Table 2.1: Local Bus Services

Service No.	Route	Typical Frequency		
		Mon-Fri	Sat	Sun
1 jetblack	Newbury – Reading via Thatcham and Theale	Every 30 mins (First service 0536, Last service 2101)	Every 30 mins (First service 0714, Last service 2102)	Every 30 mins (First service 0819, Last service 1945)
	Reading – Newbury via Theale and Thatcham	Every 30 mins (First service 0530, Last service 2103)	Every 30 mins (First service 0657, Last service 2057)	Every 30 mins (First service 0747, Last service 1916)

Source: Traveline January 2023

2.4.4 The site is well located to bus stops served by a frequent route between Reading and Newbury.

Rail

2.4.5 Theale railway station is located approximately 2.0km north east of the site which is within a comfortable cycling distance. The station is managed by Great Western Railway and is served by trains to Newbury, Reading and London Paddington. The 1 jetblack bus route serves the centre of the village of Theale which is a 400m walking distance from the railway station.

2.4.6 Theale railway station was also subject to the following improvements[5]:

- A footbridge and lifts to connect platforms on both sides of the tracks alongside step-free access to the new station building and both platforms;
- Replacing the existing ticket office with the building to be located closer to the new footbridge and designed to meet modern accessibility standards in full;
- Upgrading and opening new toilets;
- Expansion of the existing car park to include a new entrance, improved drop-off and turning facility from Brunel Road for taxis and rail replacement buses, electric vehicle charging points. This also includes improved cycle facilities, motorcycle parking and a new decked car park to increase parking capacity to 300 spaces; and
- Improved wayfinding signage and replacement of width restriction bollards.

2.4.7 **Table 2.2** summarises the destinations, served by Theale rail station, along with their typical duration and frequency.

Table 2.2: Theale Station Rail Services

Destination	Typical Journey Duration	Typical Frequency
Reading	9 mins	2-3 per hour
Newbury	14-19 mins	2 per hour
London Paddington	36-40 mins	2 per hour

Source: Trainline – January 2023

2.5 Traffic Conditions

2.5.1 A suite of traffic surveys was undertaken in January 2023 by an independent traffic survey company:

- An Automatic Traffic Counts (ATC) at the A4 Bath Road on the site frontage to collect classified speed and volume date over a 7-day period between 15 January and 21 January 2023; and
- A 24-hour Classified Turning Counts (CTC) on Tuesday 17 January 2022 (a neutral weekday) at the A4 Bath Road / Wigmore Lane / A340 / The Green roundabout.

2.5.2 The above surveys excluded school holidays, strike days and planned road works.

[5] https://www.networkrailmediacentre.co.uk/news/investment-at-theale-station-brings-improved-facilities

Traffic Flows

2.5.3 The peak hour traffic flows have been extracted from the surveys and are shown on the following figures:

- **Figure 2.2** – 2023 AM Peak Hour 1 (0700 – 0800)
- **Figure 2.3** – 2023 AM Peak Hour 2 (0800 – 0900)
- **Figure 2.4** – 2023 PM Peak Hour 1 (1600 – 1700)
- **Figure 2.5** – 2023 PM Peak Hour 2 (1700 – 1800)

2.5.4 **Table 2.3** summarises the recorded 24-hour traffic flows along the site frontage and at the A4 Bath Road / Wigmore Lane / A340 / The Green roundabout.

Table 2.3: Recorded 24-Hour Traffic Flows (Two-Way)

Location	Total Vehicles	HGVs
A4 Bath Road (Site Frontage)	25,519	2,178
A4 Bath Road / Wigmore Lane / A340 / The Green Roundabout (Entire Junction)	37,271	3,233

Source: Traffic Surveys – January 2023

Vehicle Speeds

2.5.5 The ATC survey recorded the vehicle speeds on the A4 Bath Road. In accordance with guidance set out in DMRB CA 185, **Table 2.4** sets out the 85th percentile dry weather speeds for eastbound and westbound vehicles the A4 Bath Road. These demonstrate that free flow traffic speeds are significantly below the maximum legal speed of the road.

Table 2.4: Observed Dry Weather Traffic Speeds and Stopping Sight Distances

Direction	85%ile dry weather speed	Desirable Stopping Sight Distance
Eastbound	47.9mph	136m
Westbound	46.9mph	132m

Source: ATC Surveys (January 2023). Stopping sight distances derived from DMRB[6] and MfS[7]

[6] Design Manual for Roads and Bridges

[7] Manual for Streets 2

2.6 Road Safety

2.6.1 Personal Injury Accident (PIA) data has been obtained from WBC for the most recent five-year period available and is included as **Appendix A** of this note. Whilst the location, type and frequency of accidents detailed in the PIA data do not indicate that there is a particular highway safety problem on the local network (the majority of accidents are at the roundabout to the east of the site and there are no accidents along the site frontage), the following accidents should be noted:

- One slight accident was recorded at the Bostock Lane junction where a car turning right failed to give way to a cyclist; and
- A fatal accident was recorded at the A4 junction with Lambdens Hill (some 2km to the west of the site) where a motor vehicle collided with a pedestrian in the carriageway.

2.7 Sustainable Travel Initiatives

2.7.1 The development envisaged has the potential to bring forward the following measures to facilitate the uptake of sustainable travel and to reduce the use and impacts of the private car:

- Electric vehicle charging points in all parking areas to support and encourage the transition to electric vehicles;
- The provision of an improved and widened footway along the northern side of the A4 Bath Road (see Section 3). This could also be widened further to provide an off-carriageway shared footway/cycleway if required to facilitate delivery of the NCN422 route extension;
- The provision of improved bus stops at Milehouse Cottages including improved pedestrian crossing facilities (see Section 3) to better encourage public transport use;
- The implementation of a site-wide Travel Plan providing numerous 'soft measures' to encourage uptake in sustainable modes by employees; and
- The provision of a new pedestrian footbridge over the GWR line to replace the existing level crossing to deliver an improved crossing (see Section 3).

2.8 Summary

2.8.1 The site is located at the A4 Bath Road, circa 2km to the southwest of Theale. A footway is located on the northern side of the A4 Bath Road along the site frontage which provides a connection to Wigmore Lane and onwards to Theale via Green Lane to the east. National cycle route 422 provides a cycle connection to the north east of the site and there are proposals to extend this route along the site frontage. Wigmore Lane also provides access to numerous PROWs to the south of the GWR line via a pedestrian level crossing.

2.8.2 There are bus stops located along the site frontage which are easily accessible on foot and are served by the '1 jetblack' bus route which provides frequent services from the site to Reading and Newbury. Theale railway station is located within a comfortable cycling distance from the site and is served by regular rail services to Newbury, Reading and London Paddington.

2.8.3 The site may bring forward the following infrastructure to improve sustainable travel connections:

- Electric vehicle charging points;
- The provision of an improved and widened footway along the northern side of the A4 Bath Road. This could also be widened further to provide an off-carriageway shared footway/cycleway if required to facilitate delivery of the NCN422 route extension;
- The provision of improved bus stops at Milehouse Cottages including improved pedestrian crossing facilities; and
- The provision of a new pedestrian footbridge over the GWR line to replace the existing level crossing to deliver an improved crossing.

2.8.4 The proposed development would also be accompanied by a site-wide Travel Plan to promote sustainable transport use to employees.

SECTION 3 Access Strategy

3.1 Introduction

3.1.1 The site has direct access to both Wigmore Lane to the east and A4 Bath Road to the north. Wigmore Lane is residential in nature, with limited scope for enhancement. Significant increases in HGV volumes associated with the proposal would not be appropriate on such a road. A main access to Wigmore Lane is therefore discounted, with all options focusing on access to the A4.

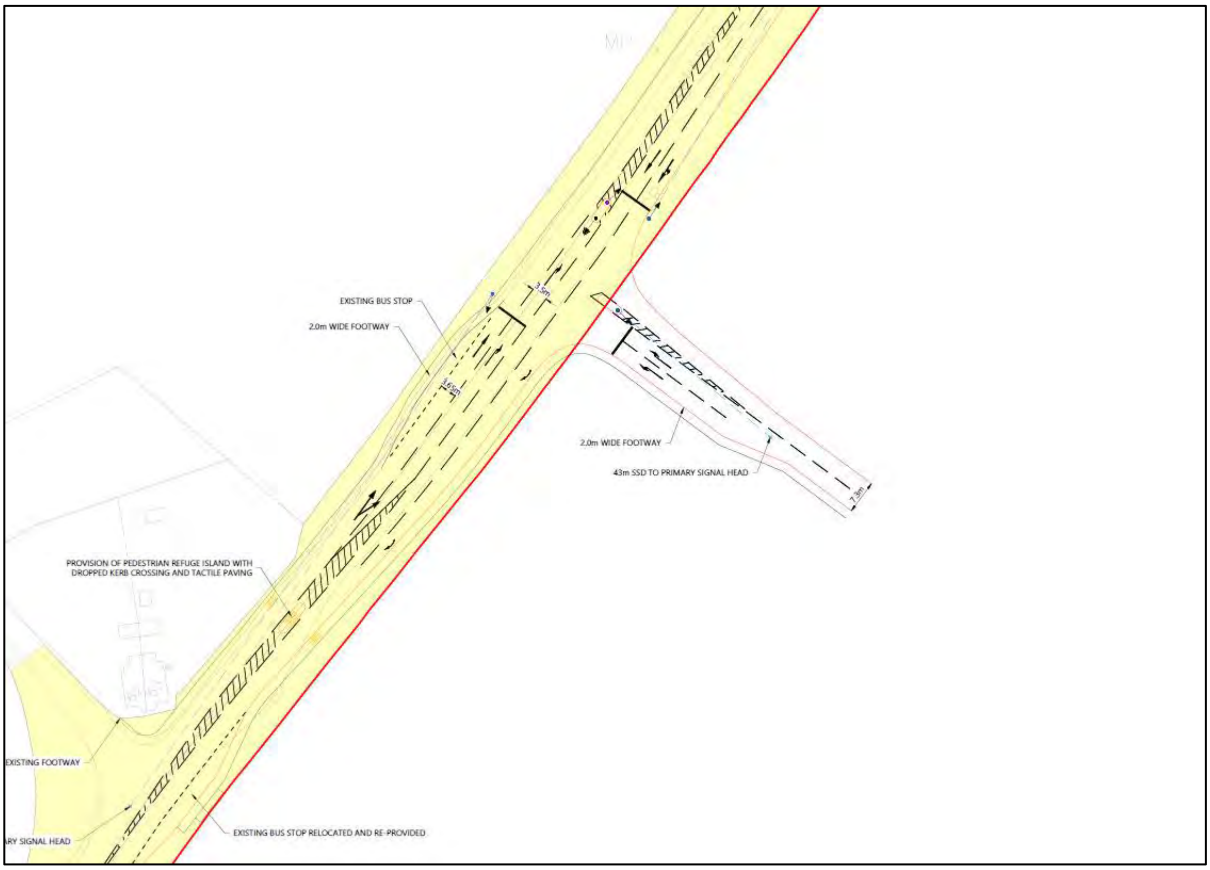
3.2 Access from A4 Bath Road

3.2.1 A number of design options have been assessed for an access to the A4. These have included a ghost island priority junction, a roundabout, and a traffic signal controlled junction. Due to the nature of the A4, the site proposal, and the anticipated (and measured) volume and form of traffic, a traffic signal controlled junction has been determined at this stage to be the most appropriate to ensure a safe and effective access can be delivered.

3.2.2 This new signalised junction is shown on **Drawing ITL18507-GA-003A** included with this report. The access has been designed in line with the prevailing design guidance set out in DMRB[8] and visibility splays are achievable in line with the recorded 85th percentile speeds detailed at **Table 2.4** of this note (visibility splays for a 60mph design speed are also shown).

[8] Design Manual for Roads and Bridges

Image 3.1: Proposed Signalised Access (Extract)



3.2.3 The proposed signalised junction has been designed to accommodate the traffic demands of the proposed development alongside the existing traffic flows on the A4 Bath Road (with adequate lane provision on all arms). This is shown by capacity testing presented at Section 4 of this note.

3.2.4 In addition, the proposed access junction could also bring forward:

- A new footway connection from the site to the existing footway on the A4 Bath Road which is proposed to be widened to 2m (this could also be widened further to provide an off-carriageway shared footway/cycleway if required to facilitate delivery of the NCN422 route extension); and
- Improved bus stops at Milehouse Cottages including a new pedestrian refuge island to better encourage public transport use.

3.3 Railway Crossing

3.3.1 Network Rail has already commented that expansion of rail freight development on land west of Wigmore Lane will give rise to a requirement to improve and upgrade the pedestrian crossing of the GWR main line to the south of the proposed expansion site and that this is likely to require the provision of a footbridge.

3.3.2 The site has the potential to deliver an improved and upgraded pedestrian crossing of the GWR mainline to the south of the site which is currently an uncontrolled pedestrian level crossing.

3.3.3 The Englefield Estate controls land on the southern side of the GWR mainline and therefore there is the potential to replace the crossing with a footbridge. This would deliver an upgraded crossing with improved pedestrian safety, in particular for users of the existing Wigmore Lane PRoW.

3.3.4 Details of any potential/proposed footbridge would be discussed in further detail with Network Rail at the appropriate juncture should the site come forward, however, at this stage it is considered feasible that a 'flow bridge' could be used to deliver the railway crossing. Flow bridges are emerging low cost, lightweight and modular structures that are designed to replace rural footpath crossings. Further detail is set out on Network Rail's website[9]. An image of a flow bridge is included as **Image 3.2** below.

Image 3.2: Flow Bridge Railway Crossing

Source: Network Rail

9 https://www.networkrail.co.uk/industry-and-commercial/research-development-and-technology/research-and-development-programme/innovative-modular-footbridge-design/

3.4 Site Layout

3.4.1 Should the site come forward, the internal layout should be designed to deliver:

- An efficient access and circulation strategy for arriving/departing HGVs to ensure that vehicles can access safely and efficiently. This will include areas where HGVs can be parked whilst drivers take rest breaks;
- Adequate staff car parking, including the provision of electric vehicle charging points;
- High-quality, covered and secure cycle parking to encourage staff to cycle to the site (this will include e-bike charging facilities);
- Safe and well-lit internal footways connecting to the existing pedestrian network via the site access; and
- High-quality staff/driver welfare facilities including shower/changing facilities, rest areas and public information noticeboards with up-to-date public transport information and walking/cycling route maps.

SECTION 4 Traffic Impact and Highway Capacity

4.1 Overview

4.1.1 This section of the note details the estimated traffic generation of the proposed rail freight interchange and subsequent traffic impact on the local highway network. This has been informed by:

- Traffic surveys undertaken on the local highway network (as detailed in Section 2); and
- Information provided by The Englefield Estate's appointed rail freight consultant (Intermodality[10]) on how the site could operate.

4.1.2 Intermodality has advised that, when fully operational, the site could accommodate up to six freight trains per day for freight interchange with road traffic. The trains would move strategic freight over long distances across the UK which would then be interchanged with HGVs at the site for movement to/from local destinations (Intermodality has advised that the site should be expected to serve an approximate 15-mile local catchment area).

4.1.3 This assessment is preliminary at this stage. Should the site come forward, it will be subject to pre-application consultation, including with the highway authority, and a rigorous and robust Transport Assessment will accompany any planning application which will assess the highway impact of the development in detail.

4.2 Traffic Generation

HGV Trips

4.2.1 Intermodality has provided the following information with regards to the operation of the rail freight interchange, based on six freight trains per day:

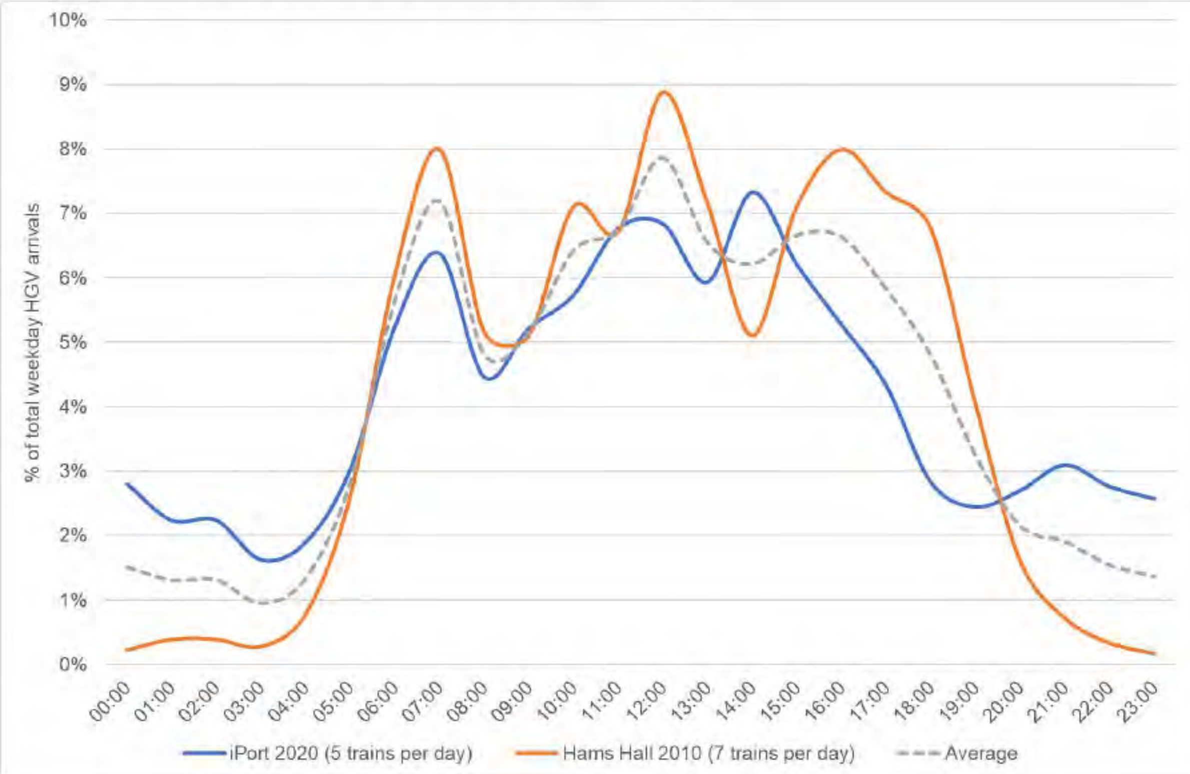
- Each train will accommodate 45 shipping containers (i.e. 45 for each train arrival and departure).
- Assuming that all HGVs arrive and depart fully loaded, this equates to 45 HGV arrivals and 45 HGV departures per train (with one shipping container per HGV).
- However, a number of HGVs will arrive or depart empty and therefore in reality each train will therefore typically generate some 55 HGV trips per train (i.e. 55 HGV arrivals and 55 departures) allowing for some empty HGVs.

[10] Detail is provided in the accompanying report 'Expanding Rail Freight Facilities at Theale' prepared by Intermodality.

4.2.2 Based on the above, this equates to a total of 660 daily HGV movements, equivalent to 330 arrivals and 330 departures (i.e. 55 x 6 x 2 = 660).

4.2.3 **Graph 4.1** presents the arrival profiled for HGVs at a rail freight interchange based on recorded data at two existing similar facilities, including an average arrival profile.

Graph 4.1: Arrival HGV Profile at Rail Freight Interchange



Source: Intermodality

4.2.4 Based on the average arrival profile detailed at **Graph 4.1**, **Table 4.1** summarises the predicted HGV arrival trip generation across a typical weekday at the proposed interchange. Intermodality has also advised that typical HGV dwell times on-site range from between 20 minutes to 1 hour[11] and therefore **Table 4.1** also details the predicted number of departing HGVs (assuming that all arriving HGVs will depart in the subsequent hour period).

Table 4.1: Theale Freight Interchange – Predicted HGV Trip Generation (6 Trains)

TIME	Arrival Profile	Arrivals	Departures	Total
0000 – 0100	1.5%	5	5	10
0100 – 0200	1.3%	4	5	9

[11] This allows for HGV drivers to use staff welfare facilities if required and/or take legally mandated breaks, as well as allowing for loading/unloading to take place.

TIME	Arrival Profile	Arrivals	Departures	Total
0200 – 0300	1.3%	4	4	8
0300 – 0400	1.0%	3	4	7
0400 – 0500	1.3%	4	3	7
0500 – 0600	2.8%	9	4	13
0600 – 0700	5.6%	19	9	28
0700 – 0800	7.2%	24	19	43
0800 – 0900	4.8%	16	24	40
0900 – 1000	5.2%	17	16	33
1000 – 1100	6.4%	21	17	38
1100 – 1200	6.7%	22	21	43
1200 – 1300	7.9%	26	22	48
1300 – 1400	6.5%	22	26	48
1400 – 1500	6.2%	21	22	43
1500 – 1600	6.7%	22	21	43
1600 – 1700	6.6%	22	22	44
1700 – 1800	5.8%	19	22	41
1800 – 1900	4.8%	16	19	35
1900 – 2000	3.2%	11	16	27
2000 – 2100	2.2%	7	11	18
2100 – 2200	1.9%	6	7	13
2200 – 2300	1.5%	5	6	11
2300 – 0000	1.4%	5	5	10
TOTAL (0000 – 0000)	**100.0%**	**330**	**330**	**660**

Source: Consultant's Calculations and Intermodality. All departing HGVs assumed to depart in the following hour period after arrival.

Staff Trip Generation

4.2.5 Intermodality has advised that a typical 6-train facility would be staffed by circa 36 staff on-site per day, divided into three shifts (equivalent to 12 staff per shift).

4.2.6 **Table 4.2** summarises the expected staff trip generation of the site based on the following parameters/assumptions:

- 36 total staff.
- Three shifts at 0000 – 0800, 0800 – 1600 and 1600 – 0000.
- 12 staff per shift.

- Staff to arrive at the site in the hour period before their shift and to depart in the hour following completion of their shift.
- All staff to travel to the site via car as a worst case assessment (in reality a number of staff will travel using public transport or active travel modes which will be promoted by a site Travel Plan).

Table 4.2: Theale Freight Interchange – Predicted Staff Trip Generation (Vehicles)

TIME	Arrivals	Departures	Total
0000 – 0100	0	12	12
0100 – 0200	0	0	0
0200 – 0300	0	0	0
0300 – 0400	0	0	0
0400 – 0500	0	0	0
0500 – 0600	0	0	0
0600 – 0700	0	0	0
0700 – 0800	12	0	12
0800 – 0900	0	12	12
0900 – 1000	0	0	0
1000 – 1100	0	0	0
1100 – 1200	0	0	0
1200 – 1300	0	0	0
1300 – 1400	0	0	0
1400 – 1500	0	0	0
1500 – 1600	12	0	12
1600 – 1700	0	12	12
1700 – 1800	0	0	0
1800 – 1900	0	0	0
1900 – 2000	0	0	0
2000 – 2100	0	0	0
2100 – 2200	0	0	0
2200 – 2300	0	0	0
2300 – 0000	12	0	12
TOTAL (0000 – 0000)	**36**	**36**	**72**

Source: Consultant's Calculations and Intermodality Information.

Total Traffic Generation

4.2.7 **Table 4.3** summarises the total traffic generation of the proposed rail freight interchange (i.e. **Table 4.1** plus **Table 4.2**). The network morning and evening peak hours are highlighted (i.e. where the impact of development will be greatest).

Table 4.3: Theale Freight Interchange – Total Traffic Generation

TIME	Light Vehicles (Staff Trips)			HGVs			TOTAL		
	Arr	Dep	2-Way	Arr	Dep	2-Way	Arr	Dep	2-Way
0000 – 0100	0	12	12	5	5	10	5	17	22
0100 – 0200	0	0	0	4	5	9	4	5	9
0200 – 0300	0	0	0	4	4	8	4	4	8
0300 – 0400	0	0	0	3	4	7	3	4	7
0400 – 0500	0	0	0	4	3	7	4	3	7
0500 – 0600	0	0	0	9	4	13	9	4	13
0600 – 0700	0	0	0	19	9	28	19	9	28
0700 – 0800	***12***	***0***	***12***	***24***	***19***	***43***	***36***	***19***	***55***
0800 – 0900	***0***	***12***	***12***	***16***	***24***	***40***	***16***	***36***	***52***
0900 – 1000	0	0	0	17	16	33	17	16	33
1000 – 1100	0	0	0	21	17	38	21	17	38
1100 – 1200	0	0	0	22	21	43	22	21	43
1200 – 1300	0	0	0	26	22	48	26	22	48
1300 – 1400	0	0	0	22	26	48	22	26	48
1400 – 1500	0	0	0	21	22	43	21	22	43
1500 – 1600	12	0	12	22	21	43	34	21	55
1600 – 1700	***0***	***12***	***12***	***22***	***22***	***44***	***22***	***34***	***56***
1700 – 1800	***0***	***0***	***0***	***19***	***22***	***41***	***19***	***22***	***41***
1800 – 1900	0	0	0	16	19	35	16	19	35
1900 – 2000	0	0	0	11	16	27	11	16	27
2000 – 2100	0	0	0	7	11	18	7	11	18
2100 – 2200	0	0	0	6	7	13	6	7	13
2200 – 2300	0	0	0	5	6	11	5	6	11
2300 – 0000	12	0	12	5	5	10	17	5	22
TOTAL (0000 – 0000)	**36**	**36**	**72**	**330**	**330**	**660**	**366**	**366**	**732**

Source: Consultant's Calculations and Intermodality Information.

4.3 Traffic Distribution and Assignment

4.3.1 Intermodality has advised that the site should be expected to serve a 15-mile catchment which will cover the major local towns of Reading, Newbury, Basingstoke, Wokingham and Bracknell. On this basis, the majority of vehicular traffic is expected to travel east from the site to/from the strategic road network at the M4 Junction 12.

4.3.2 At this stage it is therefore estimated that 75% of vehicular traffic will route to the east via the A4 and 25% will route to the west towards Newbury. The vehicular movements detailed at Table 4.3 have been assigned to the network on this basis. The peak hour traffic assignment is shown on the following figures:

- **Figure 4.1** – Proposed Development Traffic Flows – AM Peak Hour 1 (0700 – 0800)
- **Figure 4.2** – Proposed Development Traffic Flows – AM Peak Hour 2 (0800 – 0900)
- **Figure 4.3** – Proposed Development Traffic Flows – PM Peak Hour 1 (1600 – 1700)
- **Figure 4.4** – Proposed Development Traffic Flows – PM Peak Hour 2 (1700 – 1800)

4.3.3 In terms of typical daily traffic, the proposal is expected to add:

- 732 vehicles (660 HGVs) to the A4 Bath Road along the site frontage; and
- 549 vehicles (495 HGVs) to the A4 Bath Road / Wigmore Lane / A340 / The Green Roundabout.

4.4 Future Year Traffic Flows

Future Year Baseline Traffic Flows

4.4.1 **Figures 2.2 – 2.5** presented the 2023 surveyed flows on the local highway network, with **Table 2.3** presenting recorded 24-hour flows.

4.4.2 To assess the traffic impact of the proposal at the end of the WBC Local Plan period (2039), traffic growth factors were derived from the National Transport Model (NTM) with adjustments made for local factors derived from the TEMPRO database (NTS v.7.2 dataset). TEMPRO provides the planning assumptions in terms of the number of households/jobs within identified locations and therefore makes a robust assessment to allow for the impact of the already allocated sites in the emerging WBC.

4.4.3 For the purposes of this exercise, the West Berkshire Authority layer has been assessed. The TEMPRO growth factors between 2023 to 2039 are summarised in **Table 4.4**.

Table 4.4: TEMPRO Traffic Growth Factors

Data Range	Morning Peak	Evening Peak	24-Hour
2023 – 2039	1.0976	1.0996	1.1108

Source: TEMPro West Berkshire Authority

4.4.4 The above growth factors have been applied to the 2023 surveyed traffic flows and 2039 baseline traffic peak hour flows for the study area are shown on the following figures:

- **Figure 4.5** – 2039 Baseline – AM Peak Hour 1 (0700 – 0800)
- **Figure 4.6** – 2039 Baseline – AM Peak Hour 2 (0800 – 0900)
- **Figure 4.7** – 2039 Baseline – PM Peak Hour 1 (1600 – 1700)
- **Figure 4.8** – 2039 Baseline – PM Peak Hour 2 (1700 – 1800)

4.4.5 **Table 4.5** summarises the 2039 24-hour flows (derived by applying the growth factor to **Table 2.3**).

Table 4.5: 2039 24-Hour Traffic Flows (Two-Way)

Location	Total Vehicles	HGVs
A4 Bath Road (Site Frontage)	28,347	2,419
A4 Bath Road / Wigmore Lane / A340 / The Green Roundabout (Entire Junction)	41,401	3,591

Source: Traffic Surveys + TEMPro

Future Year With Development Traffic Flows

4.4.6 Future year 'With Development' peak hour traffic flows have been derived by summing **Figures 4.1 – 4.4** and **Figures 4.5 – 4.8**. 'With Development' peak hour traffic flows are shown on the following figures:

- **Figure 4.9** – 2039 With Development – AM Peak Hour 1 (0700 – 0800)
- **Figure 4.10** – 2039 With Development – AM Peak Hour 2 (0800 – 0900)
- **Figure 4.11** – 2039 With Development – PM Peak Hour 1 (1600 – 1700)
- **Figure 4.12** – 2039 With Development – PM Peak Hour 2 (1700 – 1800)

4.4.7 24-hour 'With Development' traffic flows have derived by adding the 24-hour traffic generation of the development detailed at paragraph 4.3.3 to **Table 4.5**. This is set out in **Table 4.6**.

Table 4.6: 2039 With Development 24-Hour Traffic Flows (Two-Way)

Location	Total Vehicles	HGVs
A4 Bath Road (Site Frontage)	29,079	3,079
A4 Bath Road / Wigmore Lane / A340 / The Green Roundabout (Entire Junction)	41,950	4,086

Source: Consultant's Calculations

4.5 Traffic Impact

Junctions

4.5.1 Operational assessments have been undertaken of:

- The proposed site access junction; and
- A4 Bath Road / Wigmore Lane / A340 / The Green Roundabout.

4.5.2 The junctions have been assessed using the Junctions 10 software (the industry standard tool used for non-signalised junctions) and Linsig (the industry standard tool for signalised junctions). The principal outputs derived from Junctions 10 are the Ratio of Flow to Capacity (RFC), queue lengths (in PCUs[12]) and delay (in seconds per vehicle). The principal outputs from Linsig are the Degree of Saturation (DoS[13]), queue lengths and delay.

4.5.3 The modelling results are categorised as follows:

- **GREEN** – Operating within operational capacity.
- **LIGHT GREEN** – Operating within maximum capacity.
- **RED** – Operating over maximum capacity.

4.5.4 Operational capacity is equivalent to 90% of the maximum capacity for signalised junctions and 85% of the maximum capacity for roundabouts/priority junctions. Operational capacity is theoretical and desirable for newly constructed junctions.

4.5.5 The full operational assessment outputs are included in **Appendix B**.

[12] Passenger Car Units

[13] Comparable to RFC.

Table 4.7: A4 Bath Road / Site Access Modelling Results

	AM Peak Hour 1 (0700-0800)			AM Peak Hour 2 (0800-0900)			PM Peak Hour 1 (1600-1700)			PM Peak Hour 2 (1700-1800)		
	DoS	Queue (PCU)	Delay (s)	DoS	Queue (PCU)	Delay (s)	DoS	Queue (PCU)	Delay (s)	DoS	Queue (PCU)	Delay (s)
2039 With Development												
A4 Bath Road (E)	69.6%	8	7	72.1%	9	7	79.5%	10	8	75.9%	9	8
Site Access	23.8%	1	68	38.2%	1	72	35.6%	2	71	28.8%	1	69
A4 Bath Road (W)	81.1%	22	9	80.7%	22	9	75.2%	18	7	75.7%	18	7

Source: Linsig

4.5.6 The site access junction is predicted to operate well within capacity.

Table 4.8: A4 Bath Road / Wigmore Lane / A340 / The Green Roundabout Modelling Results

	AM Peak Hour 1 (0700-0800)			AM Peak Hour 2 (0800-0900)			PM Peak Hour 1 (1600-1700)			PM Peak Hour 2 (1700-1800)		
	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)	RFC	Queue (PCU)	Delay (s)
2023 Observed Flows												
A340	0.51	1	6	0.58	1	6	0.49	1	5	0.38	1	4
The Green	0.07	0	3	0.17	0	3	0.11	0	3	0.10	0	3
A4 Bath Road (E)	0.66	2	5	0.76	3	7	0.78	4	8	0.82	4	9
Wigmore Lane	0.05	0	6	0.07	0	6	0.06	0	5	0.05	0	5
A4 Bath Road (W)	0.76	3	9	0.81	4	12	0.73	3	8	0.76	3	9
2039 Baseline												
A340	0.58	1	7	0.66	2	8	0.56	1	6	0.44	1	5
The Green	0.09	0	4	0.21	0	4	0.13	0	4	0.12	0	3
A4 Bath Road (E)	0.73	3	6	0.84	5	11	0.87	6	13	0.91	9	17
Wigmore Lane	0.06	0	6	0.09	0	7	0.07	0	5	0.07	0	6
A4 Bath Road (W)	0.85	5	14	0.91	9	24	0.82	4	12	0.86	6	16
2039 With Development												
A340	0.59	1	7	0.68	2	9	0.57	1	6	0.44	1	5
The Green	0.09	0	4	0.21	0	4	0.13	0	4	0.12	0	3
A4 Bath Road (E)	0.75	3	7	0.86	6	12	0.89	8	15	0.92	10	19
Wigmore Lane	0.06	0	6	0.09	0	7	0.08	0	5	0.07	0	6
A4 Bath Road (W)	0.86	6	16	0.94	13	34	0.84	5	14	0.88	7	19

Source: Junctions 10

4.5.7 The A4 Bath Road / Wigmore Lane / A340 / The Green is predicted to continue to operate within maximum capacity with the addition of the proposed development (minimal/negligible increases in queuing and delay are predicted).

24-Hour Flows (Weekday)

4.5.8 Table 4.9 summarises the net impact of the proposed development on the daily 24-hour traffic flows.

Table 4.9: Net Impact of Development 24-Hour Traffic Flows (Two-Way)

Location	Total Vehicles		HGVs	
	Net Change	% Change	Net Change	% Change
A4 Bath Road (Site Frontage)	+732	+2.6%	+660	+27.3%
A4 Bath Road / Wigmore Lane / A340 / The Green Roundabout (Entire Junction)	+549	+1.3%	+495	+13.7%

Source: Consultant's Calculations

4.5.9 **Table 4.9** demonstrates that the impact of the overall traffic generation of the development envisaged will be minimal on the local highway network.

Summary

4.5.10 The operational assessments demonstrate that there is sufficient capacity on the immediate local highway network to accommodate the traffic generated by the development envisaged without any material impact. The proposed site access is shown to operate efficiently.

4.5.11 Should the site come forward it will be subject to a further Transport Assessment to accompany any planning application which will assess the highways impact of the development in detail, including impacts further afield if required. However, the net impact of the overall 24-hour trip generation of the development is shown to be minimal and therefore it is likely that the wider traffic impact of the proposed development will be immaterial with no need for additional mitigation measures.

4.6 Reduction in Long Distance HGV Trips

4.6.1 Whilst the proposed development will generate additional local traffic, the delivery of a rail freight interchange at Theale will significantly reduce the number of trunk HGV trips as these goods will now be moved by rail over long distances before being switched to local HGVs for the final mile delivery (within the 15-mile catchment area).

4.6.2 As each train will carry 45 shipping containers (each equivalent to one HGV), each train has the potential to remove up to 90 two-way long distance HGV movements. For an interchange serving six trains per day, this is equivalent to a reduction of up to 540 long distance HGV movements per day. Whilst these movements will remain on the local network, this will result in a significant reduction in vehicle miles travelled over long distances which will:

- Reduce vehicle numbers on the strategic road network (easing congestion and improving safety); and
- Reduce vehicle emissions.

4.6.3 The above is supported by and is in line with the DfT's Rail Freight Strategy (September 2016) which notes at Paragraph 1 of its Executive Summary that the benefits of rail freight include ***"…reduced road congestion and environmental benefits"***. The DfT Rail Freight Strategy also states that "***Each tonne of freight transported by rail reduces carbon emissions by 76 per cent compared to road".***

4.6.4 Furthermore, encouraging sustainable freight transportation by rail is a key component of the current West Berkshire Local Transport Plan (LTP) (2014) as detailed at **Policy LTP K12.** It is also a component of the emerging West Berkshire Local Transport Plan 4 (LTP4) – Strategy Document (February 2023) recently issued for consultation. Paragraph 5.13 confirms that the LTP will support improving freight, including the transition to more sustainable modes. The draft LTP4, both in the context of 'Plan Based Evidence and Strategy' and the 'Strategy for the Eastern Area', under the heading of 'Support Sustainable Growth' makes direct reference to the Theale strategic rail Freight Interchange and that this proposal, together with the others listed, would help address the identified issues and support improved strategic connectivity.

4.7 Summary

4.7.1 Based on an expected six freight trains per day, and an allowance for 36 on-site staff, the proposed rail freight interchange is expected to generate some 730 vehicle movements per day, of which 660 are HGVs[14]. Peak hour operational assessments of both the site access junction and the nearby A4 Bath Road roundabout demonstrate that there is sufficient capacity on the immediate local highway network to accommodate the traffic generated by the development without any material impact (the proposed site access is shown to operate efficiently). The net impact of the overall 24-hour trip generation of the development is shown to be minimal.

[14] Each train accommodates 45 shipping containers which will typically generate 110 two-way HGV movements which allows for some HGVs arriving or departing empty (each HGV can accommodate one shipping container).

4.7.2 Whilst the proposed development will generate additional local traffic (but all still remaining on the primary road network), the delivery of a rail freight interchange at Theale will significantly reduce the number of trunk HGV trips as these goods will now be moved by rail over long distances before being switched to local HGVs for the final mile delivery (within the 15-mile catchment area). The proposed interchange has the potential to remove up to 540 long distance HGV movements per day which will result in a significant reduction in vehicle miles travelled over long distances.

SECTION 5 Summary and Conclusions

5.1 Summary

5.1.1 This note has been prepared to accompany representations into the Regulation 19 Consultation for the emerging WBC Local Plan Review. The representations principally relate to the omission of the LPR to appropriately identify the potential for the existing Theale Rail-Road Transfer Site to expand and grow and that this growth could be accommodated on land west of Wigmore Lane. This site comprises one of a very limited number of sites which could potentially facilitate the transfer for freight from road to rail in the Southeast region and the only site identified by the rail industry as being able to serve the western end of the region.

5.1.2 This note assesses the site, at a high level, against the three key transport tests for development detailed at paragraph 110 of the NPPF.

5.1.3 The site is located at the A4 Bath Road, circa 2km to the southwest of Theale. A footway along the site frontage provides a connection to the pedestrian network in the vicinity of the site and National cycle route 422 provides a cycle connection to the north east (there are proposals to extend this route along the site frontage). Bus stops are also in place on the site frontage which are served by regular bus routes between Reading and Newbury. Theale railway station is located within a comfortable cycling distance from the site and is served by regular rail services to Newbury, Reading and London Paddington.

5.1.4 It is proposed to create a new rail sidings at the site. This is likely to be via a connection to the existing rail head at the Theale Depot, although a connection could potentially be provided to the main line, with a new road connection to the A4 Bath Road. The site would operate as an Intermodal Rail Freight Interchange where freight is exchanged between road transport and rail. It is not proposed to link the site to the existing Theale Depot (other than by rail)and it would be proposed to operate as a standalone facility.

5.1.5 An Illustrative Site Plan has been produced to facilitate understanding of the proposals and initial assessment for the purposes of the LPR consultation response. This demonstrates one option for how the proposed IRFI could come forward and the key features envisaged. Such a development would be expected to accommodate six freight trains per day.

5.1.6 Access to the site is achievable via the introduction of a new signalised junction with the A4 Bath Road, designed in line with the prevailing design guidance and shown to achieve the required visibility splays. The junction could also bring forward improved pedestrian connections and improvements to the Milehouse Cottages bus stops. Capacity testing has been undertaken which demonstrates that the junction can adequately accommodate the traffic demands of the proposed development.

5.1.7 In addition to a site-wide Travel Plan to promote sustainable transport use to employees, the site also has potential to deliver the following infrastructure to improve sustainable travel connections:

- Electric vehicle charging points;
- The provision of an improved and widened footway along the northern side of the A4 Bath Road. This could also be widened further to provide an off-carriageway shared footway/cycleway if required to facilitate delivery of the NCN422 route extension;
- The provision of improved bus stops at Milehouse Cottages including improved pedestrian crossing facilities; and
- The provision of a new pedestrian footbridge over the GWR line to replace the existing level crossing to deliver an improved crossing.

5.1.8 Based on the expected six freight trains per day, and an allowance for 36 on-site staff, the proposed rail freight interchange is expected to generate some 730 vehicle movements per day, of which 660 are HGVs[15]. Peak hour operational assessments of both the site access junction and the nearby A4 Bath Road roundabout demonstrate that there is sufficient capacity on the immediate local highway network to accommodate the traffic generated by the development without any material impact (the proposed site access is shown to operate efficiently). The net impact of the overall 24-hour trip generation of the development is shown to be minimal.

5.1.9 Whilst the proposed development will generate additional local traffic (albeit still focused on the primary road network), the delivery of a rail freight interchange at Theale will significantly reduce the number of trunk HGV trips as these goods will now be moved by rail over long distances before being switched to local HGVs for the final mile delivery (within the 15-mile catchment area). The proposed interchange has the potential to remove up to 540 long distance HGV movements per day which will result in a significant reduction in vehicle miles travelled over long distances (easing congestion and improving safety); and potentially reducing vehicle emissions.

[15] Each train accommodates 45 shipping containers which will typically generate 110 two-way HGV movements which allows for some HGVs arriving or departing empty (each HGV can accommodate one shipping container).

5.2 Conclusions

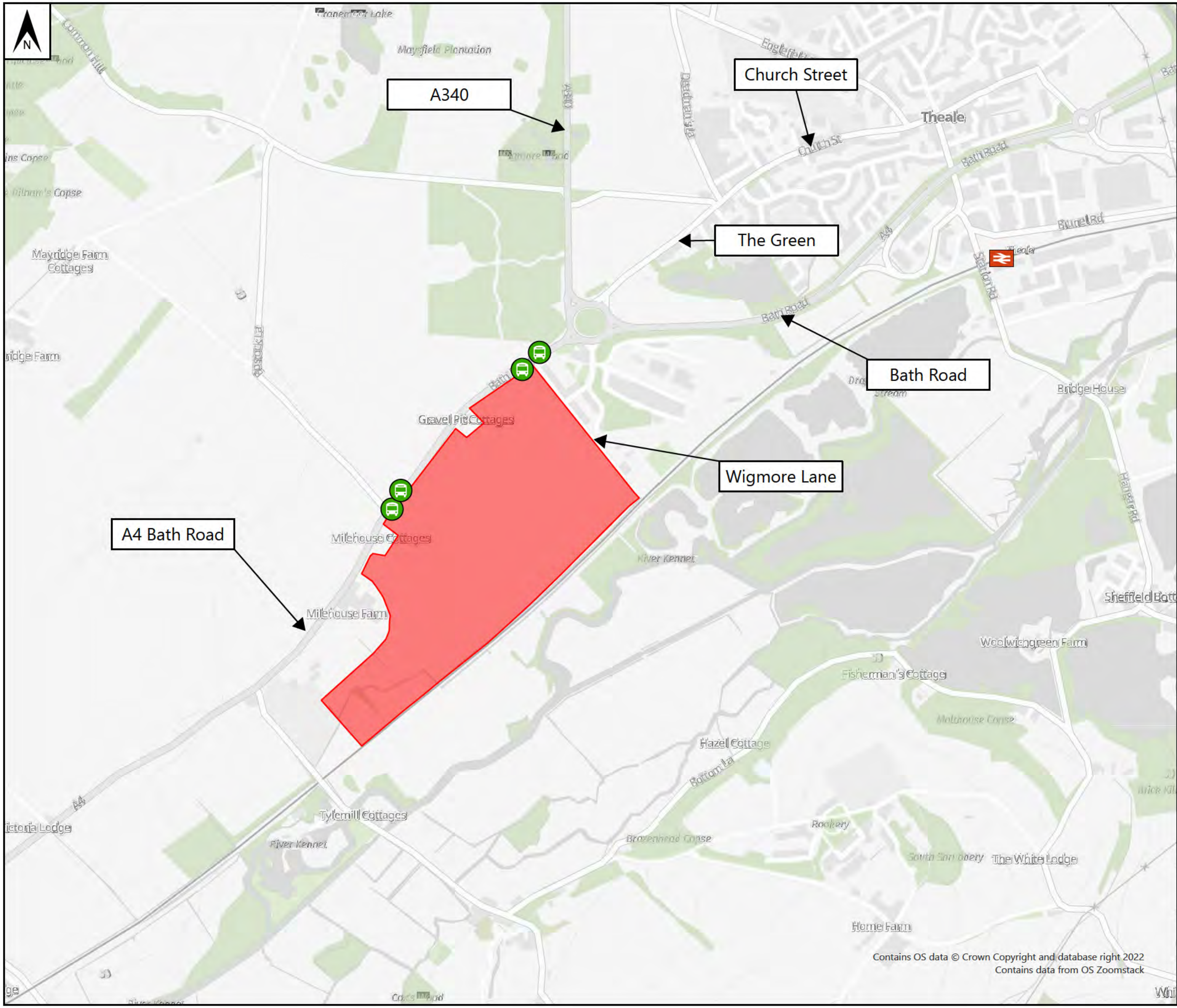
5.2.1 In conclusion, this note and assessment demonstrates that the delivery of an Intermodal Rail Freight Interchange at Land West of Wigmore Lane, Theale, is feasible in transport terms and will meet the transport objectives/tests set out in the NPPF as:

- The site will readily take up the opportunities for access for sustainable transport modes and will deliver new sustainable transport infrastructure;
- Safe and suitable access can be achieved via a new signalised junction with A4 Bath Road; and
- The local traffic impacts are acceptable (the proposal will also reduce long distance HGV trips on the strategic road network).

5.2.2 The development envisaged is therefore acceptable in transport/highways terms and there are no transport/highways reasons to support anything other than the need for the emerging WBC Local Plan to support growth and expansion of the existing rail site at Theale on land west of Wigmore Lane.

5.2.3 Nevertheless, should the site come forward, it will need to be subject to pre-application consultation, including with the highways authority, and a rigorous and robust Transport Assessment will be required to assess the site in detail and accompany any planning application made.

FIGURES



Key

- Indicative Site Boundary
- Bus Stop
- Theale Railway Station

i-Transport

Basingstoke: 01256 637 940
Leeds: 0113 357 1360
London: 020 3705 9215
Manchester: 0161 830 2172

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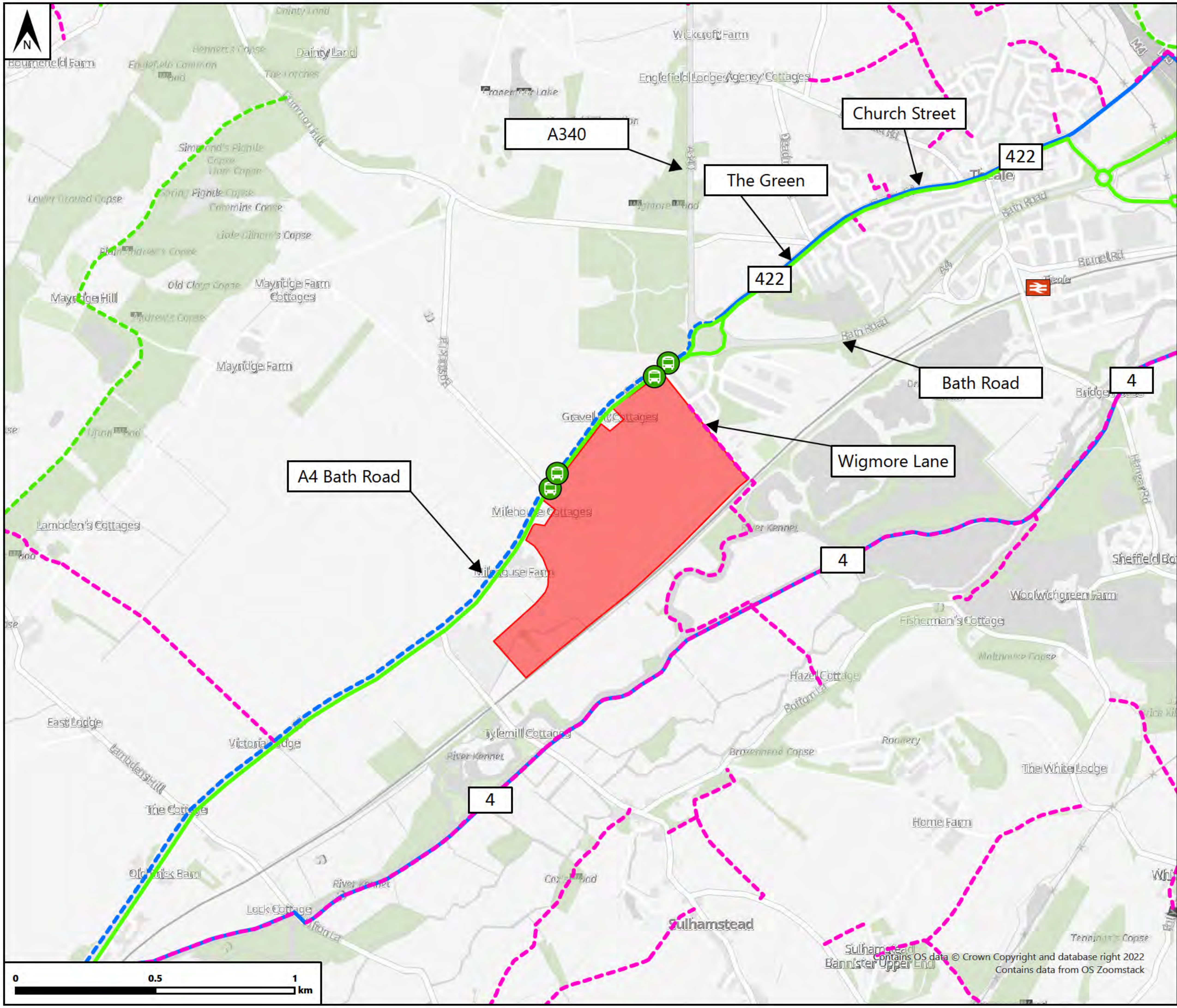
Title:		
Site Location Plan		
Project:		
Land West of Wigmore Lane, Theale		
Project Number:	**Figure Number:**	**Revision:**
ITL18507	Figure 1.1	-



Key

- Indicative Site Boundary
- Bus Stop
- Bus Service 1 Jetblack
- Theale Railway Station
- Footpath
- Bridleway
- National Cycle Route
- National Cycle Route 422 Expansion

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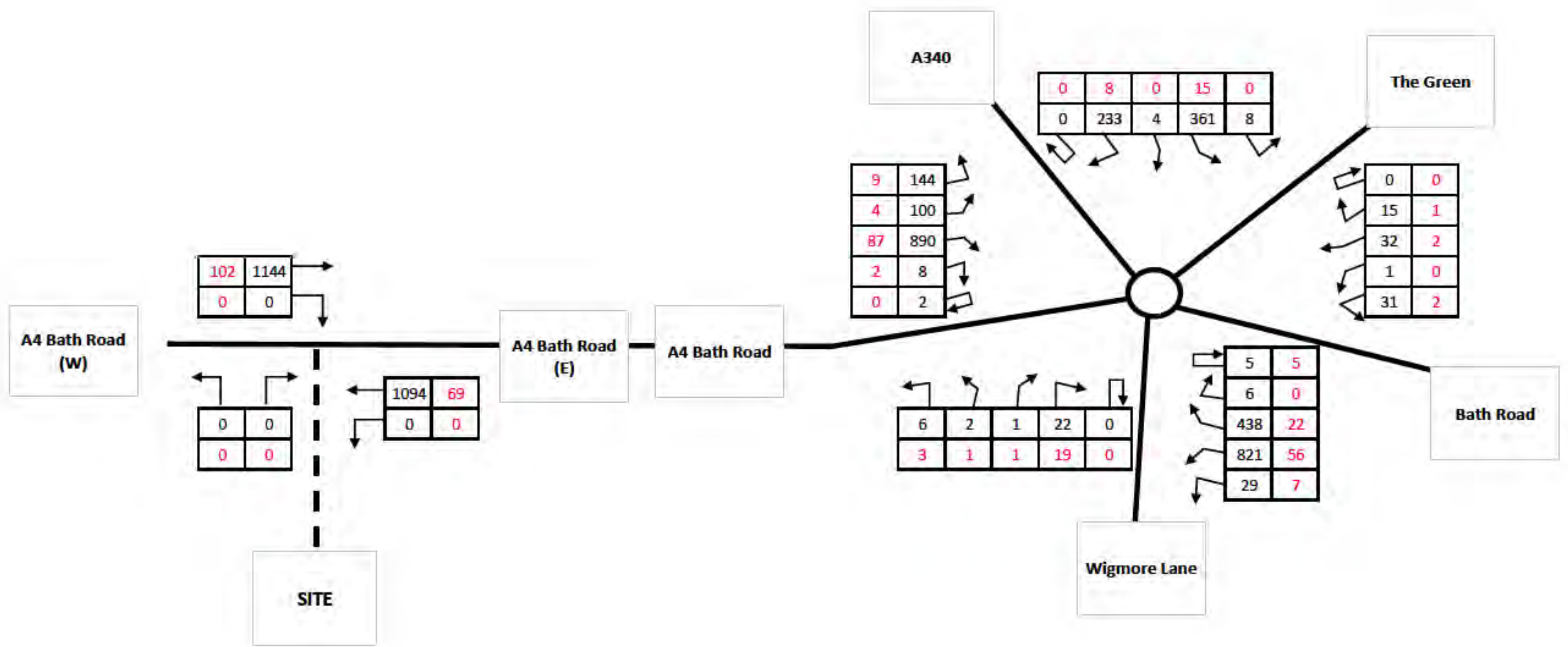
Title:
Sustainable Transport Plan and PROWs

Project:
Land West of Wigmore Lane, Theale

Project Number:	Figure Number:	Revision:
ITL18507	Figure 2.1	-



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Land West of Wigmore Lane, Theale

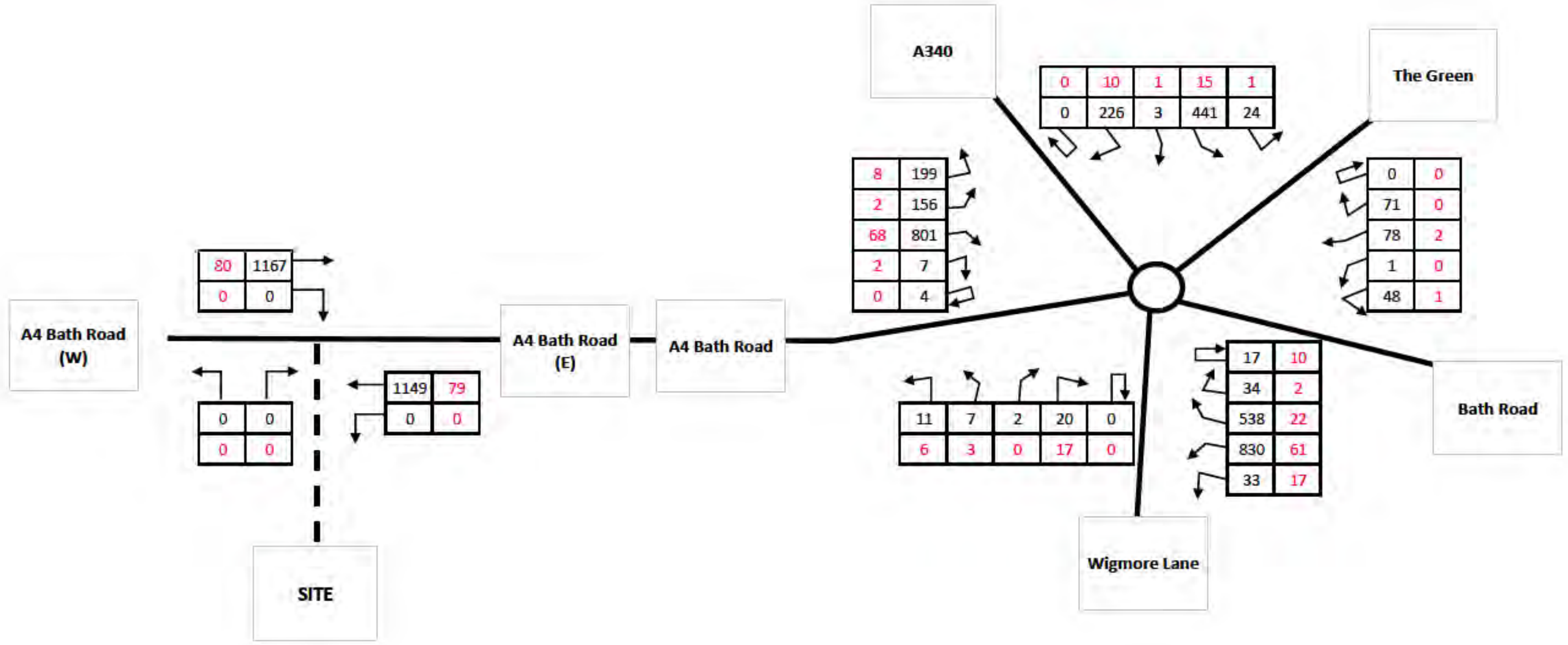
Figure 2.2

2023 AM Peak Hour 1 (0700 – 0800)

KEY

500 = TOTAL VEHICLES

25 = HGVs



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Land West of Wigmore Lane, Theale

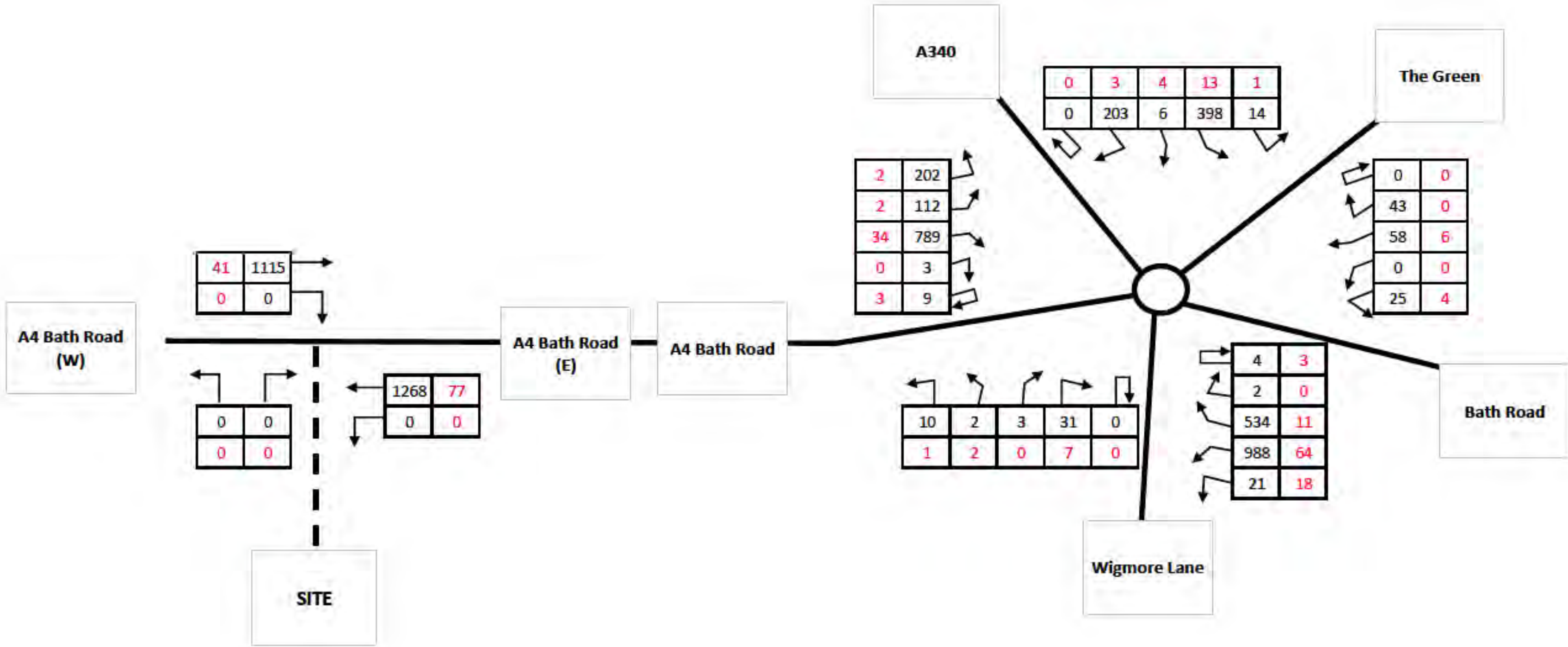
Figure 2.3

2023 AM Peak Hour 2 (0800 – 0900)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

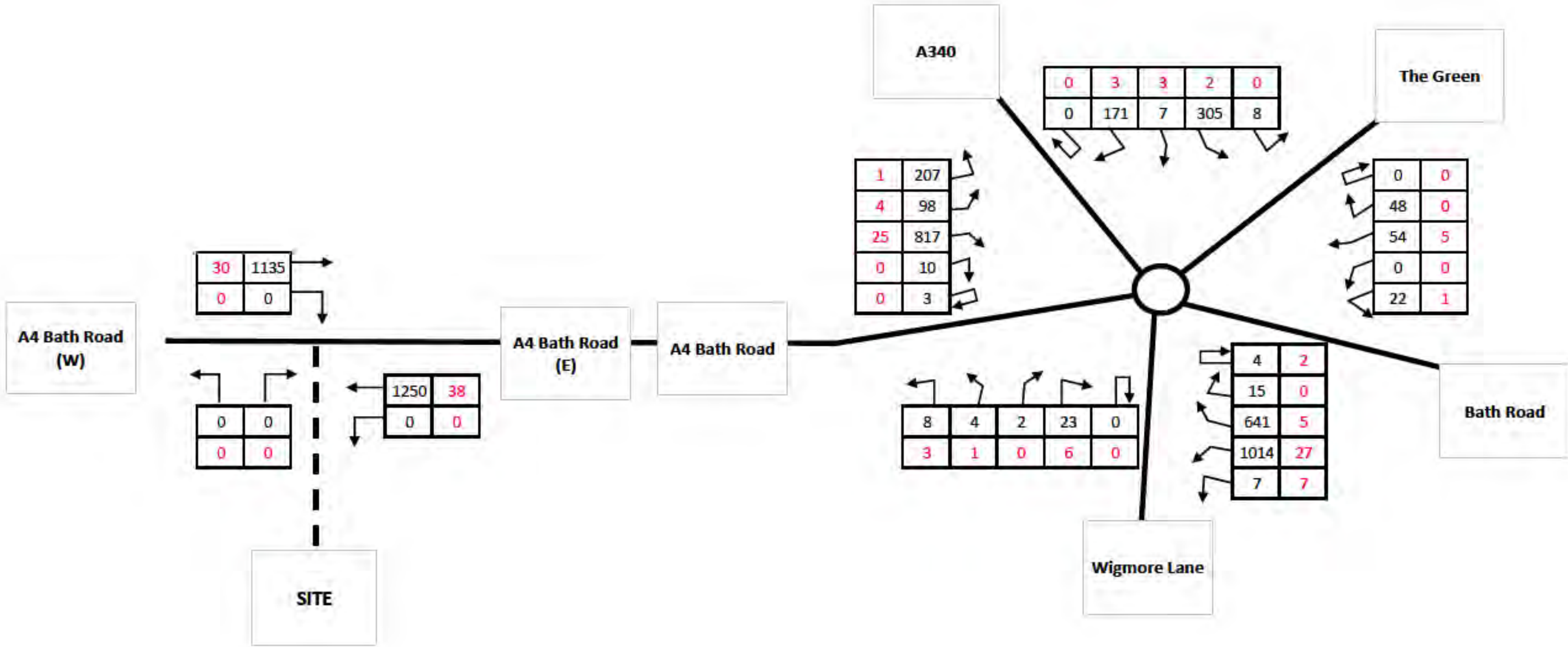
Figure 2.4

2023 PM Peak Hour 1 (1600 – 1700)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

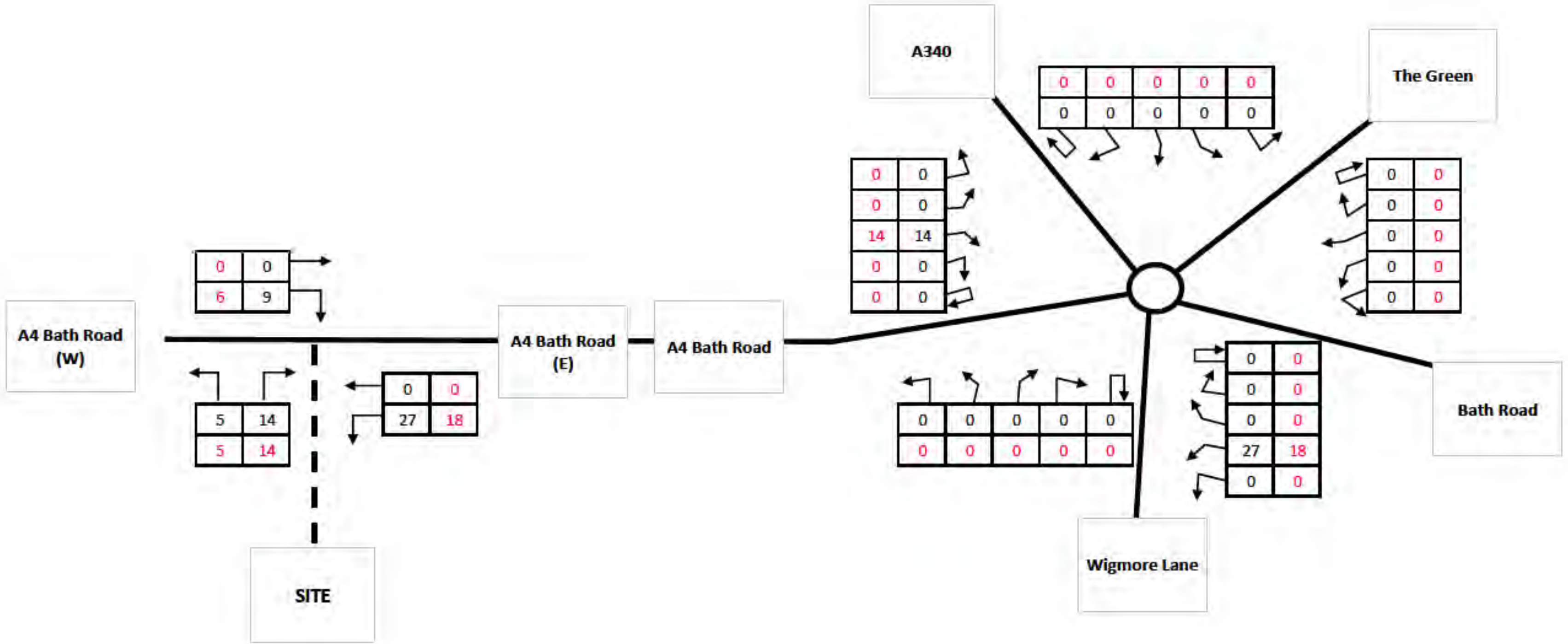
Land West of Wigmore Lane, Theale

Figure 2.5

2023 PM Peak Hour 2 (1700 – 1800)

KEY

500	=	TOTAL VEHICLES
25	=	HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

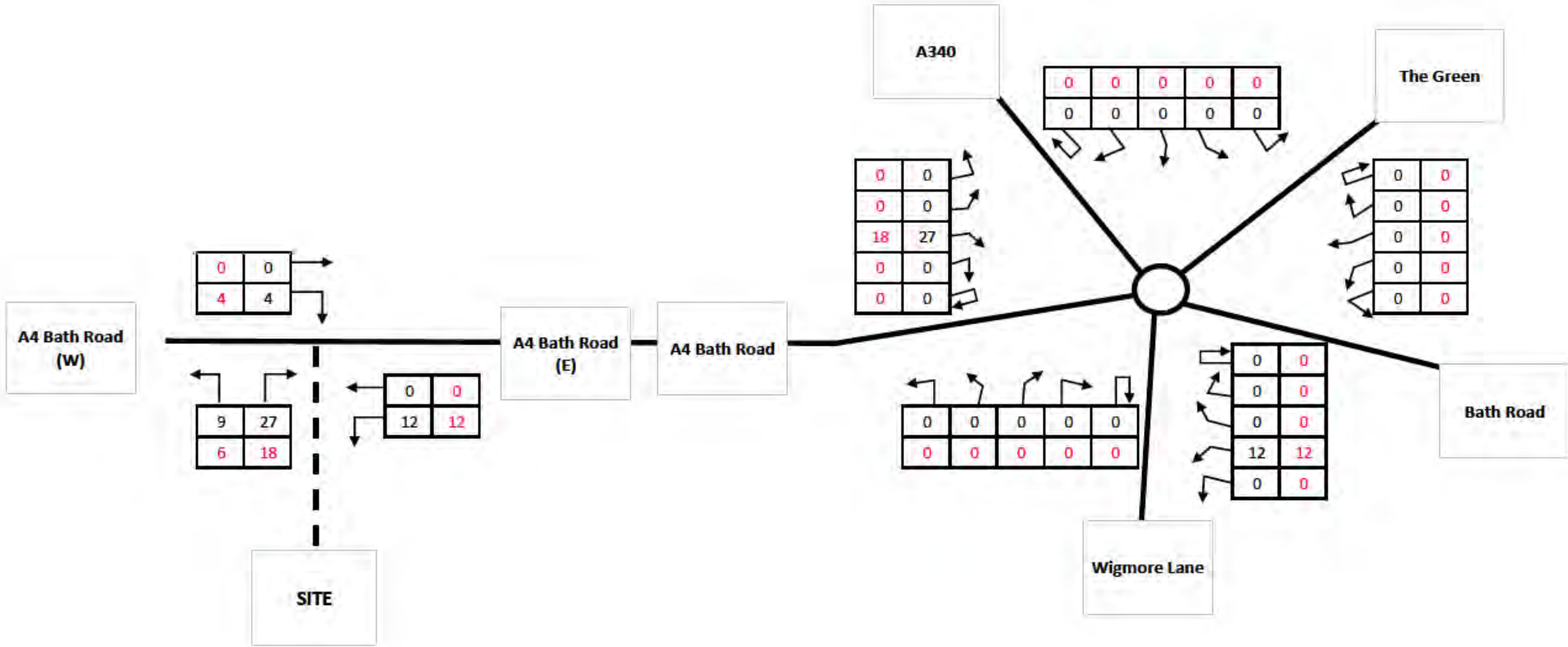
Figure 4.1

Proposed Development Traffic Flows – AM Peak Hour 1 (0700 – 0800)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

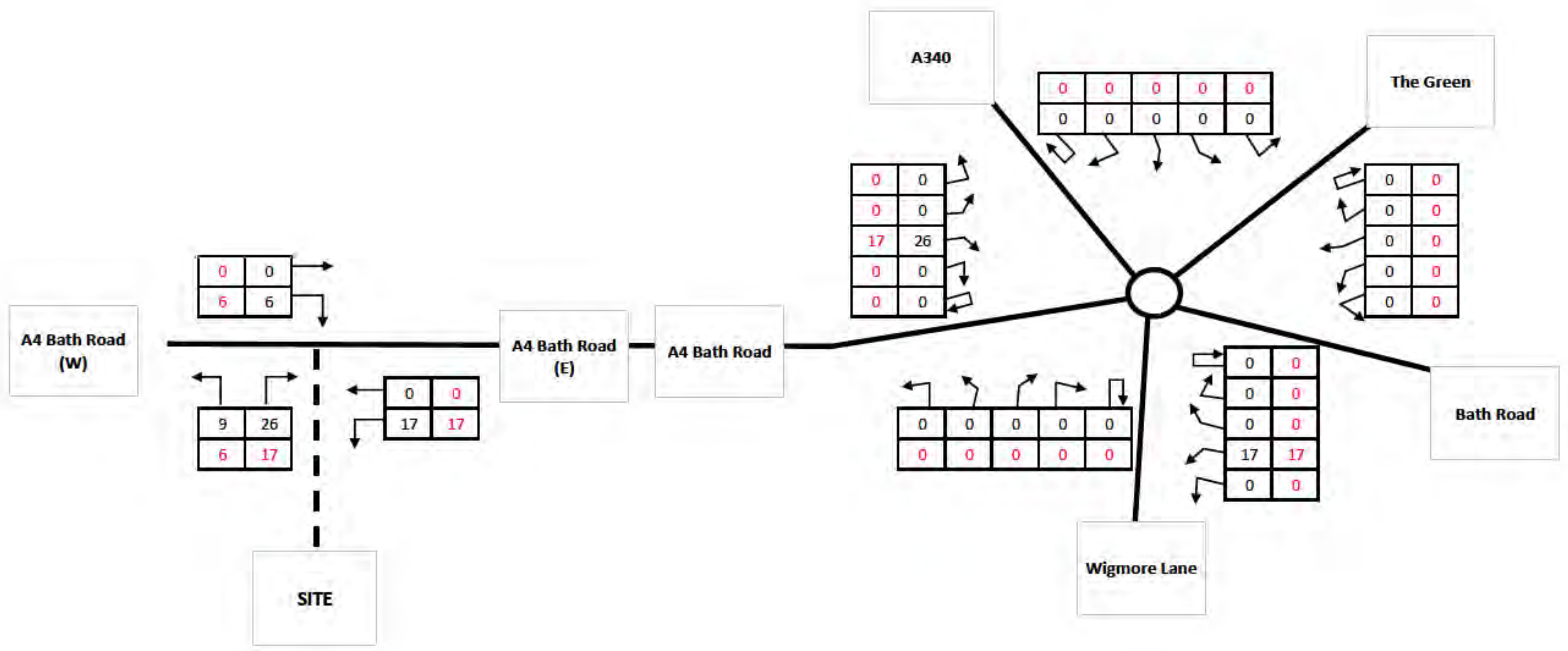
Figure 4.2

Proposed Development Traffic Flows – AM Peak Hour 2 (0800 – 0900)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport

85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

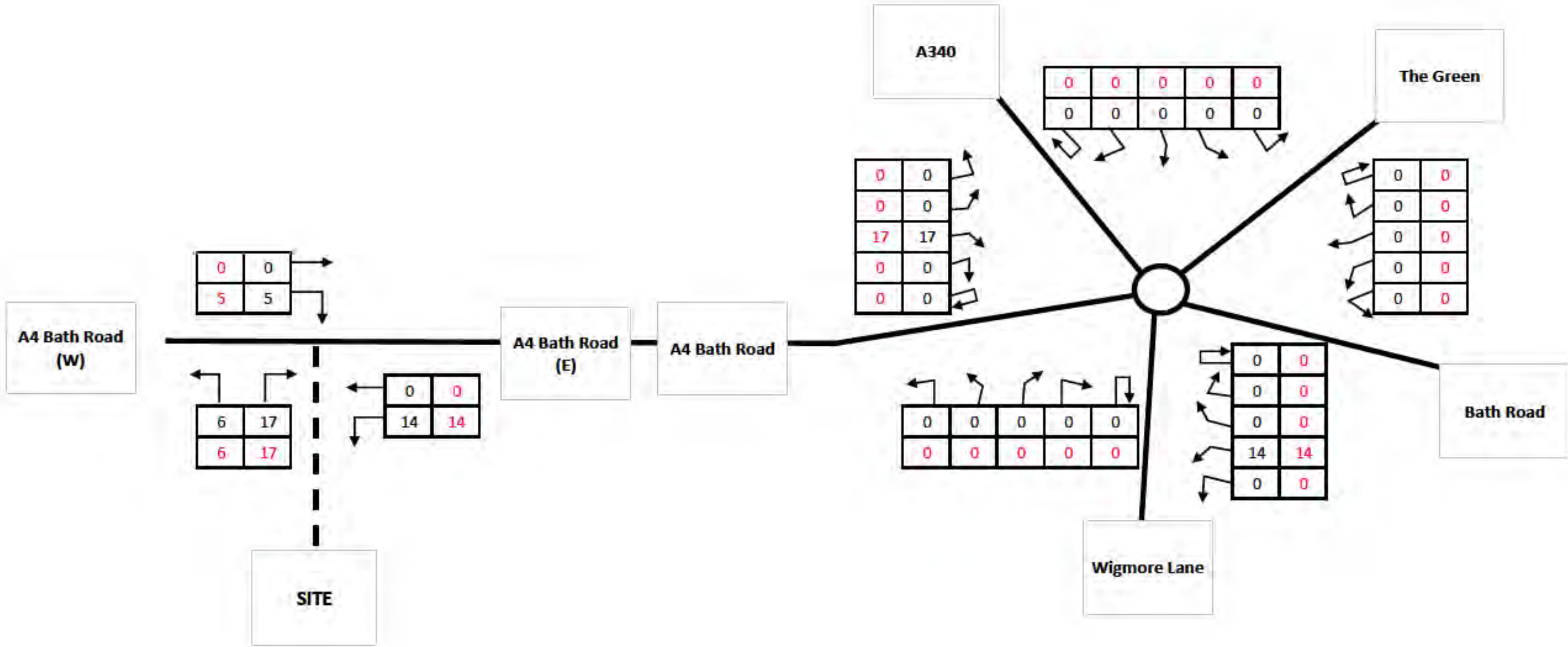
Figure 4.3

Proposed Development Traffic Flows – PM Peak Hour 1 (1600 – 1700)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport

85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

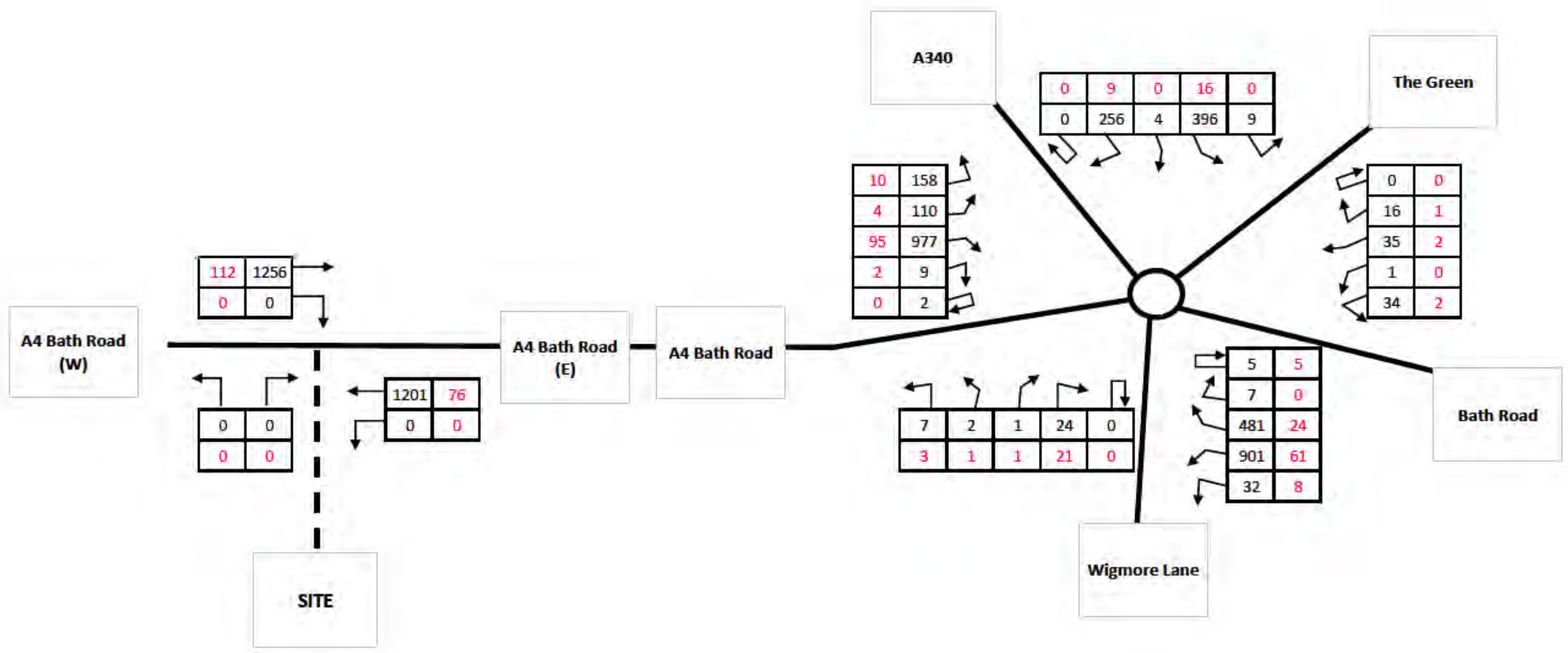
Figure 4.4

Proposed Development Traffic Flows – PM Peak Hour 2 (1700 – 1800)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport

85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

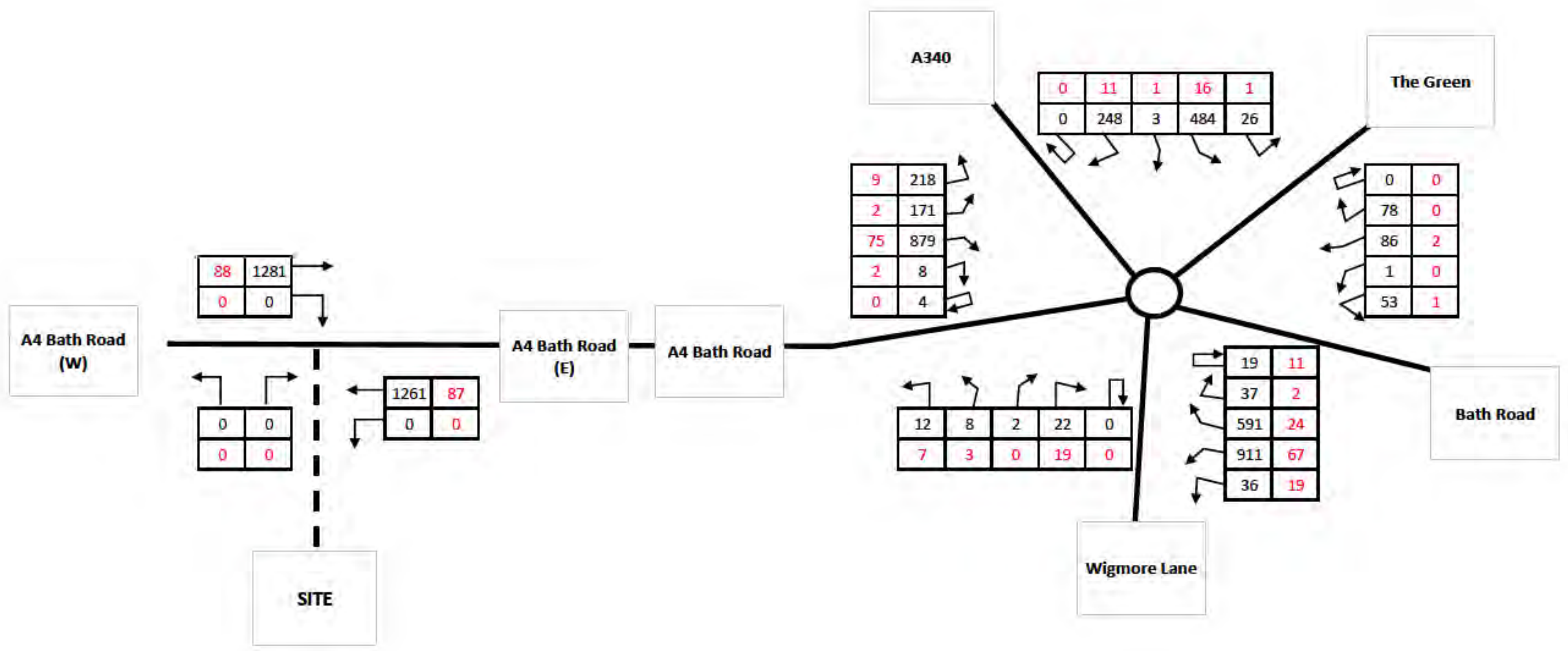
Land West of Wigmore Lane, Theale

Figure 4.5

2039 Baseline – AM Peak Hour 1 (0700 – 0800)

KEY

500	=	TOTAL VEHICLES
25	=	HGVs



i-Transport

85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

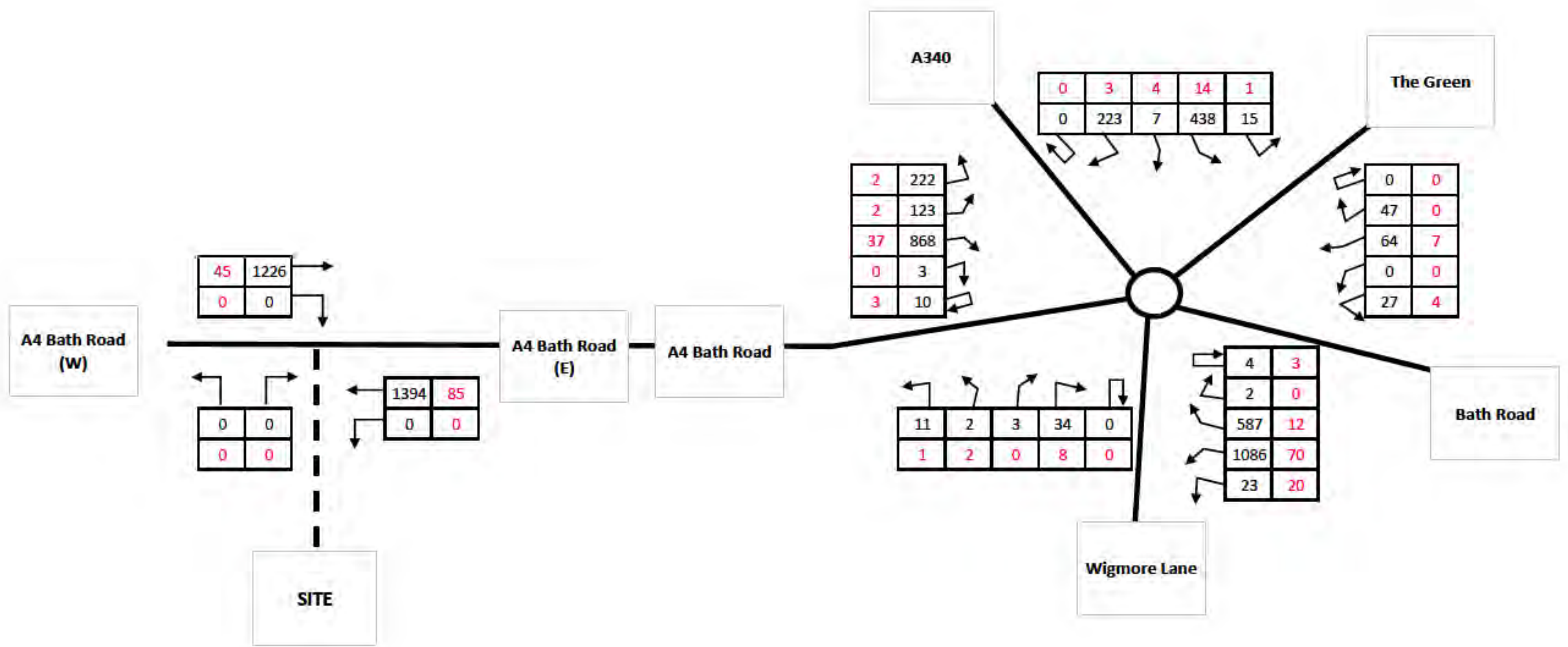
Figure 4.6

2039 Baseline – AM Peak Hour 2 (0800 – 0900)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport

85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

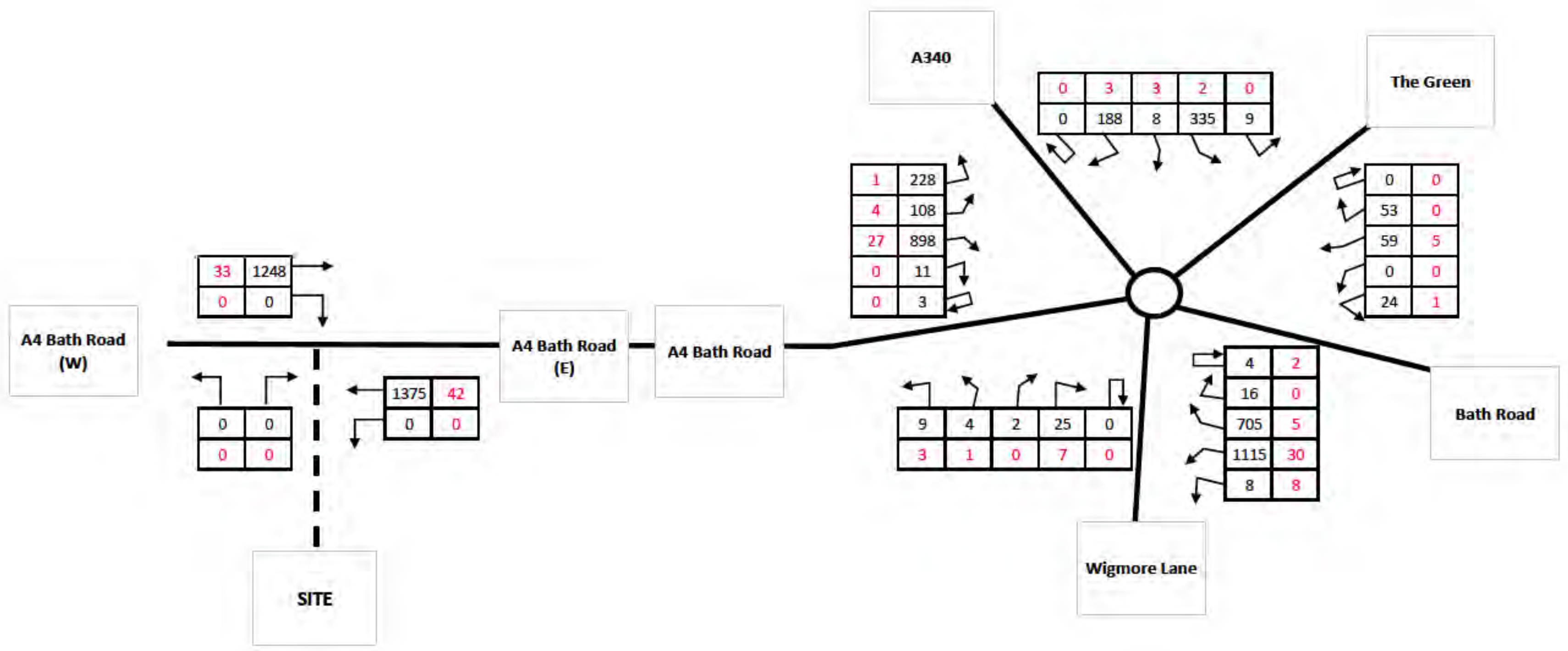
Figure 4.7

2039 Baseline – PM Peak Hour 1 (1600 – 1700)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

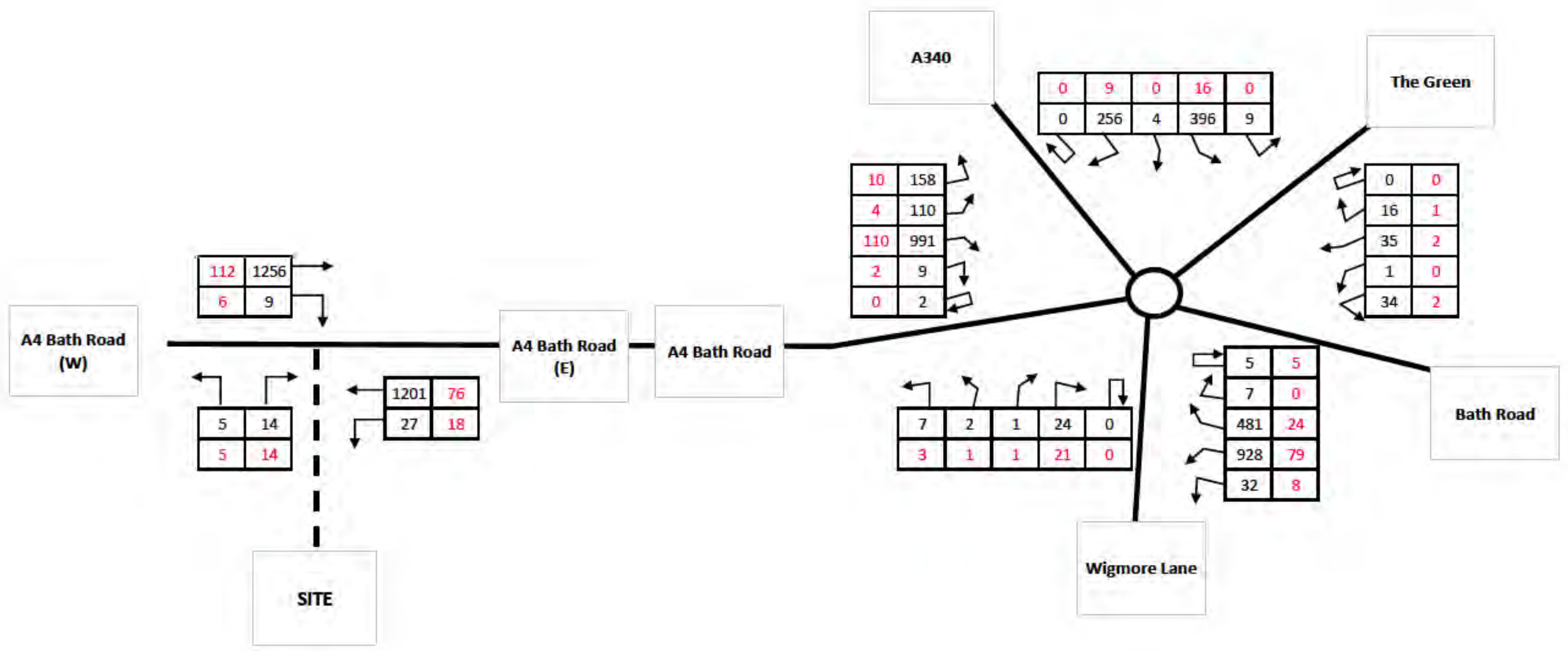
Figure 4.8

2039 Baseline – PM Peak Hour 2 (1700 – 1800)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

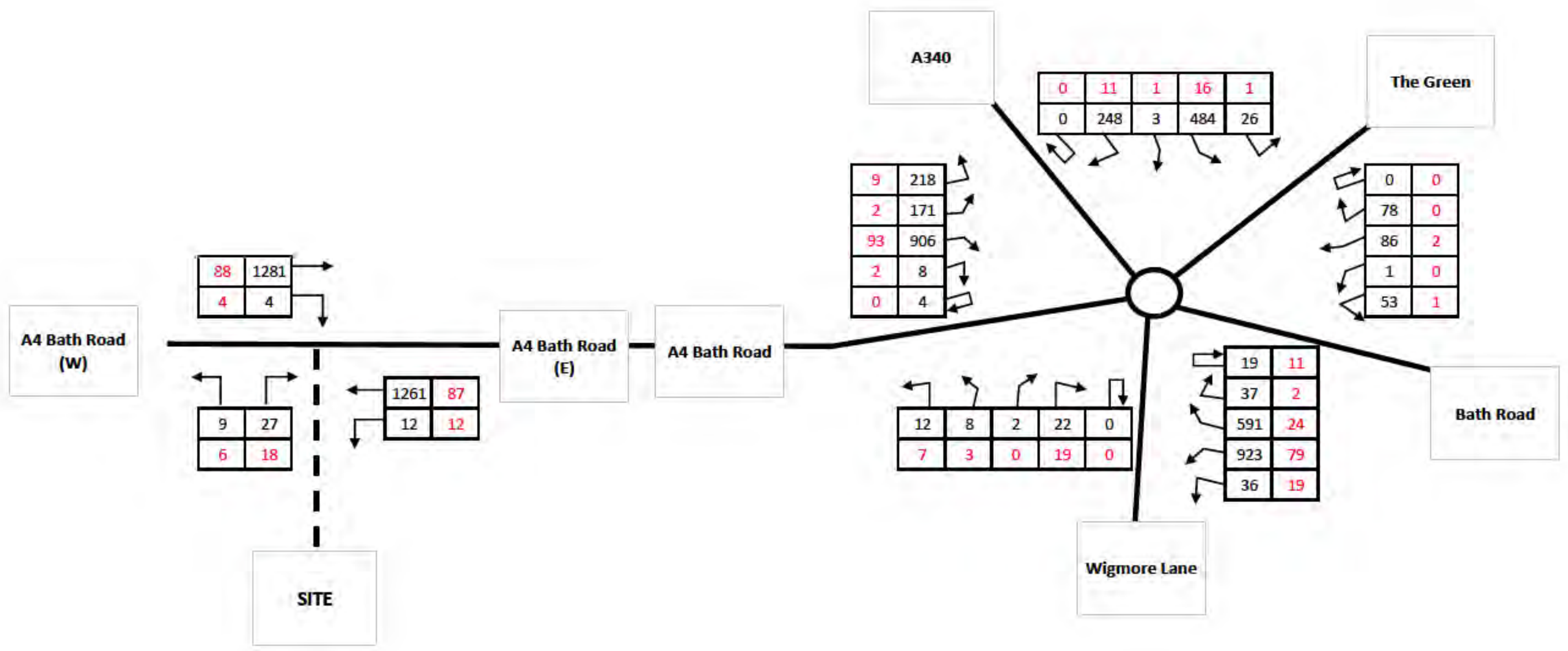
Figure 4.9

2039 With Development – AM Peak Hour 1 (0700 – 0800)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

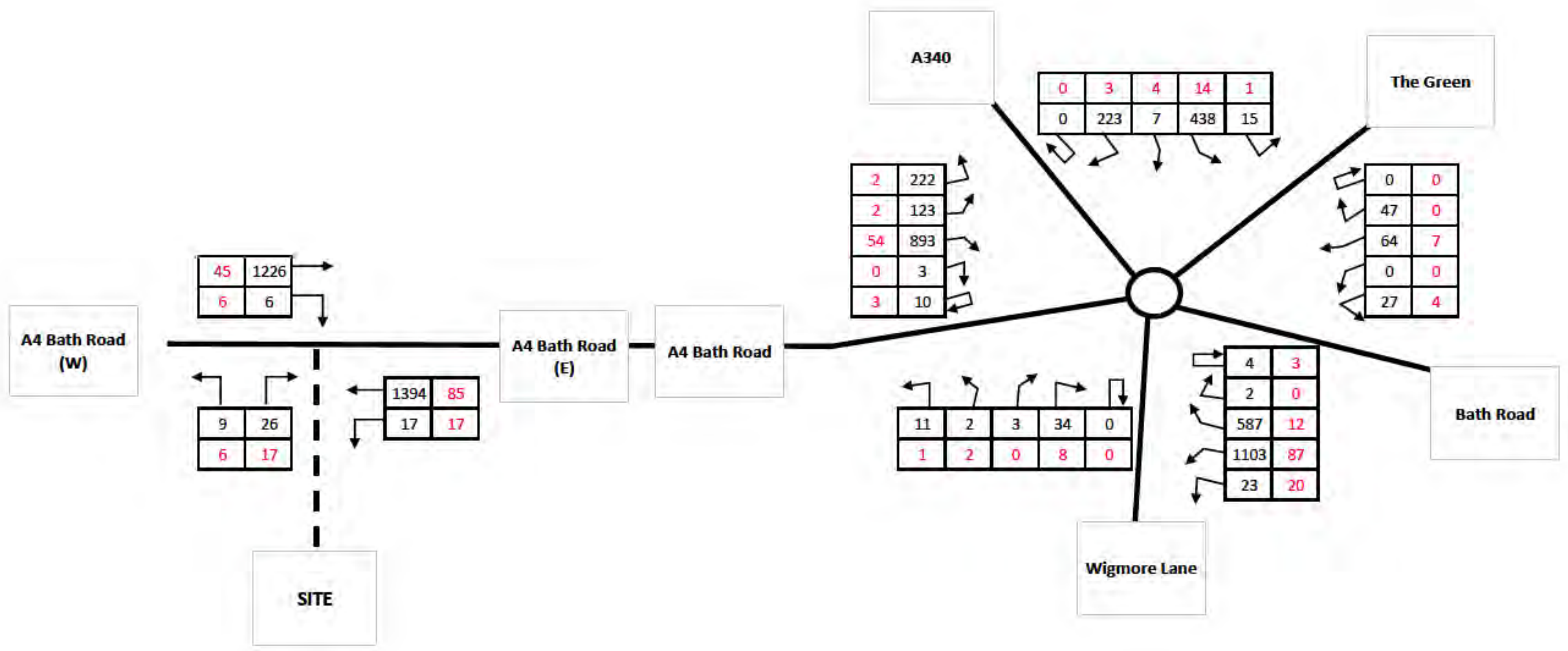
Figure 4.10

2039 With Development – AM Peak Hour 2 (0800 – 0900)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport
85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

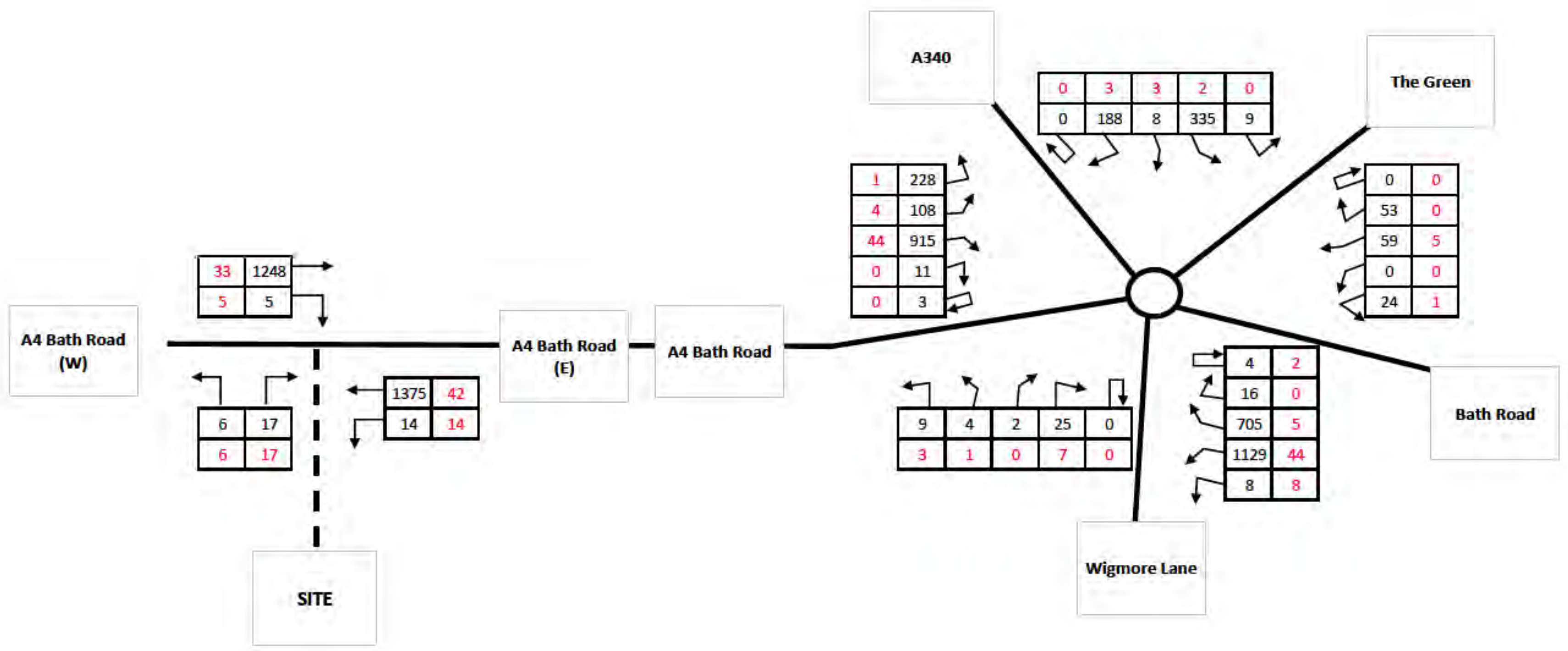
Figure 4.11

2039 With Development – PM Peak Hour 1 (1600 – 1700)

KEY

500 = TOTAL VEHICLES

25 = HGVs



i-Transport

85 Gresham Street, London, EC2V 7NQ
Tel: 020 3705 9215
www.i-transport.co.uk

Land West of Wigmore Lane, Theale

Figure 4.12

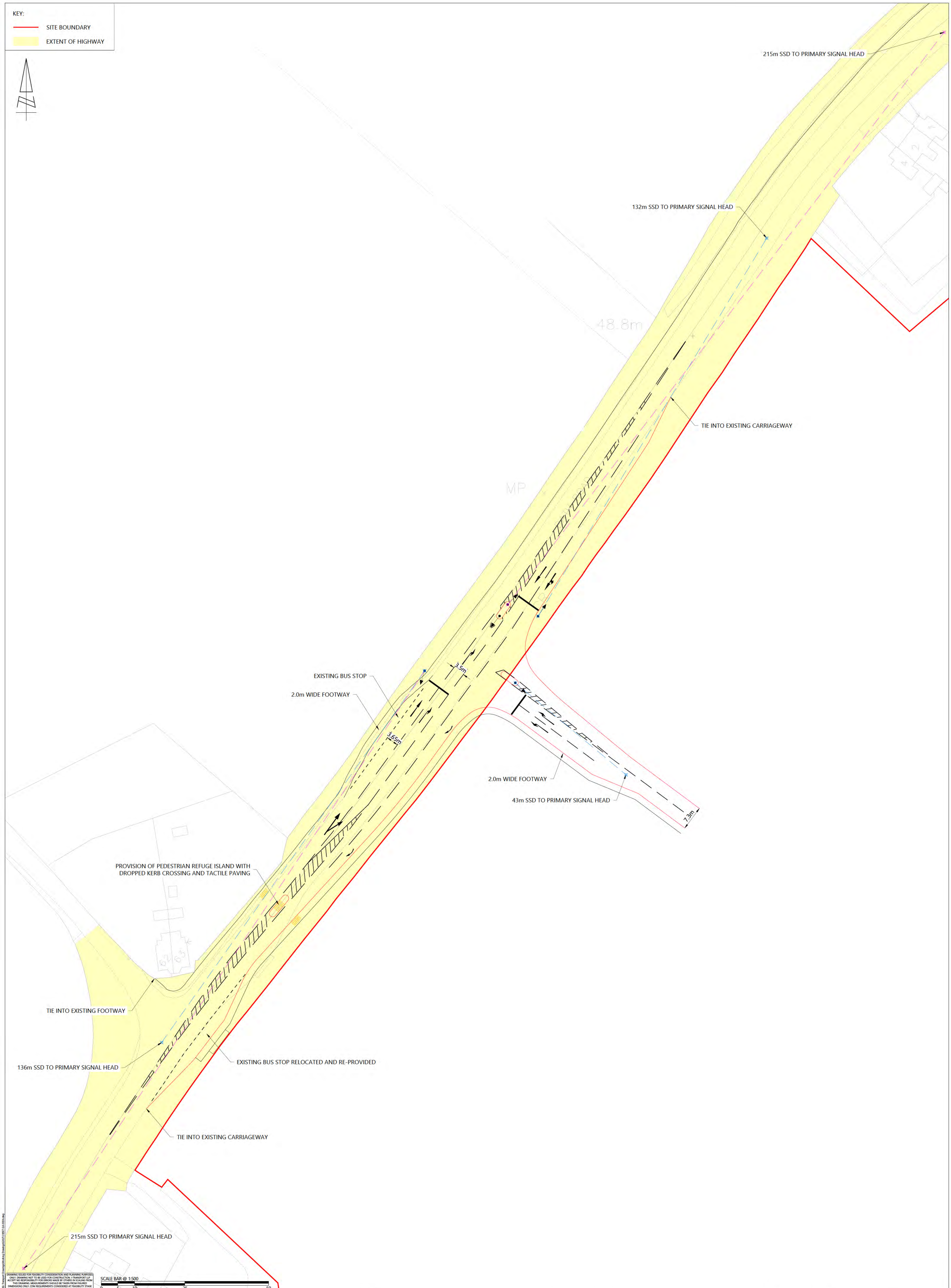
2039 With Development – PM Peak Hour 2 (1700 – 1800)

KEY

500 = TOTAL VEHICLES

25 = HGVs

DRAWINGS



DRAWING ISSUED FOR FEASIBILITY CONSIDERATION AND PLANNING PURPOSES ONLY. DRAWING NOT TO BE USED FOR CONSTRUCTION. I-TRANSPORT LLP ACCEPT NO RESPONSIBILITY FOR ERRORS MADE BY OTHERS IN SCALING FROM THIS DRAWING. MEASUREMENTS SHOULD BE TAKEN FROM FIGURED DIMENSIONS ONLY. CDM REQUIREMENTS CONSIDERED AT FEASIBILITY STAGE ONLY. FURTHER CONSIDERATION REQUIRED BY DETAILED DESIGN TEAM.

i-Transport
85 Gresham Street, London, EC2V 7NQ Tel: 020 3705 9215
www.i-transport.co.uk

REV	DATE	BY	DESCRIPTION	CHK	APD
A	03.02.23	SH	HIGHWAY ALIGNMENT UPDATED	DF	NM

STATUS: FOR INFORMATION

TITLE: INITIAL SITE ACCESS ARRANGMENT - SIGNALISED JUNCTION

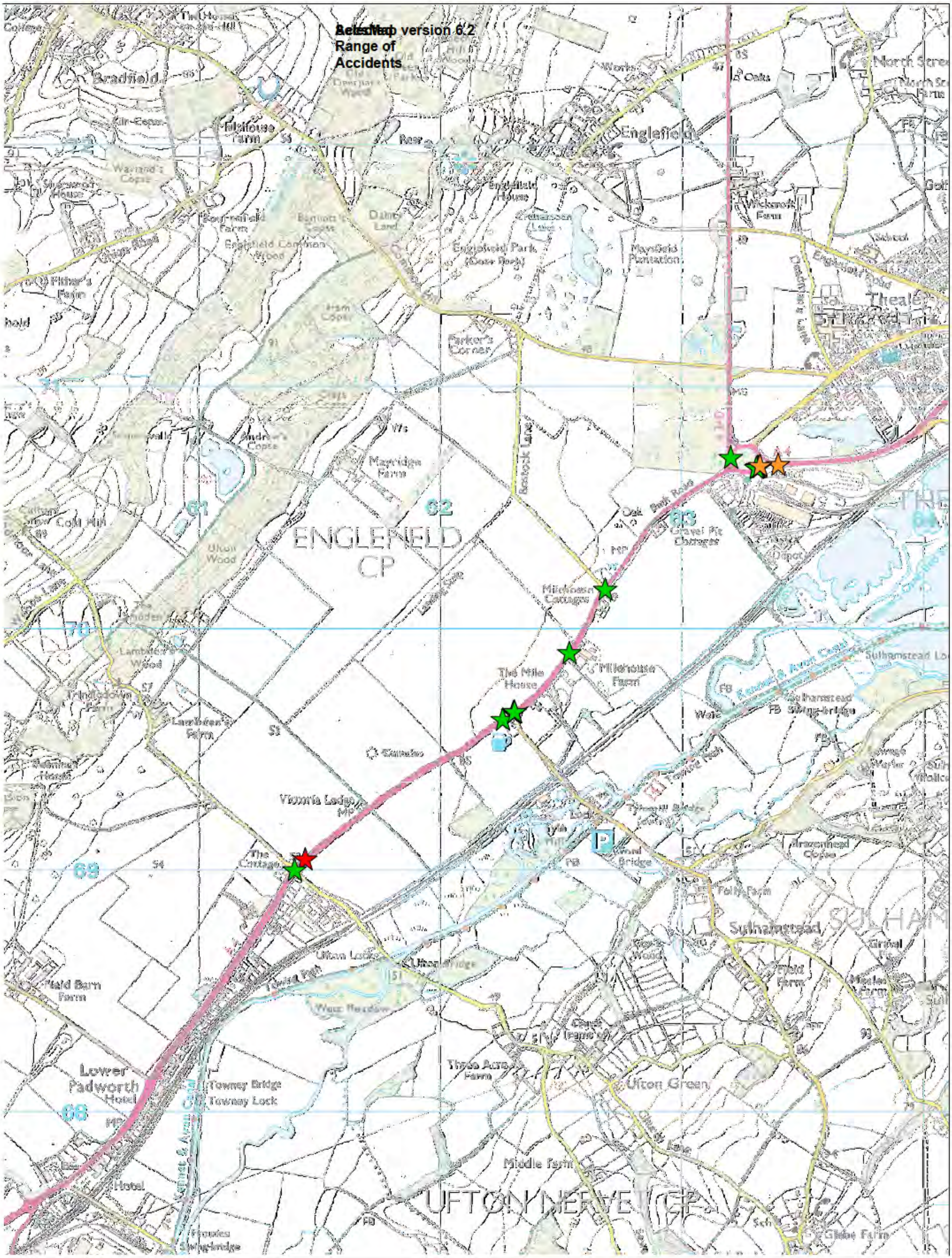
PROJECT: LAND WEST OF WIGMORE LANE, THEALE

CLIENT: THE ENGLEFIELD ESTATE

DRAWN:	CHECKED:	APPROVED:
SH	DF	NM
PROJECT No: ITL18507	SCALE @ A1: 1:500	DATE: 23.01.23

DRAWING No: ITL18507-GA-003 REV: A

APPENDIX A. ACCIDENT DATA



Selected map area

SCALE	1 : 20710
DATE	13/01/2023
DRAWING No.	
DRAWN BY	

Details of Personal Injury Accidents for Period - **01/09/2017** **to** **31/08/2022** (60) months

Selection:
Selected using Manual Selection

Notes:

Police Ref. / Road No. / 2nd Road No. / Grid Ref.	Day / Date / Time / D/L / R S C / Weather / Speed / Account of Accident	Location Description	Vehicles: Veh No / Type / Manv / Dir / Class	Casualties: Sex / Age / Sev
Causation Factor:				

170308161	Wednesday	A4 BATH ROAD JUNC/W SULHAMPSTEAD HILL READING	Veh 1	Car	Turning right	S to E	FSP	F	78	Slight
	11/10/2017		Veh 1	Car	Turning right	S to E	Dri	F	77	Slight
R1: A 4	1411 hrs		Veh 2	Goods < 3.5t	Going ahead	E to W				
R2: U 7149	Daylight:street lights present									
E 462,305	Dry									
N 169,654	Fine without high winds									
	60 mph									

Causation Factor: | **Participant:** | **Confidence:**

1st: Failed to look properly | Vehicle 1 | Possible

C1 TRNG RT S TO E FAILD TO GWAY & COLL/W LGV2 TRAV W

170378951	Saturday	A4 BATH ROAD, ENGLEFIELD	Veh 1	Car	U turn	N to N				
	09/12/2017		Veh 2	Car	Going ahead	S to N	Dri	F	32	Slight
R1: A 4	1336 hrs									
	Daylight:street lights present									
E 462,537	Dry									
N 169,901	Fine without high winds									
	40 mph									

Causation Factor: | **Participant:** | **Confidence:**

1st: Failed to look properly | Vehicle 1 | Very Likely

C1 DID U TURN COLL/W C2

180003116	Thursday	A4 BATH ROAD, THEALE EXACT LOC UNKNOWN	Veh 1	M/C < 125 cc	Going ahead	E to W	Dri	M	18	Serious
	21/12/2017									
R1: A 340	1830 hrs									
	Darkness: street lights present a									
E 463,399	Wet/Damp									
N 170,679	Raining without high winds									
	70 mph									

Causation Factor: | **Participant:** | **Confidence:**

1st: Loss of control | Vehicle 1 | Very Likely

MC1, LOOKED AWAY FROM ROAD & LOST CONTROL TRAV E TO W

Details of Personal Injury Accidents for Period - **01/09/2017** **to** **31/08/2022** (60) months

Selection:
Selected using Manual Selection

Notes:

Police Ref. / Road No. / 2nd Road No. / Grid Ref.	Day / Date / Time / D/L / R S C / Weather / Speed / Account of Accident	Location Description	Vehicles: Veh No	Type	Manv	Dir	Class	Casualties: Sex / Age / Sev
Causation Factor:								

43180108760	Monday 26/03/2018 1833hrs	A4 BATH ROAD J/W WIGMORE LANE THEALE	Veh 1	Goods < 3.5t	Going ahead	E to W				
R1: A 4 **R2: U 7153** E **463,323** N **170,670**	Daylight:street lights present; Dry; Fine without high winds; 70 mph		Veh 2	Car	Wait go ahead held	E to W	Dri	M	45	Slight

Causation Factor:

		Participant:	Confidence:
1st:	Following too close	Vehicle 1	Possible
2nd:	Failed to look properly	Vehicle 1	Very Likely
3rd:	Careless/Reckless/In a hurry	Vehicle 1	

LGV1 TRAV E TO W COLL/W RR C2 STAT WAITNG TO ENT RBT E TO W.

43180112538	Sunday 15/04/2018 1058hrs	A4 BATH ROAD J/W WIGMORE LANE THEALE	Veh 1	Car	Going ahead	E to W				
R1: A 4 **R2: U 7153** E **463,316** N **170,671**	Daylight:street lights present; Dry; Fine without high winds; 70 mph		Veh 2	Pedal cycle	Going ahead	N to S	Dri	F	37	Serious

Causation Factor:

		Participant:	Confidence:
1st:	Failed to look properly	Vehicle 1	Very Likely
2nd:	Vehicle blind spot	Vehicle 1	Possible

C1 ENT RBT E TO W & COLL/W PC2 TRAV N TO S ON RBT

43180150248	Friday 18/05/2018 0918hrs	A4 BATH ROAD 50M NE J/W LAMBDENS HILL PADWORTH	Veh 1	Car	Going ahead	SW to NE	Ped	M	48	Fatal
R1: A 4 E **461,445** N **169,048**	Daylight:street lights present; Dry; Fine without high winds; 60 mph									

Causation Factor:

		Participant:	Confidence:
1st:	Failed to look properly	Casualty 1	Very Likely
2nd:	Failed to judge vehicles path or speed	Casualty 1	Possible
3rd:	Wrong use of pedestrian crossing facility	Casualty 1	

PED XING C/WAY NW TO SE COLL/W C1 TRAV SW TO NE. PED DECEASED IN HOSP.

Details of Personal Injury Accidents for Period - **01/09/2017** **to** **31/08/2022** (60) months

Selection:
Selected using Manual Selection

Notes:

Police Ref. / Road No. / 2nd Road No. / Grid Ref.	Day / Date / Time / D/L / R S C / Weather / Speed / Account of Accident	Location Description	Vehicles: Veh No / Type / Manv / Dir / Class	Casualties: Sex / Age / Sev

Causation Factor:

43180269657
R1: A 4
R2: U 7149
E 462,310
N 169,656

Monday
03/09/2018
1647hrs
Daylight:street lights present
Dry
Fine without high winds
60 mph

A4 BATH ROAD J/W SULHAMSTEAD HILL READING

Veh	Type	Manv	Dir	Class	Sex	Age	Sev
Veh 1	Car	Turning right	S to NE	Dri	M	47	Serious
Veh 2	Car	Going ahead	NE to SW				

Causation Factor:		Participant:	Confidence:
1st:	Poor turn or manoevre	Vehicle 1	Very Likely
2nd:	Failed to look properly	Vehicle 1	Very Likely
3rd:	Failed to judge other persons path or speed	Vehicle 1	

C1 TRN RT S TO NE COLL/W C2 TRAV NE TO SW.

43180327162
R1: A 4
R2: U 7149
E 462,309
N 169,658

Friday
26/10/2018
0755hrs
Daylight:street lights present
Dry
Fine without high winds
60 mph

A4 BATH ROAD J/W SULHAMSTEAD HILL READING

Veh	Type	Manv	Dir	Class	Sex	Age	Sev
Veh 1	Car	Turning right	S to NE				
Veh 2	Car	Going ahead	SW to NE	Dri	M	45	Slight

Causation Factor:		Participant:	Confidence:
1st:	Disobeyed Give Way or Stop sign or markings	Vehicle 1	Very Likely
2nd:	Failed to look properly	Vehicle 1	Very Likely
3rd:	Failed to judge other persons path or speed	Vehicle 1	Very Likely
4th:	Impaired by drugs (illicit or medicinal)	Vehicle 1	Very Likely
5th:	Distraction in vehicle	Vehicle 1	Possible
6th:	Careless/Reckless/In a hurry	Vehicle 1	Possible

C1 TRNG RT S TO NE FAILD TO G/WAY & COLL/W C2 TRAV SW TO N E

190074984
R1: A 4
R2: U 7107
E 461,401
N 169,003

Monday
11/03/2019
1010hrs
Daylight:street lights present
Dry
Fine with high winds
60 mph

A4 BATH ROAD J/W LAMBDENS HILL BEENHAM

Veh	Type	Manv	Dir	Class	Sex	Age	Sev
Veh 1	Car	Going ahead	SW to NE				
Veh 2	Goods < 3.5t	Stopping	SW to NE	Dri	M	38	Slight

Causation Factor:		Participant:	Confidence:
1st:	Failed to look properly	Vehicle 1	Very Likely

C1 TRAV SW TO NE COLL/W RR LGV2 STPPNG SW TO NE.

Details of Personal Injury Accidents for Period - **01/09/2017** **to** **31/08/2022** (60) months

Selection:
Selected using Manual Selection

Notes:

Police Ref. / Road No. / 2nd Road No. / Grid Ref.	Day / Date / Time / D/L / R S C / Weather / Speed / Account of Accident	Location Description	Vehicles: Veh No / Type / Manv / Dir / Class				Casualties: Sex / Age / Sev
190326578	Sunday	A4 BATH ROAD J/W SULHAMSTEAD HILL SULHAMSTEAD	Veh 1	Car	Turning right	S to NE Dri	F 71 Slight
	20/10/2019		Veh 2	Car	Going ahead	NE to SW	
R1: A 4	1530hrs						
R2: U 7123	Daylight:street lights present						
E 462,307	Dry						
N 169,656	Fine without high winds						
	50 mph						

Causation Factor:		**Participant:**	**Confidence:**
1st:	Failed to look properly	Vehicle 1	Very Likely
2nd:	Failed to judge other persons path or speed	Vehicle 1	Very Likely

C1 TRN RT S TO NE COLL/W C2 TRAV NE TO SW.

190368997	Saturday	A4 BATH ROAD J/W A330 READING	Veh 1	Car	Going ahead	E to W	
	16/11/2019		Veh 2	Pedal cycle	Turning right	N to W Dri	M 34 Slight
R1: A 4	1611hrs						
R2: A 330	Darkness: street lights present b						
E 463,314	Dry						
N 170,668	Fine without high winds						
	60 mph						

Causation Factor:		**Participant:**	**Confidence:**
1st:	Vehicle blind spot	Vehicle 1	Possible
2nd:	Cyclist wearing dark clothing at night	Vehicle 2	Very Likely
3rd:	Failed to look properly	Vehicle 1	

C1 ENT RBT E TO W COLL/W PC2 TRN RT N TO W.

200162928	Thursday	A4 BATH ROAD J/W WIGMORE LANE THEALE	Veh 1	Car	Going ahead	E to S	
	28/05/2020		Veh 2	Pedal cycle	Going ahead	NE to SW Dri	M 45 Slight
R1: A 4	1810hrs						
R2: U 7153	Daylight:street lights present						
E 463,310	Dry						
N 170,666	Fine without high winds						
	60 mph						

Causation Factor:		**Participant:**	**Confidence:**
1st:	Failed to look properly	Vehicle 1	Very Likely
2nd:	Dazzling sun	Vehicle 1	Possible
3rd:	Failed to judge other persons path or speed	Vehicle 2	

C1 TRN LFT E TO S ENT RBT & COLL/W PC2 TRAV NE TO SW ON RBT.

Details of Personal Injury Accidents for Period - **01/09/2017** **to** **31/08/2022** (60) months

Selection:
Selected using Manual Selection

Notes:

Police Ref. / **Road No.** / **2nd Road No.** / **Grid Ref.**	Day / Date / Time / D/L / R S C / Weather / Speed	Location Description	Vehicles: Veh No / Type / Manv / Dir / Class	Casualties: Sex / Age / Sev
Account of Accident				
Causation Factor:				

200227390	Thursday	A4 BATH ROAD J/W A340 THEALE	Veh 1	Pedal cycle	Turning left	SW to N	Dri	M	41	Slight
	23/07/2020		Veh 2	Car	Going ahead	SW to NE				
R1: A 4	1030hrs									
R2: A 340	Daylight:street lights present									
E 463,204	Dry									
N 170,708	Fine without high winds									
	40 mph									

C2 TRAV IN N/K DIR COLL/W PC1 TRAV IN N/K DIR.

210194431	Thursday	A4 BATH ROAD J/W WIGMORE LANE THEALE	Veh 1	Car	Going ahead	E to W	Ped	M	53	Serious
	06/05/2021									
R1: A 4	2156hrs									
R2: U 7153	Darkness: street lights present a									
E 463,325	Dry									
N 170,675	Fine without high winds									
	50 mph									

Causation Factor:		**Participant:**	**Confidence:**
1st:	Careless/Reckless/In a hurry	Vehicle 1	Possible
2nd:	Swerved	Vehicle 1	Possible
3rd:	Impaired by alcohol	Vehicle 1	Very Likely
4th:	Impaired by drugs (illicit or medicinal)	Vehicle 1	Very Likely
5th:	Temporary road layout (eg contraflow)	Vehicle 1	Very Likely

C1 TRAV E TO W APPRCHNG RBT COLL/W PED (MAINTENANCE WORKER) STAT IN C/WAY IN ROADWORKS. DRIVER C1 INTOX.

210293342	Saturday	A4 BATH ROAD APPX 50M SW J/W SULHAMSTEAD ROAD THEALE	Veh 1	Car	Turning right	SE to NE	Dri	F	74	Slight
	03/07/2021		Veh 2	Car	Going ahead	NE to SW	Dri	M	39	Slight
R1: A 4	0949hrs									
R2: U	Daylight:street lights present									
E 462,261	Dry									
N 169,625	Fine without high winds									
	60 mph									

Causation Factor:		**Participant:**	**Confidence:**
1st:	Failed to signal/Misleading signal	Vehicle 2	Possible
2nd:	Failed to look properly	Vehicle 1	Very Likely
3rd:	Failed to judge other persons path or speed	Vehicle 1	

C1 TRN RT SE TO NE COLL/W C2 TRAV NE TO SW

Details of Personal Injury Accidents for Period - **01/09/2017** **to** **31/08/2022** (60) months

Selection:
Selected using Manual Selection

Notes:

Police Ref. / Road No. / 2nd Road No. / Grid Ref.	Day / Date / Time / D/L / R S C / Weather / Speed / Account of Accident	Location Description	Veh No	Type	Manv	Dir	Class	Casualties Sex / Age / Sev
210383439	Thursday 26/08/2021 1300hrs	A4 BATH ROAD J/W BOSTOCK LANE SULHAMSTEAD	Veh 1	Car	Turning right	NW to SW		
R1: A 4 **R2: U 7149**	Daylight:street lights present		Veh 2	Pedal cycle	Going ahead	SW to NE	Dri	M 65 Slight
E 462,685 **N 170,163**	Dry / Fine without high winds / 60 mph							

Causation Factor:

	Causation Factor	Participant:	Confidence:
1st:	Failed to look properly	Vehicle 1	Possible

C1 TRN RT NW TO SW COLL/W PC2 TRAV SW TO NE.

Police Ref. / Road No. / 2nd Road No. / Grid Ref.	Day / Date / Time / D/L / R S C / Weather / Speed / Account of Accident	Location Description	Veh No	Type	Manv	Dir	Class	Casualties Sex / Age / Sev
220001115	Saturday 01/01/2022 1854hrs	A4 BATH ROAD J/W SULHAMSTEAD HILL THEALE	Veh 1	M/C > 500 cc	Going ahead	NE to SW	Dri	M 31 Slight
R1: A 4 **R2: U 7149**	Darkness: street lights present a		Veh 2	Car	Turning right	S to NE		
E 462,310 **N 169,657**	Dry / Fine without high winds / 60 mph							

Causation Factor:

	Causation Factor	Participant:	Confidence:
1st:	Failed to look properly	Vehicle 1	Possible
2nd:	Failed to look properly	Vehicle 2	Possible
3rd:	Junction restart	Vehicle 2	Possible
4th:	Aggressive driving	Vehicle 1	Possible
5th:	Careless/Reckless/In a hurry	Vehicle 1	Possible

MC1 TRAV NE TO SW. C2 TRN RT SE TO NE. COLL OCCRD.

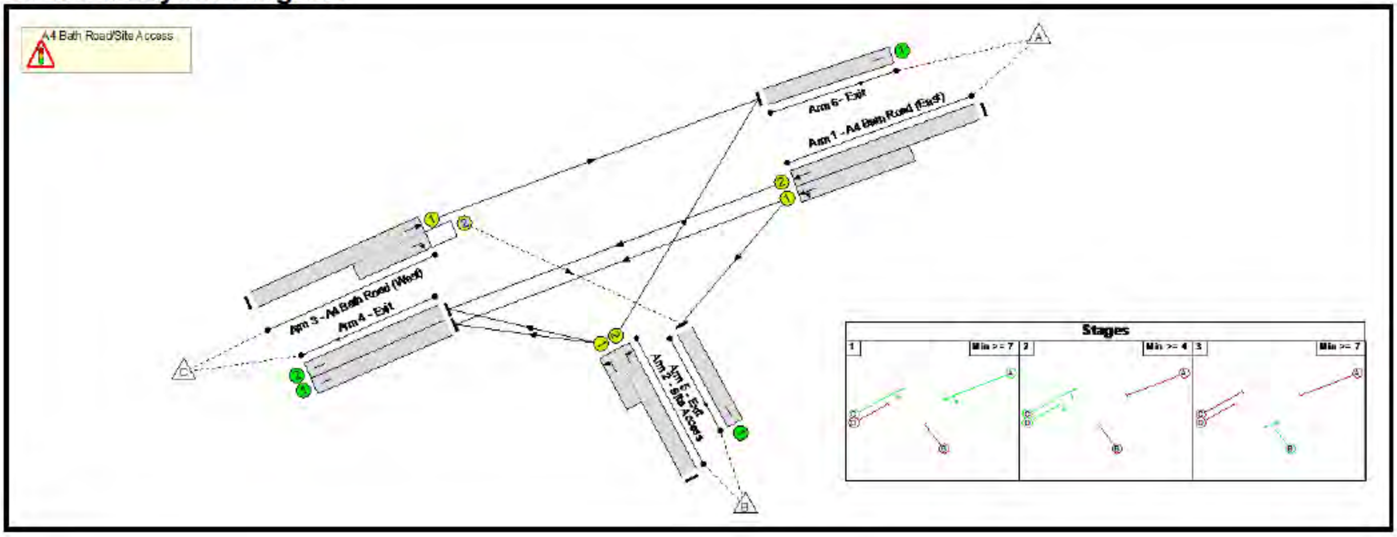
APPENDIX B. OPERATIONAL ASSESSMENTS

Full Input Data And Results

User and Project Details

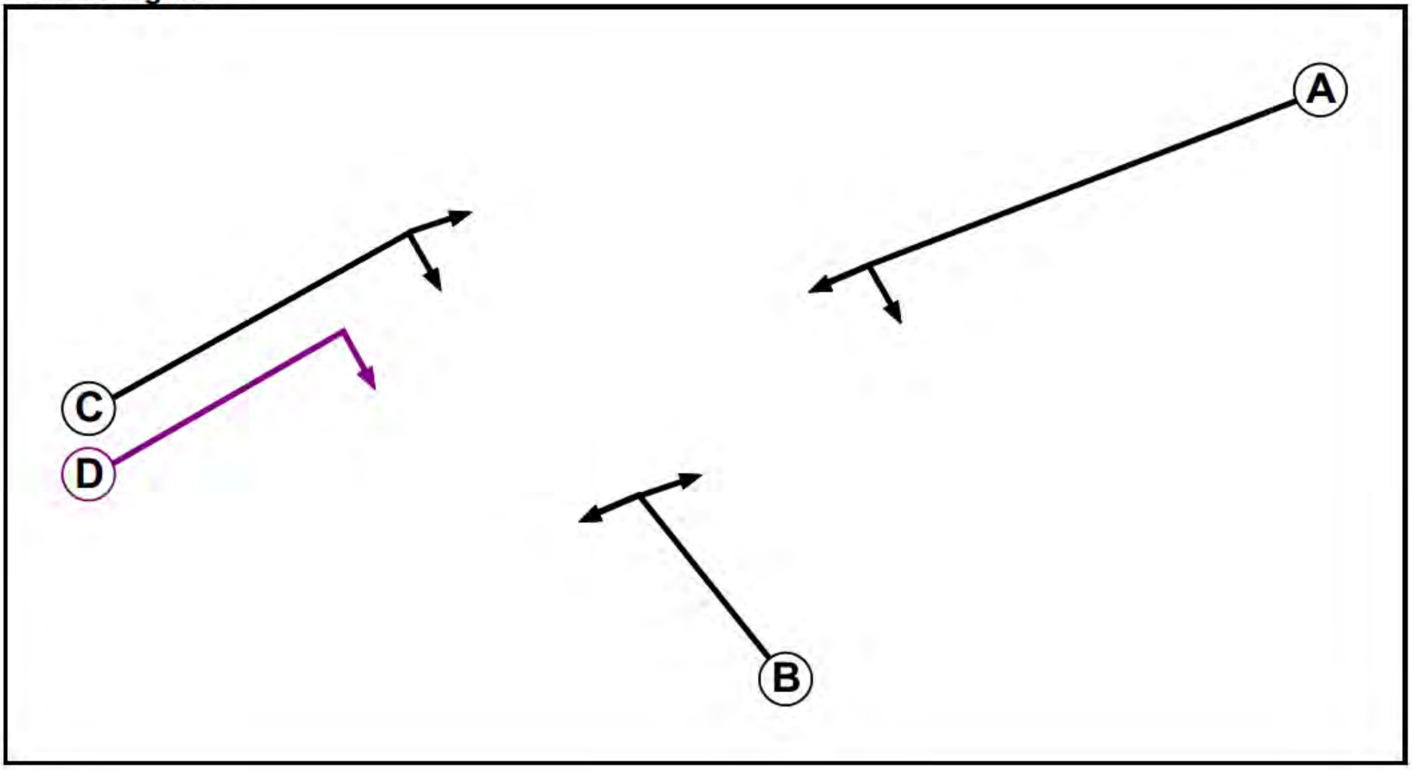
Project:	**Wigmore Lane, Theale**
Title:	**Site Access**
Location:	
Date Started:	07/02/2023
Additional detail:	
File name:	Site Access With Left Turn Lane.lsg3x
Author:	BD
Company:	i-Transport LLP
Address:	

Network Layout Diagram



Full Input Data And Results

Phase Diagram



Phase Input Data

Phase Name	Phase Type	Assoc. Phase	Street Min	Cont Min
A	Traffic		7	7
B	Traffic		7	7
C	Traffic		7	7
D	Ind. Arrow	C	4	4

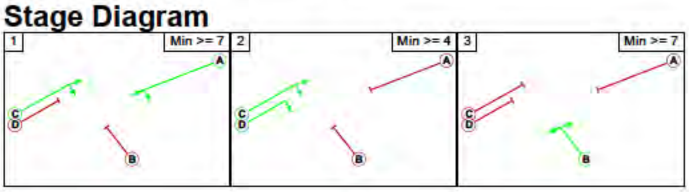
Phase Intergreens Matrix

		Starting Phase			
		A	B	C	D
Terminating Phase	A		6	-	5
	B	5		5	5
	C	-	5		-
	D	6	5	-	

Phases in Stage

Stage No.	Phases in Stage
1	A C
2	C D
3	B

Stage Diagram



Phase Delays

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

		To Stage		
		1	2	3
From Stage	1		5	6
	2	6		5
	3	5	5	

Full Input Data And Results

Give-Way Lane Input Data

Junction: A4 Bath Road/Site Access											
Lane	**Movement**	**Max Flow when Giving Way (PCU/Hr)**	**Min Flow when Giving Way (PCU/Hr)**	**Opposing Lane**	**Opp. Lane Coeff.**	**Opp. Mvmnts.**	**Right Turn Storage (PCU)**	**Non-Blocking Storage (PCU)**	**RTF**	**Right Turn Move up (s)**	**Max Turns in Intergreen (PCU)**
3/2 (A4 Bath Road (West))	5/1 (Right)	1439	0	1/1	1.09	All	2.50	-	0.50	3	2.50

Full Input Data And Results

Lane Input Data

Junction: A4 Bath Road/Site Access												
Lane	**Lane Type**	**Phases**	**Start Disp.**	**End Disp.**	**Physical Length (PCU)**	**Sat Flow Type**	**Def User Saturation Flow (PCU/Hr)**	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Turns**	**Turning Radius (m)**
1/1 (A4 Bath Road (East))	U	A	2	3	10.8	Geom	-	3.65	0.00	Y	Arm 4 Ahead	Inf
											Arm 5 Left	16.70
1/2 (A4 Bath Road (East))	U	A	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Ahead	Inf
2/1 (Site Access)	U	B	2	3	5.2	Geom	-	3.65	0.00	Y	Arm 4 Left	16.70
2/2 (Site Access)	U	B	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 6 Right	12.50
3/1 (A4 Bath Road (West))	U	C	2	3	60.0	Geom	-	3.57	0.00	Y	Arm 6 Ahead	Inf
3/2 (A4 Bath Road (West))	O	C D	2	3	7.1	Geom	-	3.57	0.00	Y	Arm 5 Right	6.90
4/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
4/2 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1 (Exit)	U		2	3	60.0	Inf	-	-	-	-	-	-

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
5: '2039 AM 1'	07:00	08:00	01:00	
6: '2039 AM 2'	08:00	09:00	01:00	
7: '2039 PM 1'	16:00	17:00	01:00	
8: '2039 PM 2'	17:00	18:00	01:00	

Scenario 5: '2039 B+C+D AM1' (FG5: '2039 AM 1', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	45	1277	1322
	B	28	0	10	38
	C	1368	15	0	1383
	Tot.	1396	60	1287	2743

Traffic Lane Flows

Lane	Scenario 5: 2039 B+C+D AM1
Junction: A4 Bath Road/Site Access	
1/1 (short)	659
1/2 (with short)	1322(In) 663(Out)
2/1 (short)	10
2/2 (with short)	38(In) 28(Out)
3/1 (with short)	1383(In) 1368(Out)
3/2 (short)	15
4/1	619
4/2	668
5/1	60
6/1	1396

Lane Saturation Flows

Junction: A4 Bath Road/Site Access								
Lane	**Lane Width (m)**	**Gradient**	**Nearside Lane**	**Allowed Turns**	**Turning Radius (m)**	**Turning Prop.**	**Sat Flow (PCU/Hr)**	**Flared Sat Flow (PCU/Hr)**
1/1 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	93.2 %	1968	1968
				Arm 5 Left	16.70	6.8 %		
1/2 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1980	1980
2/1 (Site Access)	3.65	0.00	Y	Arm 4 Left	16.70	100.0 %	1817	1817
2/2 (Site Access)	3.65	0.00	Y	Arm 6 Right	12.50	100.0 %	1768	1768
3/1 (A4 Bath Road (West))	3.57	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1972	1972
3/2 (A4 Bath Road (West))	3.57	0.00	Y	Arm 5 Right	6.90	100.0 %	1620	1620
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Full Input Data And Results

Scenario 6: '2039 B+C+D AM2' (FG6: '2039 AM 2', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	24	1348	1372
	B	45	0	15	60
	C	1369	8	0	1377
	Tot.	1414	32	1363	2809

Traffic Lane Flows

Lane	Scenario 6: 2039 B+C+D AM2
Junction: A4 Bath Road/Site Access	
1/1 (short)	685
1/2 (with short)	1372(In) 687(Out)
2/1 (short)	15
2/2 (with short)	60(In) 45(Out)
3/1 (with short)	1377(In) 1369(Out)
3/2 (short)	8
4/1	668
4/2	695
5/1	32
6/1	1414

Lane Saturation Flows

Junction: A4 Bath Road/Site Access								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	96.5 %	1974	1974
				Arm 5 Left	16.70	3.5 %		
1/2 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1980	1980
2/1 (Site Access)	3.65	0.00	Y	Arm 4 Left	16.70	100.0 %	1817	1817
2/2 (Site Access)	3.65	0.00	Y	Arm 6 Right	12.50	100.0 %	1768	1768
3/1 (A4 Bath Road (West))	3.57	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1972	1972
3/2 (A4 Bath Road (West))	3.57	0.00	Y	Arm 5 Right	6.90	100.0 %	1620	1620
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 7: '2039 B+C+D PM1' (FG7: '2039 PM 1', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	34	1479	1513
	B	42	0	15	57
	C	1271	12	0	1283
	Tot.	1313	46	1494	2853

Full Input Data And Results

Traffic Lane Flows

Lane	Scenario 7: 2039 B+C+D PM1
Junction: A4 Bath Road/Site Access	
1/1 (short)	755
1/2 (with short)	1513(In) 758(Out)
2/1 (short)	15
2/2 (with short)	57(In) 42(Out)
3/1 (with short)	1283(In) 1271(Out)
3/2 (short)	12
4/1	728
4/2	766
5/1	46
6/1	1313

Lane Saturation Flows

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
Junction: A4 Bath Road/Site Access								
1/1 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	95.5 %	1972	1972
				Arm 5 Left	16.70	4.5 %		
1/2 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1980	1980
2/1 (Site Access)	3.65	0.00	Y	Arm 4 Left	16.70	100.0 %	1817	1817
2/2 (Site Access)	3.65	0.00	Y	Arm 6 Right	12.50	100.0 %	1768	1768
3/1 (A4 Bath Road (West))	3.57	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1972	1972
3/2 (A4 Bath Road (West))	3.57	0.00	Y	Arm 5 Right	6.90	100.0 %	1620	1620
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 8: '2039 B+C+D PM2' (FG8: '2039 PM 2', Plan 1: 'Network Control Plan 1')

Traffic Flows, Desired

Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	28	1416	1444
	B	34	0	12	46
	C	1281	10	0	1291
	Tot.	1315	38	1428	2781

Traffic Lane Flows

Lane	Scenario 8: 2039 B+C+D PM2
Junction: A4 Bath Road/Site Access	
1/1 (short)	721
1/2 (with short)	1444(In) 723(Out)
2/1 (short)	12
2/2 (with short)	46(In) 34(Out)
3/1 (with short)	1291(In) 1281(Out)
3/2 (short)	10
4/1	699
4/2	729
5/1	38
6/1	1315

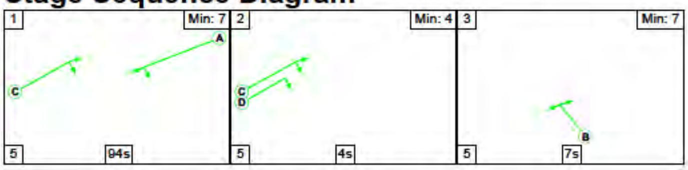
Full Input Data And Results

Lane Saturation Flows

Junction: A4 Bath Road/Site Access								
Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	96.1 %	1973	1973
				Arm 5 Left	16.70	3.9 %		
1/2 (A4 Bath Road (East))	3.65	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1980	1980
2/1 (Site Access)	3.65	0.00	Y	Arm 4 Left	16.70	100.0 %	1817	1817
2/2 (Site Access)	3.65	0.00	Y	Arm 6 Right	12.50	100.0 %	1768	1768
3/1 (A4 Bath Road (West))	3.57	0.00	Y	Arm 6 Ahead	Inf	100.0 %	1972	1972
3/2 (A4 Bath Road (West))	3.57	0.00	Y	Arm 5 Right	6.90	100.0 %	1620	1620
4/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
4/2 (Exit Lane 2)	Infinite Saturation Flow						Inf	Inf
5/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf
6/1 (Exit Lane 1)	Infinite Saturation Flow						Inf	Inf

Scenario 5: '2039 B+C+D AM1' (FG5: '2039 AM 1', Plan 1: 'Network Control Plan 1')

Stage Sequence Diagram

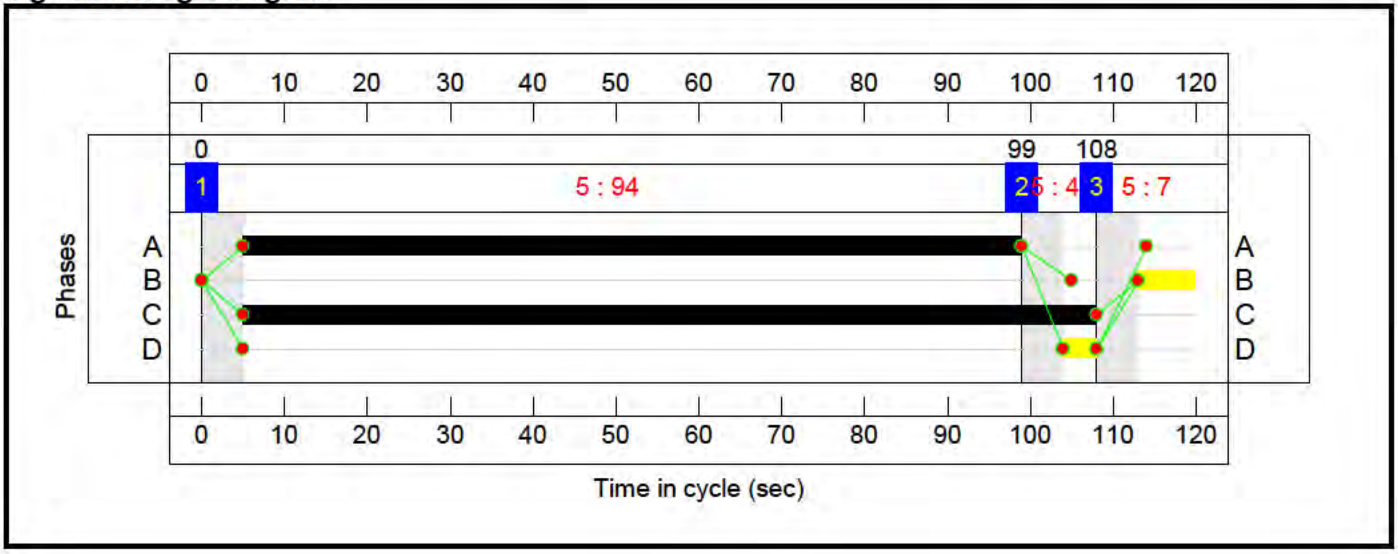


Stage Timings

Stage	1	2	3
Duration	94	4	7
Change Point	0	99	108

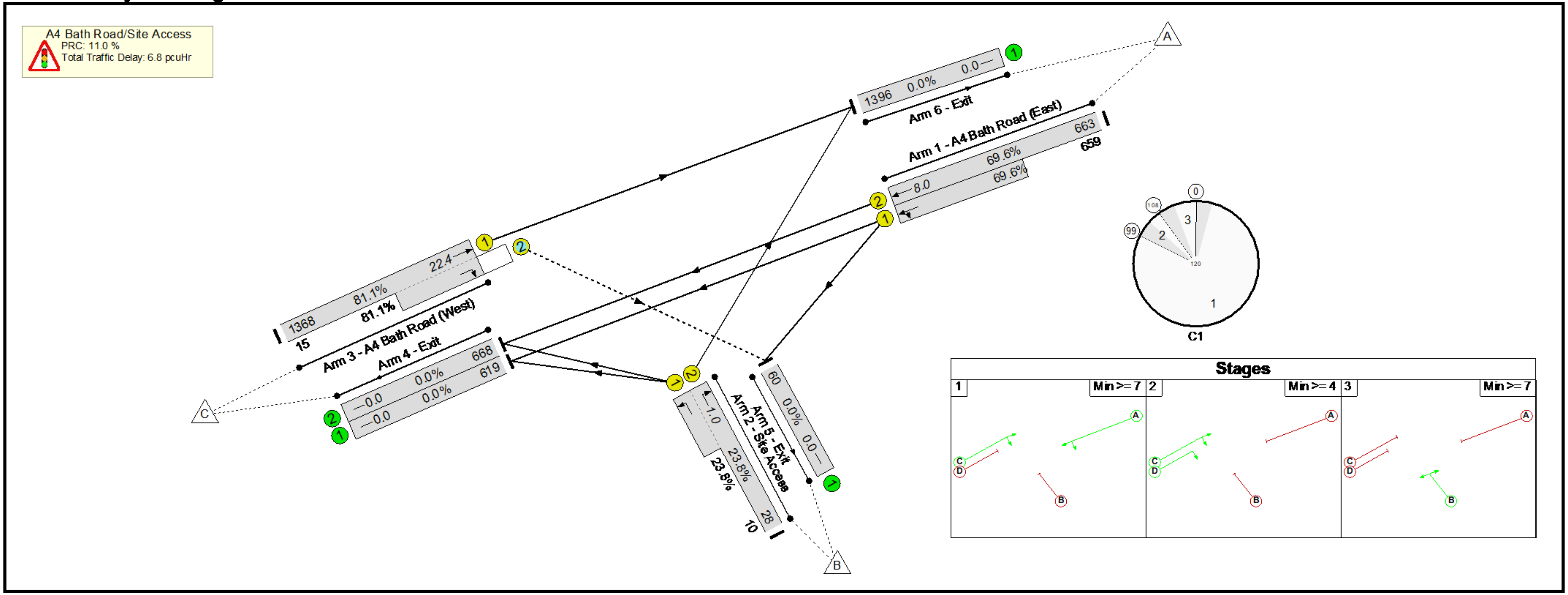
Full Input Data And Results

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.1%**
A4 Bath Road/Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**81.1%**
1/2+1/1	A4 Bath Road (East) Ahead Left	U	N/A	N/A	A		1	94	-	1322	1980:1968	953+947	69.6 : 69.6%
2/2+2/1	Site Access Left Right	U	N/A	N/A	B		1	7	-	38	1768:1817	118+42	23.8 : 23.8%
3/1+3/2	A4 Bath Road (West) Right Ahead	U+O	N/A	N/A	C	D	1	103	4	1383	1972:1620	1687+18	81.1 : 81.1%
4/1	Exit	U	N/A	N/A	-		-	-	-	619	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	668	Inf	Inf	0.0%
5/1	Exit	U	N/A	N/A	-		-	-	-	60	Inf	Inf	0.0%
6/1	Exit	U	N/A	N/A	-		-	-	-	1396	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Site Access	-	-	**14**	**1**	**0**	**3.4**	**3.4**	**0.0**	**6.8**	-	-	-	-
A4 Bath Road/Site Access	-	-	**14**	**1**	**0**	**3.4**	**3.4**	**0.0**	**6.8**	-	-	-	-
1/2+1/1	1322	1322	-	-	-	1.4	1.1	-	2.6	7.0	6.8	1.1	8.0
2/2+2/1	38	38	-	-	-	0.6	0.2	-	0.7	67.8	0.9	0.2	1.0
3/1+3/2	1383	1383	14	1	0	1.4	2.1	0.0	3.5	9.1	20.3	2.1	22.4
4/1	619	619	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	668	668	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	60	60	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1396	1396	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

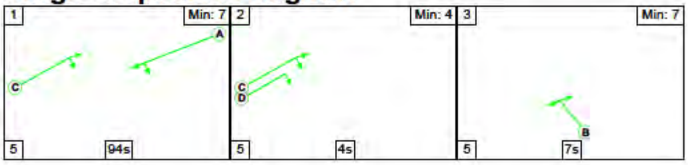
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	11.0	Total Delay for Signalled Lanes (pcuHr):	6.78	Cycle Time (s):	120
	PRC Over All Lanes (%):	11.0	Total Delay Over All Lanes(pcuHr):	6.78		

Full Input Data And Results

Scenario 6: '2039 B+C+D AM2' (FG6: '2039 AM 2', Plan 1: 'Network Control Plan 1')

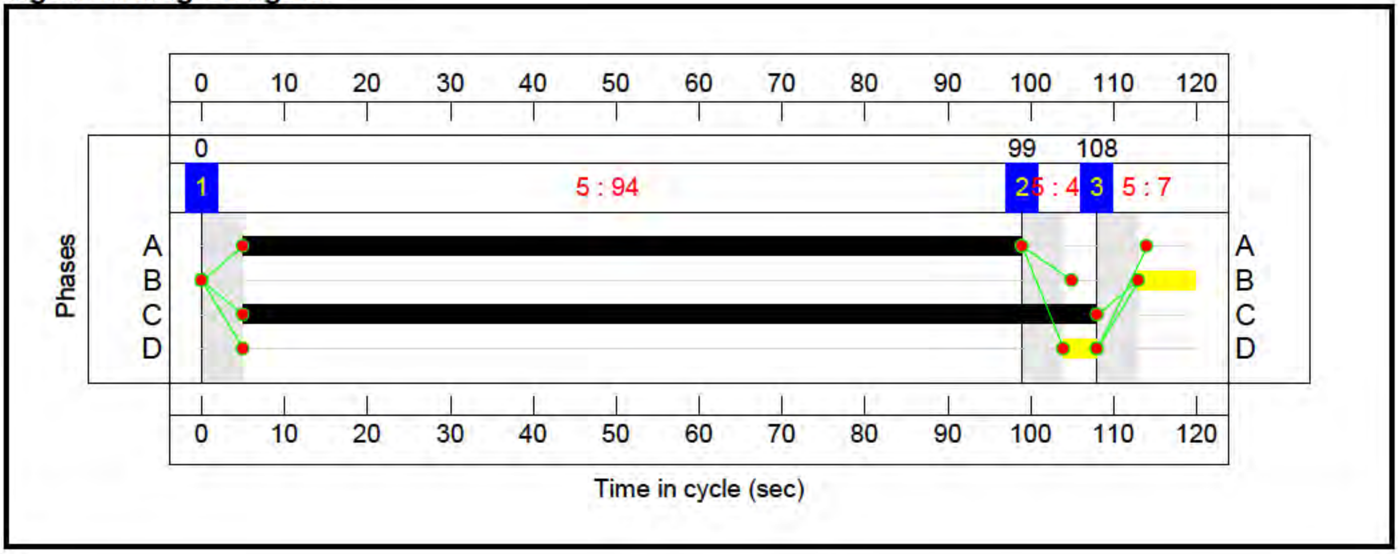
Stage Sequence Diagram



Stage Timings

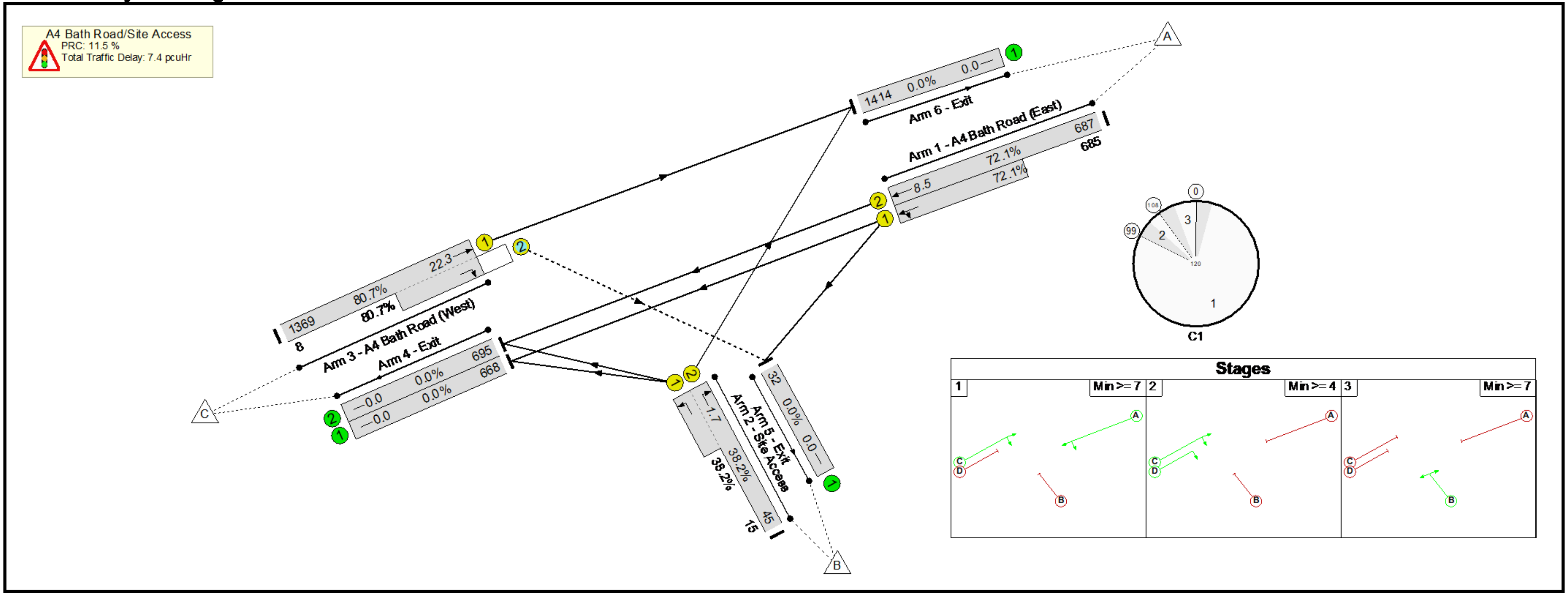
Stage	1	2	3
Duration	94	4	7
Change Point	0	99	108

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.7%**
A4 Bath Road/Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**80.7%**
1/2+1/1	A4 Bath Road (East) Ahead Left	U	N/A	N/A	A		1	94	-	1372	1980:1974	953+950	72.1 : 72.1%
2/2+2/1	Site Access Left Right	U	N/A	N/A	B		1	7	-	60	1768:1817	118+39	38.2 : 38.2%
3/1+3/2	A4 Bath Road (West) Right Ahead	U+O	N/A	N/A	C	D	1	103	4	1377	1972:1620	1696+10	80.7 : 80.7%
4/1	Exit	U	N/A	N/A	-		-	-	-	668	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	695	Inf	Inf	0.0%
5/1	Exit	U	N/A	N/A	-		-	-	-	32	Inf	Inf	0.0%
6/1	Exit	U	N/A	N/A	-		-	-	-	1414	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Site Access	-	-	**7**	**0**	**0**	**3.8**	**3.7**	**0.0**	**7.4**	-	-	-	-
A4 Bath Road/Site Access	-	-	**7**	**0**	**0**	**3.8**	**3.7**	**0.0**	**7.4**	-	-	-	-
1/2+1/1	1372	1372	-	-	-	1.5	1.3	-	2.8	7.4	7.3	1.3	8.5
2/2+2/1	60	60	-	-	-	0.9	0.3	-	1.2	71.8	1.4	0.3	1.7
3/1+3/2	1377	1377	7	0	0	1.4	2.1	0.0	3.4	9.0	20.2	2.1	22.3
4/1	668	668	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	695	695	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	32	32	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1414	1414	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

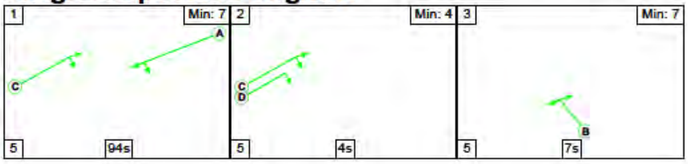
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	11.5	Total Delay for Signalled Lanes (pcuHr):	7.43	Cycle Time (s):	120
	PRC Over All Lanes (%):	11.5	Total Delay Over All Lanes(pcuHr):	7.43		

Full Input Data And Results

Scenario 7: '2039 B+C+D PM1' (FG7: '2039 PM 1', Plan 1: 'Network Control Plan 1')

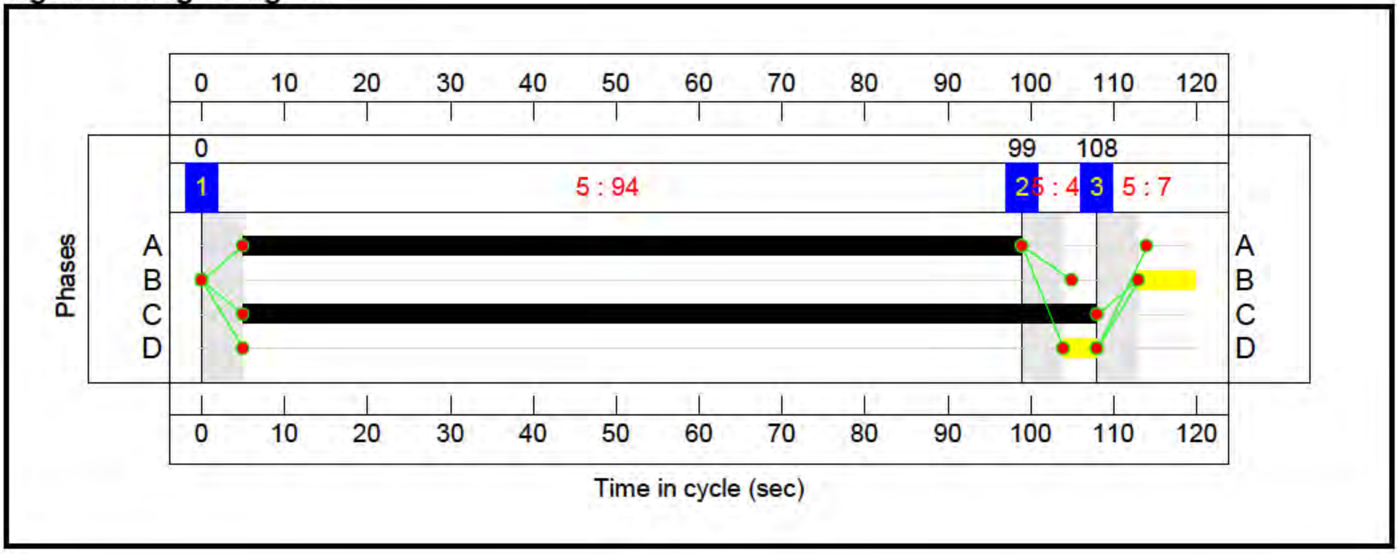
Stage Sequence Diagram



Stage Timings

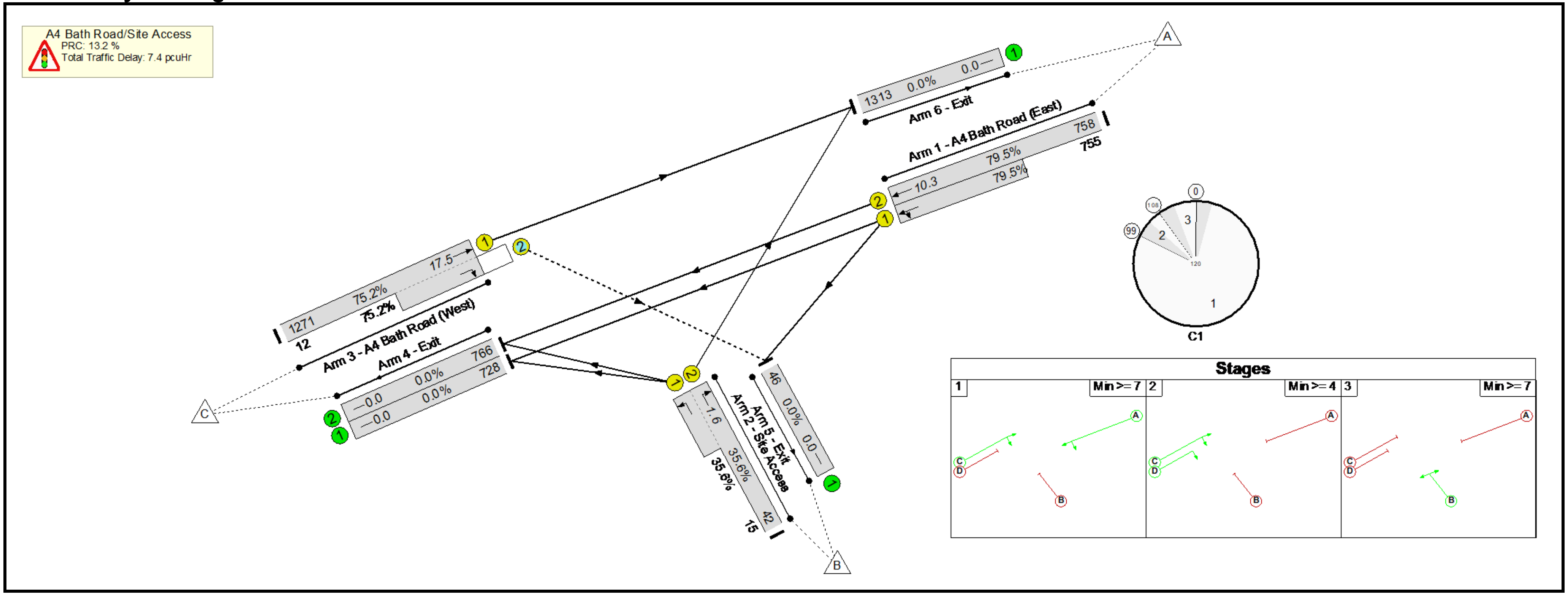
Stage	1	2	3
Duration	94	4	7
Change Point	0	99	108

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.5%**
A4 Bath Road/Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**79.5%**
1/2+1/1	A4 Bath Road (East) Ahead Left	U	N/A	N/A	A		1	94	-	1513	1980:1972	953+949	79.5 : 79.5%
2/2+2/1	Site Access Left Right	U	N/A	N/A	B		1	7	-	57	1768:1817	118+42	35.6 : 35.6%
3/1+3/2	A4 Bath Road (West) Right Ahead	U+O	N/A	N/A	C	D	1	103	4	1283	1972:1620	1690+16	75.2 : 75.2%
4/1	Exit	U	N/A	N/A	-		-	-	-	728	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	766	Inf	Inf	0.0%
5/1	Exit	U	N/A	N/A	-		-	-	-	46	Inf	Inf	0.0%
6/1	Exit	U	N/A	N/A	-		-	-	-	1313	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network: Site Access	-	-	**11**	**1**	**0**	**3.7**	**3.7**	**0.0**	**7.4**	-	-	-	-
A4 Bath Road/Site Access	-	-	**11**	**1**	**0**	**3.7**	**3.7**	**0.0**	**7.4**	-	-	-	-
1/2+1/1	1513	1513	-	-	-	1.8	1.9	-	3.7	8.8	8.4	1.9	10.3
2/2+2/1	57	57	-	-	-	0.8	0.3	-	1.1	70.7	1.3	0.3	1.6
3/1+3/2	1283	1283	11	1	0	1.1	1.5	0.0	2.6	7.3	16.0	1.5	17.5
4/1	728	728	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	766	766	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	46	46	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1313	1313	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

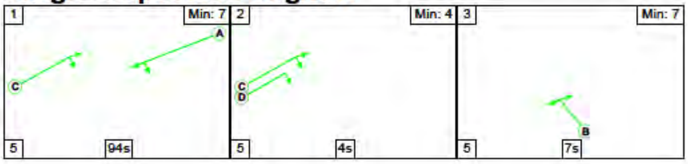
Full Input Data And Results

C1	PRC for Signalled Lanes (%):	13.2	Total Delay for Signalled Lanes (pcuHr):	7.42	Cycle Time (s):	120
	PRC Over All Lanes (%):	13.2	Total Delay Over All Lanes(pcuHr):	7.42		

Full Input Data And Results

Scenario 8: '2039 B+C+D PM2' (FG8: '2039 PM 2', Plan 1: 'Network Control Plan 1')

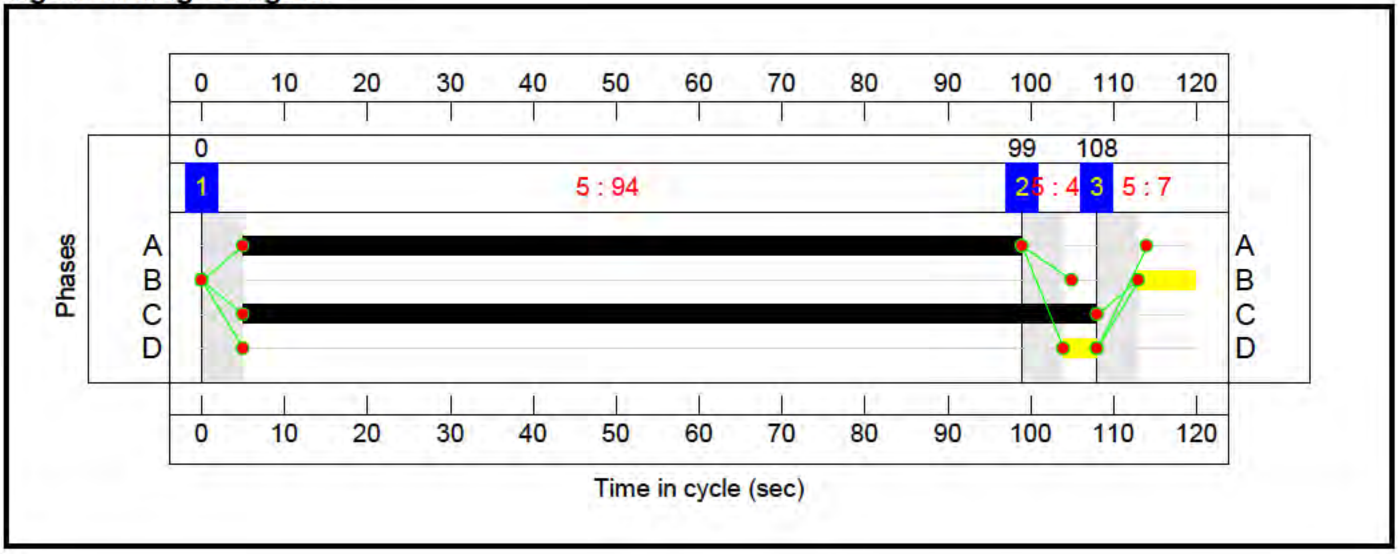
Stage Sequence Diagram



Stage Timings

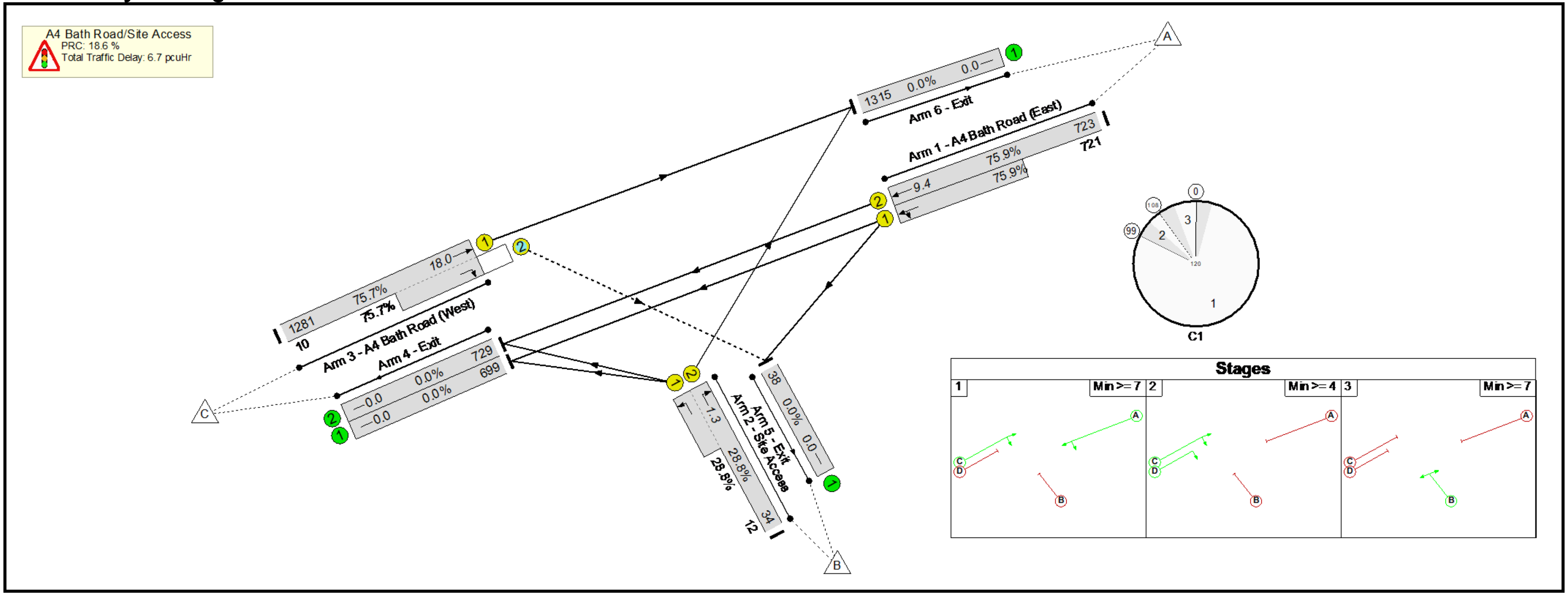
Stage	1	2	3
Duration	94	4	7
Change Point	0	99	108

Signal Timings Diagram



Full Input Data And Results

Network Layout Diagram



Full Input Data And Results

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network: Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.9%**
A4 Bath Road/Site Access	-	-	**N/A**	-	-		-	-	-	-	-	-	**75.9%**
1/2+1/1	A4 Bath Road (East) Ahead Left	U	N/A	N/A	A		1	94	-	1444	1980:1973	953+950	75.9 : 75.9%
2/2+2/1	Site Access Left Right	U	N/A	N/A	B		1	7	-	46	1768:1817	118+42	28.8 : 28.8%
3/1+3/2	A4 Bath Road (West) Right Ahead	U+O	N/A	N/A	C	D	1	103	4	1291	1972:1620	1693+13	75.7 : 75.7%
4/1	Exit	U	N/A	N/A	-		-	-	-	699	Inf	Inf	0.0%
4/2	Exit	U	N/A	N/A	-		-	-	-	729	Inf	Inf	0.0%
5/1	Exit	U	N/A	N/A	-		-	-	-	38	Inf	Inf	0.0%
6/1	Exit	U	N/A	N/A	-		-	-	-	1315	Inf	Inf	0.0%
Item	**Arriving (pcu)**	**Leaving (pcu)**	**Turners In Gaps (pcu)**	**Turners When Unopposed (pcu)**	**Turners In Intergreen (pcu)**	**Uniform Delay (pcuHr)**	**Rand + Oversat Delay (pcuHr)**	**Storage Area Uniform Delay (pcuHr)**	**Total Delay (pcuHr)**	**Av. Delay Per PCU (s/pcu)**	**Max. Back of Uniform Queue (pcu)**	**Rand + Oversat Queue (pcu)**	**Mean Max Queue (pcu)**
Network: Site Access	-	-	**9**	**1**	**0**	**3.4**	**3.3**	**0.0**	**6.7**	-	-	-	-
A4 Bath Road/Site Access	-	-	**9**	**1**	**0**	**3.4**	**3.3**	**0.0**	**6.7**	-	-	-	-
1/2+1/1	1444	1444	-	-	-	1.6	1.6	-	3.2	8.0	7.8	1.6	9.4
2/2+2/1	46	46	-	-	-	0.7	0.2	-	0.9	69.0	1.1	0.2	1.3
3/1+3/2	1291	1291	9	1	0	1.1	1.5	0.0	2.7	7.4	16.4	1.5	18.0
4/1	699	699	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
4/2	729	729	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	38	38	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	1315	1315	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

Full Input Data And Results

C1	PRC for Signalled Lanes (%):	18.6	Total Delay for Signalled Lanes (pcuHr):	6.75	Cycle Time (s):	120
	PRC Over All Lanes (%):	18.6	Total Delay Over All Lanes(pcuHr):	6.75		

Junctions 10

ARCADY 10 - Roundabout Module

Filename: A340, The Green, Bath Road, Wigmore Lane, A4 Bath Road v2.j10
Path: L:\PROJECTS\18000 SERIES\18507 - WIgmore Lane, Theale\Tech\Junction Assessments\Arcady
Report generation date: 09/02/2023 08:39:17

Summary of junction performance

	AM1					AM2					PM1					PM2				
	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS	Set ID	Queue (Veh)	Delay (s)	RFC	LOS
	2023 Observed																			
Arm 1	D1	1.0	5.55	0.51	A	D2	1.3	6.42	0.58	A	D3	0.9	4.98	0.49	A	D4	0.6	4.10	0.38	A
Arm 2		0.1	3.26	0.07	A		0.2	3.46	0.17	A		0.1	3.21	0.11	A		0.1	2.92	0.10	A
Arm 3		1.9	4.86	0.66	A		3.1	7.14	0.76	A		3.6	7.64	0.78	A		4.4	8.70	0.82	A
Arm 4		0.1	5.69	0.05	A		0.1	6.21	0.07	A		0.1	4.60	0.06	A		0.1	4.96	0.05	A
Arm 5		3.1	8.95	0.76	A		4.1	11.86	0.81	B		2.6	7.76	0.73	A		3.1	9.14	0.76	A
	2039 Baseline																			
Arm 1	D5	1.4	6.90	0.58	A	D6	1.9	8.41	0.66	A	D7	1.2	6.00	0.56	A	D8	0.8	4.69	0.44	A
Arm 2		0.1	3.59	0.09	A		0.3	3.90	0.21	A		0.1	3.52	0.13	A		0.1	3.16	0.12	A
Arm 3		2.7	6.17	0.73	A		5.2	11.06	0.84	B		6.3	12.62	0.87	B		8.9	16.57	0.91	C
Arm 4		0.1	6.24	0.06	A		0.1	7.08	0.09	A		0.1	5.24	0.07	A		0.1	5.71	0.07	A
Arm 5		5.3	14.20	0.85	B		9.0	24.47	0.91	C		4.3	11.71	0.82	B		5.7	15.61	0.86	C
	2039 with Devlopment																			
Arm 1	D9	1.4	7.09	0.59	A	D10	2.0	8.91	0.68	A	D11	1.3	6.25	0.57	A	D12	0.8	4.81	0.44	A
Arm 2		0.1	3.64	0.09	A		0.3	4.02	0.21	A		0.2	3.61	0.13	A		0.1	3.22	0.12	A
Arm 3		3.0	6.81	0.75	A		5.9	12.36	0.86	B		7.5	14.84	0.89	B		10.1	18.82	0.92	C
Arm 4		0.1	6.42	0.06	A		0.1	7.24	0.09	A		0.1	5.39	0.08	A		0.1	5.82	0.07	A
Arm 5		5.9	15.84	0.86	C		12.7	33.76	0.94	D		5.1	13.92	0.84	B		6.9	18.74	0.88	C

There are warnings associated with one or more model runs - see the Data Errors and Warnings tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	17/01/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	I-TRANSPORT\basingstoke.hotdesk
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perHour	s	-Min	perMin

Analysis Options

Calculate Queue Percentiles	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
		0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D1	2023 Observed	AM1	ONE HOUR	06:45	08:15	15
D2	2023 Observed	AM2	ONE HOUR	07:45	09:15	15
D3	2023 Observed	PM1	ONE HOUR	15:45	17:15	15
D4	2023 Observed	PM2	ONE HOUR	16:45	18:15	15
D5	2039 Baseline	AM1	ONE HOUR	06:45	08:15	15
D6	2039 Baseline	AM2	ONE HOUR	07:45	09:15	15
D7	2039 Baseline	PM1	ONE HOUR	15:45	17:15	15
D8	2039 Baseline	PM2	ONE HOUR	16:45	18:15	15
D9	2039 with Devlopment	AM1	ONE HOUR	06:45	08:15	15
D10	2039 with Devlopment	AM2	ONE HOUR	07:45	09:15	15
D11	2039 with Devlopment	PM1	ONE HOUR	15:45	17:15	15
D12	2039 with Devlopment	PM2	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Network flow scaling factor (%)
A1	100.000

2023 Observed, AM1

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	6.46	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	6.46	A

Arms

Arms

Arm	Name	Description	No give-way line
1	A340		
2	The Green		
3	Bath Road		
4	Wigmore Lane		
5	A4 Bath Road		

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Entry only	Exit only
1	4.44	6.37	58.2	50.2	88.9	15.6		
2	4.51	7.82	30.1	38.1	88.9	12.6		
3	7.74	7.74	0.0	46.3	88.9	16.2		
4	4.40	8.75	15.1	23.2	88.9	13.0		
5	4.45	7.17	20.5	38.2	88.9	5.9		

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1	0.520	2023
2	0.559	2284
3	0.591	2522
4	0.536	2152
5	0.542	2132

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D1	2023 Observed	AM1	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	606	100.000
2		✓	79	100.000
3		✓	1299	100.000
4		✓	31	100.000
5		✓	1144	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	8	361	4	233
	2	15	0	31	1	32
	3	438	6	5	29	821
	4	2	1	22	0	6
	5	144	100	890	8	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	4	0	3
	2	7	0	6	0	6
	3	5	0	100	24	7
	4	50	100	86	0	50
	5	6	4	10	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.51	5.55	1.0	A
2	0.07	3.26	0.1	A
3	0.66	4.86	1.9	A
4	0.05	5.69	0.1	A
5	0.76	8.95	3.1	A

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	456	775	1519	0.300	455	0.4	3.375	A
2	59	1143	1497	0.040	59	0.0	2.503	A
3	978	221	2230	0.439	975	0.8	2.862	A
4	23	1165	841	0.028	23	0.0	4.402	A
5	861	367	1755	0.491	857	1.0	3.996	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	545	928	1433	0.380	544	0.6	4.044	A
2	71	1369	1368	0.052	71	0.1	2.775	A
3	1168	265	2205	0.530	1166	1.1	3.463	A
4	28	1394	767	0.036	28	0.0	4.867	A
5	1028	439	1715	0.600	1026	1.5	5.210	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	667	1133	1318	0.506	666	1.0	5.503	A
2	87	1673	1194	0.073	87	0.1	3.252	A
3	1430	324	2171	0.659	1427	1.9	4.821	A
4	34	1705	668	0.051	34	0.1	5.683	A
5	1260	537	1662	0.758	1253	3.0	8.690	A

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	667	1138	1315	0.507	667	1.0	5.554	A
2	87	1679	1190	0.073	87	0.1	3.263	A
3	1430	325	2170	0.659	1430	1.9	4.864	A
4	34	1709	666	0.051	34	0.1	5.693	A
5	1260	538	1661	0.758	1259	3.1	8.948	A

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	545	935	1429	0.381	546	0.6	4.084	A
2	71	1377	1363	0.052	71	0.1	2.786	A
3	1168	266	2204	0.530	1171	1.1	3.497	A
4	28	1399	766	0.036	28	0.0	4.881	A
5	1028	441	1714	0.600	1035	1.5	5.345	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	456	780	1516	0.301	457	0.4	3.400	A
2	59	1151	1493	0.040	60	0.0	2.511	A
3	978	222	2229	0.439	979	0.8	2.883	A
4	23	1170	839	0.028	23	0.0	4.412	A
5	861	369	1754	0.491	863	1.0	4.053	A

2023 Observed, AM2

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	8.34	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	8.34	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D2	2023 Observed	AM2	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	694	100.000
2		✓	198	100.000
3		✓	1452	100.000
4		✓	40	100.000
5		✓	1167	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	24	441	3	226
	2	71	0	48	1	78
	3	538	34	17	33	830
	4	7	2	20	0	11
	5	199	156	801	7	4

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	4	3	33	4
	2	0	0	2	0	3
	3	4	6	59	52	7
	4	43	0	85	0	55
	5	4	1	8	29	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.58	6.42	1.3	A
2	0.17	3.46	0.2	A
3	0.76	7.14	3.1	A
4	0.07	6.21	0.1	A
5	0.81	11 86	4.1	B

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	522	780	1526	0.342	520	0.5	3.572	A
2	149	1139	1573	0.095	149	0.1	2.527	A
3	1093	293	2180	0.501	1089	1.0	3.288	A
4	30	1349	840	0.036	30	0.0	4.443	A
5	879	517	1719	0.511	874	1.0	4.242	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	624	934	1442	0.433	623	0.8	4.391	A
2	178	1363	1441	0.124	178	0.1	2.850	A
3	1305	350	2147	0.608	1303	1.5	4.255	A
4	36	1614	749	0.048	36	0.1	5.046	A
5	1049	618	1663	0.631	1047	1.7	5.812	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	764	1138	1329	0.575	762	1.3	6.322	A
2	218	1664	1263	0.173	218	0.2	3.445	A
3	1599	428	2102	0.760	1593	3.1	6.975	A
4	44	1973	626	0.070	44	0.1	6.183	A
5	1285	756	1588	0.809	1276	4.0	11.210	B

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	764	1146	1325	0.577	764	1.3	6.416	A
2	218	1672	1258	0.173	218	0.2	3.461	A
3	1599	429	2102	0.761	1598	3.1	7.145	A
4	44	1979	624	0.071	44	0.1	6.208	A
5	1285	759	1587	0.810	1284	4.1	11.860	B

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	624	944	1436	0.435	626	0.8	4.460	A
2	178	1374	1434	0.124	178	0.1	2.867	A
3	1305	352	2146	0.608	1312	1.6	4.344	A
4	36	1623	746	0.048	36	0.1	5.073	A
5	1049	622	1661	0.631	1059	1.7	6.065	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	522	786	1523	0.343	523	0.5	3.605	A
2	149	1147	1569	0.095	149	0.1	2.536	A
3	1093	294	2179	0.502	1095	1.0	3.328	A
4	30	1356	838	0.036	30	0.0	4.460	A
5	879	520	1718	0.512	881	1.1	4.320	A

2023 Observed, PM1

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	7.00	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.00	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D3	2023 Observed	PM1	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	621	100.000
2		✓	126	100.000
3		✓	1549	100.000
4		✓	46	100.000
5		✓	1115	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	14	398	6	203
	2	43	0	25	0	58
	3	534	2	4	21	988
	4	2	3	31	0	10
	5	202	112	789	3	9

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	7	3	67	1
	2	0	0	16	0	10
	3	2	0	75	86	6
	4	100	0	23	0	10
	5	1	2	4	0	33

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.49	4.98	0.9	A
2	0.11	3.21	0.1	A
3	0.78	7.64	3.6	A
4	0.06	4.60	0.1	A
5	0.73	7.76	2.6	A

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	468	715	1584	0.295	466	0.4	3.215	A
2	95	1082	1534	0.062	95	0.1	2.500	A
3	1166	242	2241	0.520	1162	1.1	3.321	A
4	35	1381	1129	0.031	35	0.0	3.287	A
5	839	464	1809	0.464	836	0.9	3.690	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	558	855	1510	0.370	558	0.6	3.779	A
2	113	1295	1419	0.080	113	0.1	2.756	A
3	1393	289	2214	0.629	1390	1.7	4.359	A
4	41	1652	1005	0.041	41	0.0	3.735	A
5	1002	556	1759	0.570	1001	1.3	4.735	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	684	1045	1409	0.485	682	0.9	4.944	A
2	139	1584	1263	0.110	139	0.1	3.201	A
3	1705	354	2176	0.784	1698	3.5	7.424	A
4	51	2019	836	0.061	51	0.1	4.581	A
5	1228	679	1692	0.726	1223	2.6	7.588	A

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	684	1049	1407	0.486	684	0.9	4.976	A
2	139	1589	1260	0.110	139	0.1	3.208	A
3	1705	355	2176	0.784	1705	3.6	7.643	A
4	51	2027	833	0.061	51	0.1	4.601	A
5	1228	681	1691	0.726	1227	2.6	7.764	A

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	558	861	1507	0.371	560	0.6	3.805	A
2	113	1302	1415	0.080	113	0.1	2.767	A
3	1393	290	2213	0.629	1400	1.7	4.467	A
4	41	1663	1000	0.041	41	0.0	3.758	A
5	1002	559	1757	0.570	1007	1.3	4.833	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	468	719	1582	0.296	468	0.4	3.233	A
2	95	1088	1531	0.062	95	0.1	2.508	A
3	1166	243	2241	0.520	1169	1.1	3.367	A
4	35	1389	1126	0.031	35	0.0	3.298	A
5	839	467	1807	0.465	841	0.9	3.736	A

2023 Observed, PM2

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	7.94	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	7.94	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D4	2023 Observed	PM2	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	491	100.000
2		✓	124	100.000
3		✓	1681	100.000
4		✓	37	100.000
5		✓	1135	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	8	305	7	171
	2	48	0	22	0	54
	3	641	15	4	7	1014
	4	4	2	23	0	8
	5	207	98	817	10	3

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	1	43	2
	2	0	0	5	0	9
	3	1	0	50	100	3
	4	25	0	26	0	38
	5	0	4	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.38	4.10	0.6	A
2	0.10	2.92	0.1	A
3	0.82	8.70	4.4	A
4	0.05	4.96	0.1	A
5	0.76	9.14	3.1	A

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	370	729	1599	0.231	368	0.3	2.924	A
2	93	1005	1627	0.057	93	0.1	2.346	A
3	1266	220	2324	0.545	1261	1.2	3.370	A
4	28	1463	1062	0.026	28	0.0	3.481	A
5	854	553	1782	0.480	851	0.9	3.852	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	441	872	1523	0.290	441	0.4	3.326	A
2	111	1203	1518	0.073	111	0.1	2.558	A
3	1511	263	2298	0.658	1508	1.9	4.541	A
4	33	1750	937	0.035	33	0.0	3.981	A
5	1020	661	1723	0.592	1018	1.4	5.090	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	541	1065	1421	0.381	540	0.6	4.084	A
2	137	1470	1372	0.100	136	0.1	2.914	A
3	1851	322	2263	0.818	1841	4.3	8.351	A
4	41	2137	770	0.053	41	0.1	4.934	A
5	1250	808	1644	0.760	1243	3.0	8.833	A

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	541	1070	1418	0.381	541	0.6	4.103	A
2	137	1475	1369	0.100	137	0.1	2.921	A
3	1851	323	2263	0.818	1850	4.4	8.705	A
4	41	2147	766	0.053	41	0.1	4.961	A
5	1250	811	1642	0.761	1249	3.1	9.142	A

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	441	879	1519	0.291	442	0.4	3.348	A
2	111	1210	1514	0.074	112	0.1	2.566	A
3	1511	264	2298	0.658	1521	1.9	4.689	A
4	33	1763	932	0.036	33	0.0	4.008	A
5	1020	666	1721	0.593	1027	1.5	5.237	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	370	734	1596	0.232	370	0.3	2.937	A
2	93	1011	1624	0.057	93	0.1	2.353	A
3	1266	221	2324	0.545	1269	1.2	3.423	A
4	28	1471	1058	0.026	28	0.0	3.494	A
5	854	556	1780	0.480	857	0.9	3.907	A

2039 Baseline, AM1

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	9.19	A

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	9.19	A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D5	2039 Baseline	AM1	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	665	100.000
2		✓	86	100.000
3		✓	1426	100.000
4		✓	34	100.000
5		✓	1256	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	9	396	4	256
	2	16	0	34	1	35
	3	481	7	5	32	901
	4	2	1	24	0	7
	5	158	110	977	9	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	4	0	3
	2	7	0	6	0	6
	3	5	0	100	24	7
	4	50	100	86	0	50
	5	6	4	10	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.58	6.90	1.4	A
2	0.09	3.59	0.1	A
3	0.73	6.17	2.7	A
4	0.06	6.24	0.1	A
5	0.85	14 20	5.3	B

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	501	850	1477	0.339	499	0.5	3.671	A
2	65	1254	1434	0.045	65	0.0	2.628	A
3	1074	242	2218	0.484	1070	0.9	3.124	A
4	26	1278	806	0.032	25	0.0	4.612	A
5	946	402	1736	0.545	941	1.2	4.505	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	598	1018	1383	0.432	597	0.8	4.572	A
2	77	1501	1292	0.060	77	0.1	2.962	A
3	1282	290	2191	0.585	1280	1.4	3.945	A
4	31	1529	725	0.042	31	0.0	5.180	A
5	1129	481	1693	0.667	1126	2.0	6.318	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	732	1239	1259	0.582	730	1.4	6.770	A
2	95	1830	1104	0.086	95	0.1	3.567	A
3	1570	354	2154	0.729	1565	2.6	6.065	A
4	37	1869	616	0.061	37	0.1	6.221	A
5	1383	588	1634	0.846	1371	5.0	13.093	B

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	732	1249	1254	0.584	732	1.4	6.901	A
2	95	1841	1097	0.086	95	0.1	3.590	A
3	1570	356	2153	0.729	1570	2.7	6.168	A
4	37	1875	614	0.061	37	0.1	6.241	A
5	1383	590	1633	0.847	1382	5.3	14.205	B

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	598	1032	1375	0.435	600	0.8	4.660	A
2	77	1517	1283	0.060	77	0.1	2.987	A
3	1282	292	2190	0.585	1287	1.4	4.007	A
4	31	1537	723	0.042	31	0.0	5.201	A
5	1129	484	1691	0.668	1142	2.1	6.703	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	501	857	1473	0.340	502	0.5	3.709	A
2	65	1263	1428	0.045	65	0.0	2.641	A
3	1074	244	2217	0.484	1075	0.9	3.157	A
4	26	1284	804	0.032	26	0.0	4.625	A
5	946	404	1735	0.545	949	1.2	4.603	A

2039 Baseline, AM2

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	14.50	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	14.50	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D6	2039 Baseline	AM2	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	761	100.000
2		✓	218	100.000
3		✓	1594	100.000
4		✓	44	100.000
5		✓	1280	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	26	484	3	248
	2	78	0	53	1	86
	3	591	37	19	36	911
	4	8	2	22	0	12
	5	218	171	879	8	4

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	4	3	33	4
	2	0	0	2	0	3
	3	4	6	59	52	7
	4	43	0	85	0	55
	5	4	1	8	29	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.66	8.41	1.9	A
2	0.21	3.90	0.3	A
3	0.84	11 06	5.2	B
4	0.09	7.08	0.1	A
5	0.91	24.47	9.0	C

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	573	855	1485	0.386	570	0.6	3.928	A
2	164	1249	1508	0.109	164	0.1	2.678	A
3	1200	321	2164	0.555	1195	1.2	3.700	A
4	33	1480	794	0.042	33	0.0	4.727	A
5	964	568	1691	0.570	958	1.3	4.881	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	684	1023	1392	0.491	683	1.0	5.064	A
2	196	1494	1363	0.144	196	0.2	3.084	A
3	1433	384	2128	0.674	1430	2.0	5.136	A
4	40	1771	695	0.057	39	0.1	5.495	A
5	1151	679	1630	0.706	1147	2.3	7.387	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	838	1238	1274	0.658	834	1.9	8.116	A
2	240	1816	1173	0.205	240	0.3	3.858	A
3	1755	470	2079	0.844	1743	5.0	10.359	B
4	48	2160	561	0.086	48	0.1	7.016	A
5	1409	828	1548	0.910	1386	8.1	19.948	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	838	1254	1265	0.662	838	1.9	8.412	A
2	240	1833	1163	0.206	240	0.3	3.901	A
3	1755	471	2078	0.845	1754	5.2	11.057	B
4	48	2173	557	0.087	48	0.1	7.079	A
5	1409	833	1545	0.912	1406	9.0	24.466	C

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	684	1049	1378	0.496	688	1.0	5.240	A
2	196	1521	1347	0.145	196	0.2	3.128	A
3	1433	387	2126	0.674	1445	2.1	5.384	A
4	40	1788	689	0.057	40	0.1	5.550	A
5	1151	686	1626	0.708	1177	2.5	8.452	A

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	573	864	1480	0.387	574	0.6	3.981	A
2	164	1260	1502	0.109	164	0.1	2.694	A
3	1200	323	2162	0.555	1203	1.3	3.769	A
4	33	1490	791	0.042	33	0.0	4.751	A
5	964	571	1689	0.571	968	1.3	5.028	A

2039 Baseline, PM1

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	10.71	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	10.71	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D7	2039 Baseline	PM1	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	683	100.000
2		✓	138	100.000
3		✓	1702	100.000
4		✓	50	100.000
5		✓	1226	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	15	438	7	223
	2	47	0	27	0	64
	3	587	2	4	23	1086
	4	2	3	34	0	11
	5	222	123	868	3	10

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	7	3	67	1
	2	0	0	16	0	10
	3	2	0	75	86	6
	4	100	0	23	0	10
	5	1	2	4	0	33

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.56	6.00	1.2	A
2	0.13	3.52	0.1	A
3	0.87	12 62	6.3	B
4	0.07	5.24	0.1	A
5	0.82	11.71	4.3	B

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	514	785	1547	0.332	512	0.5	3.474	A
2	104	1190	1476	0.070	104	0.1	2.622	A
3	1281	266	2228	0.575	1276	1.3	3.761	A
4	38	1517	1069	0.035	37	0.0	3.490	A
5	923	509	1784	0.517	919	1.1	4.139	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	614	939	1465	0.419	613	0.7	4.222	A
2	124	1424	1350	0.092	124	0.1	2.936	A
3	1530	318	2197	0.696	1526	2.3	5.338	A
4	45	1815	932	0.048	45	0.1	4.059	A
5	1102	609	1730	0.637	1099	1.7	5.685	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	752	1145	1356	0.555	750	1.2	5.920	A
2	152	1738	1179	0.129	152	0.1	3.502	A
3	1874	389	2156	0.869	1859	6.1	11.574	B
4	55	2211	749	0.073	55	0.1	5.184	A
5	1350	742	1658	0.814	1340	4.1	11.015	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	752	1152	1352	0.556	752	1.2	5.999	A
2	152	1747	1175	0.129	152	0.1	3.518	A
3	1874	390	2155	0.870	1873	6.3	12.622	B
4	55	2226	742	0.074	55	0.1	5.236	A
5	1350	747	1655	0.816	1349	4.3	11.710	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	614	949	1459	0.421	616	0.7	4.280	A
2	124	1436	1343	0.092	124	0.1	2.955	A
3	1530	319	2196	0.697	1546	2.3	5.668	A
4	45	1835	922	0.049	45	0.1	4.105	A
5	1102	616	1726	0.638	1112	1.8	5.953	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	514	791	1544	0.333	515	0.5	3.502	A
2	104	1198	1472	0.071	104	0.1	2.631	A
3	1281	267	2227	0.575	1285	1.4	3.837	A
4	38	1527	1064	0.035	38	0.0	3.510	A
5	923	513	1782	0.518	926	1.1	4.217	A

2039 Baseline, PM2

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	13.96	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	13.96	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D8	2039 Baseline	PM2	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	540	100.000
2		✓	136	100.000
3		✓	1848	100.000
4		✓	40	100.000
5		✓	1248	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	9	335	8	188
	2	53	0	24	0	59
	3	705	16	4	8	1115
	4	4	2	25	0	9
	5	228	108	898	11	3

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	1	43	2
	2	0	0	5	0	9
	3	1	0	50	100	3
	4	25	0	26	0	38
	5	0	4	3	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.44	4.69	0.8	A
2	0.12	3.16	0.1	A
3	0.91	16 57	8.9	C
4	0.07	5.71	0.1	A
5	0.86	15 61	5.7	C

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	407	799	1561	0.260	405	0.4	3.110	A
2	102	1103	1573	0.065	102	0.1	2.446	A
3	1391	242	2311	0.602	1385	1.5	3.865	A
4	30	1607	998	0.030	30	0.0	3.719	A
5	940	607	1753	0.536	935	1.1	4.376	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	485	957	1478	0.329	485	0.5	3.624	A
2	122	1320	1454	0.084	122	0.1	2.702	A
3	1661	289	2283	0.728	1657	2.6	5.712	A
4	36	1922	862	0.042	36	0.0	4.358	A
5	1122	725	1689	0.664	1119	1.9	6.279	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	595	1163	1368	0.435	593	0.8	4.640	A
2	150	1609	1295	0.116	150	0.1	3.142	A
3	2035	354	2244	0.907	2012	8.3	14.305	B
4	44	2336	683	0.064	44	0.1	5.632	A
5	1374	882	1605	0.856	1360	5.4	14.012	B

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	595	1174	1363	0.436	595	0.8	4.686	A
2	150	1620	1290	0.116	150	0.1	3.157	A
3	2035	355	2244	0.907	2032	8.9	16.575	C
4	44	2357	674	0.065	44	0.1	5.711	A
5	1374	890	1600	0.859	1373	5.7	15.609	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	485	972	1470	0.330	487	0.5	3.667	A
2	122	1335	1446	0.085	122	0.1	2.719	A
3	1661	290	2282	0.728	1686	2.7	6.278	A
4	36	1952	849	0.042	36	0.0	4.430	A
5	1122	737	1683	0.667	1137	2.0	6.762	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	407	806	1557	0.261	407	0.4	3.133	A
2	102	1111	1569	0.065	102	0.1	2.454	A
3	1391	243	2310	0.602	1396	1.5	3.958	A
4	30	1618	993	0.030	30	0.0	3.739	A
5	940	611	1751	0.537	943	1.2	4.478	A

2039 with Devlopment , AM1

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	10.09	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	10.09	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D9	2039 with Devlopment	AM1	ONE HOUR	06:45	08:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	665	100.000
2		✓	86	100.000
3		✓	1453	100.000
4		✓	34	100.000
5		✓	1270	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	9	396	4	256
	2	16	0	34	1	35
	3	481	7	5	32	928
	4	2	1	24	0	7
	5	158	110	991	9	2

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	4	0	3
	2	7	0	6	0	6
	3	5	0	100	24	9
	4	50	100	86	0	50
	5	6	4	11	25	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.59	7.09	1.4	A
2	0.09	3.64	0.1	A
3	0.75	6.81	3.0	A
4	0.06	6.42	0.1	A
5	0.86	15 84	5.9	C

Main Results for each time segment

06:45 - 07:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	501	861	1468	0.341	499	0.5	3.707	A
2	65	1264	1424	0.045	65	0.0	2.648	A
3	1094	242	2192	0.499	1090	1.0	3.254	A
4	26	1298	795	0.032	25	0.0	4.676	A
5	956	402	1723	0.555	951	1.2	4.633	A

07:00 - 07:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	598	1030	1372	0.436	597	0.8	4.639	A
2	77	1513	1281	0.060	77	0.1	2.991	A
3	1306	290	2165	0.603	1304	1.5	4.171	A
4	31	1553	713	0.043	31	0.0	5.278	A
5	1142	481	1680	0.679	1138	2.1	6.601	A

07:15 - 07:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	732	1253	1246	0.588	730	1.4	6.936	A
2	95	1844	1090	0.087	95	0.1	3.616	A
3	1600	354	2128	0.752	1594	2.9	6.666	A
4	37	1898	600	0.062	37	0.1	6.393	A
5	1398	588	1622	0.862	1384	5.6	14.332	B

07:30 - 07:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	732	1264	1240	0.591	732	1.4	7.089	A
2	95	1856	1083	0.087	95	0.1	3.643	A
3	1600	356	2128	0.752	1600	3.0	6.810	A
4	37	1905	598	0.063	37	0.1	6.417	A
5	1398	590	1621	0.862	1397	5.9	15.838	C

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	598	1046	1363	0.439	600	0.8	4.738	A
2	77	1531	1270	0.061	77	0.1	3.018	A
3	1306	292	2164	0.604	1312	1.5	4.254	A
4	31	1562	710	0.043	31	0.0	5.302	A
5	1142	484	1679	0.680	1157	2.2	7.083	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	501	868	1463	0.342	502	0.5	3.747	A
2	65	1274	1418	0.046	65	0.0	2.659	A
3	1094	244	2191	0.499	1096	1.0	3.295	A
4	26	1305	793	0.032	26	0.0	4.693	A
5	956	404	1722	0.555	960	1.3	4.744	A

2039 with Devlopment , AM2

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	18.32	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	18.32	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D10	2039 with Devlopment	AM2	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	761	100.000
2		✓	218	100.000
3		✓	1606	100.000
4		✓	44	100.000
5		✓	1307	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	26	484	3	248
	2	78	0	53	1	86
	3	591	37	19	36	923
	4	8	2	22	0	12
	5	218	171	906	8	4

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	4	3	33	4
	2	0	0	2	0	3
	3	4	6	59	52	9
	4	43	0	85	0	55
	5	4	1	10	29	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.68	8.91	2.0	A
2	0.21	4.02	0.3	A
3	0.86	12 36	5.9	B
4	0.09	7.24	0.1	A
5	0.94	33.76	12.7	D

Main Results for each time segment

07:45 - 08:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	573	875	1467	0.391	570	0.6	4.004	A
2	164	1269	1489	0.110	164	0.1	2.717	A
3	1209	321	2141	0.565	1204	1.3	3.823	A
4	33	1489	787	0.042	33	0.0	4.774	A
5	984	568	1669	0.590	978	1.4	5.172	A

08:00 - 08:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	684	1047	1371	0.499	683	1.0	5.217	A
2	196	1518	1340	0.146	196	0.2	3.146	A
3	1444	384	2105	0.686	1440	2.1	5.387	A
4	40	1781	686	0.058	39	0.1	5.571	A
5	1175	679	1608	0.731	1170	2.6	8.123	A

08:15 - 08:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	838	1260	1252	0.669	834	2.0	8.522	A
2	240	1838	1148	0.209	240	0.3	3.959	A
3	1768	469	2057	0.860	1754	5.6	11.399	B
4	48	2171	551	0.088	48	0.1	7.162	A
5	1439	828	1528	0.942	1407	10.7	24.916	C

08:30 - 08:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	838	1281	1241	0.675	838	2.0	8.915	A
2	240	1859	1136	0.211	240	0.3	4.018	A
3	1768	471	2056	0.860	1767	5.9	12.356	B
4	48	2186	546	0.089	48	0.1	7.236	A
5	1439	833	1525	0.944	1431	12.7	33.757	D

08:45 - 09:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	684	1084	1351	0.506	688	1.0	5.464	A
2	196	1555	1318	0.149	196	0.2	3.213	A
3	1444	387	2104	0.686	1458	2.2	5.701	A
4	40	1801	679	0.058	40	0.1	5.634	A
5	1175	687	1604	0.732	1214	2.8	10.108	B

09:00 - 09:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	573	885	1462	0.392	574	0.6	4.064	A
2	164	1281	1481	0.111	164	0.1	2.735	A
3	1209	323	2140	0.565	1213	1.3	3.900	A
4	33	1499	783	0.042	33	0.0	4.800	A
5	984	572	1667	0.590	989	1.5	5.357	A

2039 with Devlopment , PM1

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	12.51	B

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	12.51	B

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D11	2039 with Devlopment	PM1	ONE HOUR	15:45	17:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	683	100.000
2		✓	138	100.000
3		✓	1719	100.000
4		✓	50	100.000
5		✓	1251	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	15	438	7	223
	2	47	0	27	0	64
	3	587	2	4	23	1103
	4	2	3	34	0	11
	5	222	123	893	3	10

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	7	3	67	1
	2	0	0	16	0	10
	3	2	0	75	86	8
	4	100	0	23	0	10
	5	1	2	6	0	33

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.57	6.25	1.3	A
2	0.13	3.61	0.2	A
3	0.89	14 84	7.5	B
4	0.08	5.39	0.1	A
5	0.84	13 92	5.1	B

Main Results for each time segment

15:45 - 16:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	514	803	1530	0.336	512	0.5	3.528	A
2	104	1208	1459	0.071	104	0.1	2.655	A
3	1294	266	2201	0.588	1289	1.4	3.921	A
4	38	1529	1056	0.036	37	0.0	3.535	A
5	942	509	1760	0.535	937	1.1	4.353	A

16:00 - 16:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	614	961	1445	0.425	613	0.7	4.322	A
2	124	1446	1329	0.093	124	0.1	2.986	A
3	1545	318	2171	0.712	1541	2.4	5.682	A
4	45	1830	916	0.049	45	0.1	4.132	A
5	1125	609	1706	0.659	1122	1.9	6.123	A

16:15 - 16:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	752	1170	1333	0.564	750	1.3	6.152	A
2	152	1764	1156	0.131	152	0.2	3.585	A
3	1893	389	2130	0.889	1874	7.0	13.214	B
4	55	2227	732	0.075	55	0.1	5.321	A
5	1377	741	1636	0.842	1365	4.9	12.782	B

16:30 - 16:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	752	1179	1328	0.566	752	1.3	6.249	A
2	152	1774	1150	0.132	152	0.2	3.605	A
3	1893	390	2129	0.889	1891	7.5	14.844	B
4	55	2244	723	0.076	55	0.1	5.386	A
5	1377	747	1633	0.844	1376	5.1	13.924	B

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	614	974	1438	0.427	616	0.8	4.390	A
2	124	1461	1321	0.094	124	0.1	3.007	A
3	1545	319	2170	0.712	1565	2.5	6.137	A
4	45	1854	905	0.050	45	0.1	4.190	A
5	1125	617	1702	0.661	1137	2.0	6.510	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	514	810	1527	0.337	515	0.5	3.564	A
2	104	1217	1454	0.071	104	0.1	2.667	A
3	1294	267	2200	0.588	1298	1.4	4.012	A
4	38	1541	1050	0.036	38	0.0	3.554	A
5	942	513	1758	0.536	945	1.2	4.448	A

2039 with Devlopment , PM2

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm 1 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Geometry	Arm 2 - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		1, 2, 3, 4, 5	16.14	C

Junction Network

Driving side	Lighting	Network delay (s)	Network LOS
Left	Normal/unknown	16.14	C

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH mm)	Finish time (HH mm)	Time segment length (min)
D12	2039 with Devlopment	PM2	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Average Demand (Veh/hr)	Scaling Factor (%)
1		✓	540	100.000
2		✓	136	100.000
3		✓	1862	100.000
4		✓	40	100.000
5		✓	1265	100.000

Origin-Destination Data

Demand (Veh/hr)

		To				
		1	2	3	4	5
From	1	0	9	335	8	188
	2	53	0	24	0	59
	3	705	16	4	8	1129
	4	4	2	25	0	9
	5	228	108	915	11	3

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1	2	3	4	5
From	1	0	0	1	43	2
	2	0	0	5	0	9
	3	1	0	50	100	4
	4	25	0	26	0	38
	5	0	4	5	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (Veh)	Max LOS
1	0.44	4.81	0.8	A
2	0.12	3.22	0.1	A
3	0.92	18 82	10.1	C
4	0.07	5.82	0.1	A
5	0.88	18.74	6.9	C

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	407	812	1547	0.263	405	0.4	3.147	A
2	102	1116	1559	0.066	102	0.1	2.470	A
3	1402	242	2297	0.610	1396	1.5	3.966	A
4	30	1617	990	0.030	30	0.0	3.750	A
5	952	606	1729	0.551	948	1.2	4.581	A

17:00 - 17:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	485	971	1461	0.332	485	0.5	3.684	A
2	122	1335	1437	0.085	122	0.1	2.737	A
3	1674	289	2269	0.738	1669	2.7	5.952	A
4	36	1934	852	0.042	36	0.0	4.409	A
5	1137	725	1665	0.683	1134	2.1	6.725	A

17:15 - 17:30

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	595	1179	1350	0.441	593	0.8	4.754	A
2	150	1626	1276	0.117	150	0.1	3.196	A
3	2050	354	2231	0.919	2024	9.3	15.740	C
4	44	2348	673	0.065	44	0.1	5.724	A
5	1393	880	1583	0.880	1376	6.4	16.204	C

17:30 - 17:45

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	595	1192	1343	0.443	595	0.8	4.810	A
2	150	1638	1269	0.118	150	0.1	3.216	A
3	2050	354	2230	0.919	2047	10.1	18.824	C
4	44	2372	663	0.066	44	0.1	5.817	A
5	1393	889	1578	0.883	1391	6.9	18.744	C

17:45 - 18:00

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	485	990	1451	0.334	487	0.5	3.737	A
2	122	1354	1427	0.086	122	0.1	2.759	A
3	1674	290	2269	0.738	1703	2.9	6.678	A
4	36	1969	837	0.043	36	0.0	4.494	A
5	1137	739	1658	0.686	1156	2.2	7.417	A

18:00 - 18:15

Arm	Total Demand (Veh/hr)	Circulating flow (Veh/hr)	Capacity (Veh/hr)	RFC	Throughput (Veh/hr)	End queue (Veh)	Delay (s)	Unsignalised level of service
1	407	819	1543	0.263	407	0.4	3.169	A
2	102	1125	1554	0.066	102	0.1	2.481	A
3	1402	243	2297	0.610	1407	1.6	4.069	A
4	30	1629	984	0.031	30	0.0	3.775	A
5	952	611	1726	0.552	956	1.2	4.700	A

AECOM

Land West of Wigmore Lane

Flood Risk Technical Note
Rail Freight Interchange

Englefield Estate

Project number: 60700546

25 January 2023

Delivering a better world

Quality information

Prepared by	Checked by	Verified by	Approved by
NW	BF	BF	KR
N Whiskin Engineer	B Fyfe Associate Director	B Fyfe Associate Director	K Ratzko Associate Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
R00	23/02/2023	First Issue	BF	B Fyfe	Associate Director
R01	28/02/2023	Client Comments	BF	B Fyfe	Associate Director
R03	01/03/2023	Final Comments	BF	B Fyfe	Associate Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Englefield Estate

Prepared by:

N Whiskin
Engineer
[redacted]

AECOM Infrastructure & Environment UK Limited
Marlborough Court
10 Bricket Road
St Albans
AL1 3JX
United Kingdom

[redacted]
aecom.com

Table of Contents

Figures

Tables

1. Introduction

1.1 This Technical Note has been prepared to support representations being made by Firstplan Ltd on behalf of the Englefield Estate to the West Berkshire Proposed Submission (Regulation 19) Local Plan Review ('LPR') consultation. The representations principally relate to the omission of the LPR to appropriately identify the potential for the existing Theale Rail-Road Transfer Site to expand and grow (as has previously been the case) and that this growth could be accommodated on land west of Wigmore Lane.

1.2 Network Rail (NR) has approached Englefield Estate with a view to investigating the key potential that land in their ownership offers to secure modal shift from road to rail and meet identified market demand for further rail served facilities in this location. Specifically the land west of Wigmore Lane, in the ownership of the Englefield Estate, has been identified as one of only 4 candidate sites in the South East able to accommodate an Intermodal Rail Freight Interchange (IRFI). Indeed, the Theale site has been identified as the only site capable of serving the western end of the region.

1.3 Network Rail and Englefield Estate are working jointly to review development options for the land west of Wigmore Lane, in particular in terms of operationally suitable options for the delivery of necessary sidings infrastructure. The proposals are at an early stage and at the appropriate time will need to be reviewed via pre-application consultation with West Berkshire, be subject to detailed design development and full assessment as part of a formal planning application submission.

1.4 To facilitate understanding of the proposals and initial assessment for the purposes of the LPR consultation response an initial illustrative option of one way in which the proposed IRFI could come forward has been developed (see Intermodality Illustrative layout in Appendix A).

The illustrative layout for the IRFI follows the established pattern of design, development and uses for such developments, and key features include:

- A level area of hardstanding enclosed by securing fencing to prevent unauthorised access (concrete pad circa 700m in length and minimum 30m in width);
- Main line access which could be provided via the existing complex of freight sidings serving the Wigmore Lane site immediately to the east;
- Highways access direct from the A4 into the site from the north;
- Sidings within the site capable of accommodating 1-2 x 775m length trains simultaneously;
- Portable modular buildings providing gatehouse and ancillary office/amenities for staff and visitors;
- Container handling equipment, typically "reachstacker" units;
- Temporary container storage stacking up to 3-4 high (9-12m);
- Lighting columns, typically up to 18m in height around the perimeter, with directional lighting to minimise light spill onto adjacent areas.

1.5 In addition, and having specific regard to identified potential site constraints as a result of the site's location within an area of high flood risk, in proximity to an AONB and residential uses, and proximity to a level crossing the following additional requirements have been identified:

- Flood water displacement that would be caused by the development could be offset by compensation on other areas of land within the ownership of the Englefield Estate and in close proximity to the proposed development (potentially to the west).
- Provision of a robust landscape mitigation scheme – to provide screening and separation between any proposed development and the AONB Boundary and existing residential receptors including those at Wigmore Lane.
- Potential to deliver an improved and upgraded pedestrian crossing of the GWR mainline to the south of the site. The Englefield Estate controls land on the southern side of the main line and therefore there is potential to replace the crossing with a footbridge.

1.6 The extent of the land west of Wigmore Lane is indicatively identified in Appendix B and will be subject to change/refinement based on the above requirements. At this stage the indicative site area identified would accommodate the concrete pad, sidings, access road and land for landscape/screen planting – with the need for additional land for flood compensation and footbridge provision required to be assessed further.

1.7 The Local Planning Authority (LPA) and Lead Local Flood Authority (LLFA) are West Berkshire Council (WBC). The local sewerage provider is Thames Water.

1.8 The Englefield Estate commissioned a Flood Risk Scoping Assessment Technical Note for the same site location in January 2021 (hereafter referenced as the Englefield Flood Risk Scoping Assessment (2021)). Much of the information contained within that document appears relevant to the above proposal and has been referred to where relevant and checked against other sources where available.

2. Site Location

2.1 The site is located to the southwest of Theale and is bounded by the A4 – Bath Road to the northwest, Wigmore Lane and Theale Rail Freight depot to the northeast and the Great Western (Reading – Newbury) Railway to the southeast. See Figure 1.

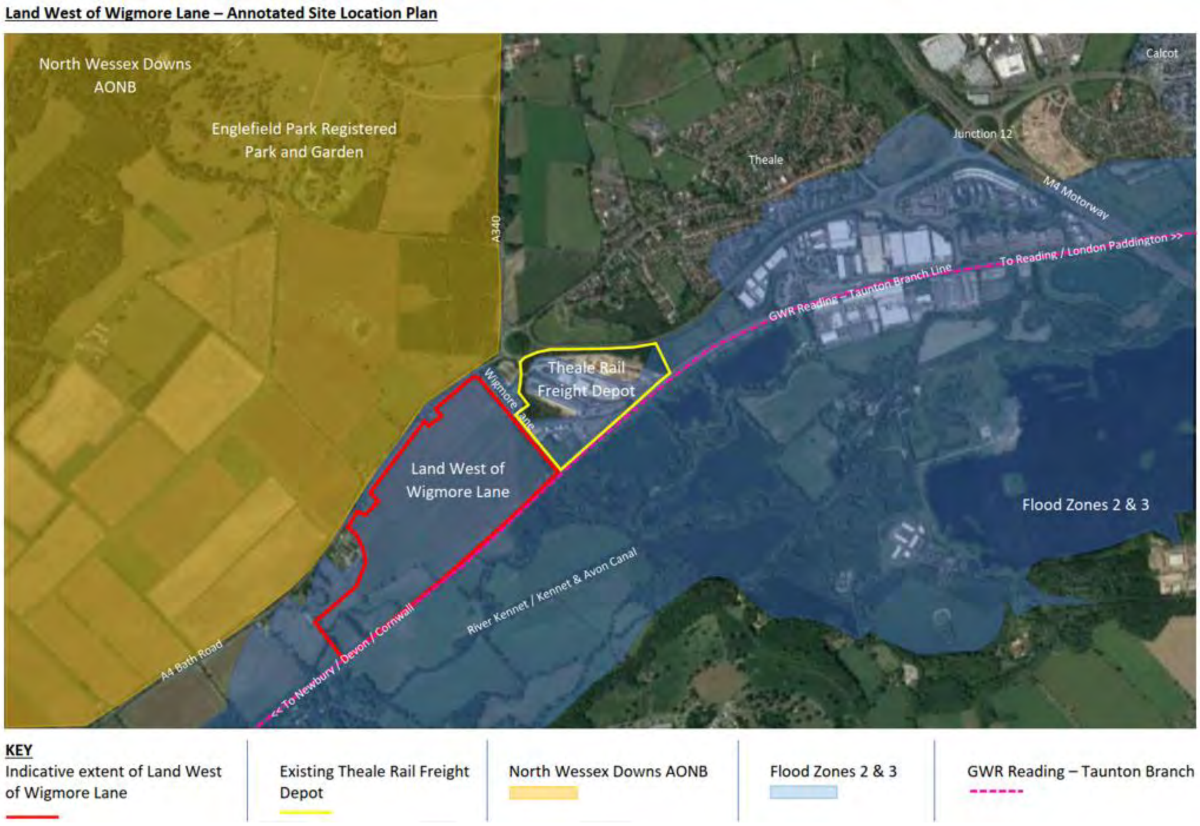


Figure 1: Site Location Plan

2.2 The site is predominately flat with a general fall from northwest (approx. 48.1m AOD) to southeast (approx. 47.1m AOD) of approximately 1 in 750. The Englefield Flood Risk Scoping Assessment (2021) technical note provided a plan (Figure 003a) which included LiDAR topography levels on an approximate 80m grid. This has been used to establish the approximate existing ground levels that occur within the proposed development footprint.

3. Flood Risk

3.1 The first phase in identifying whether a site is potentially at risk of flooding is to consult the EA Flood Zone maps, available on the EA website. The Flood Zones are defined under Table 1 of the NPPF PPG 'Flood Risk and Coastal Change' section as follows:

• Zone 1 Low Probability	Land having a less than 0.1% annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
• Zone 2 Medium Probability	Land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)
• Zone 3a High Probability	Land having a 1% or greater annual probability of river flooding; or Land having a 0.5% or greater annual probability of sea. (Land shown in dark blue on the Flood Map)
• Zone 3b The Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. Functional floodplain will normally comprise: • land having a 3.3% or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 0.1% annual probability of flooding). Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

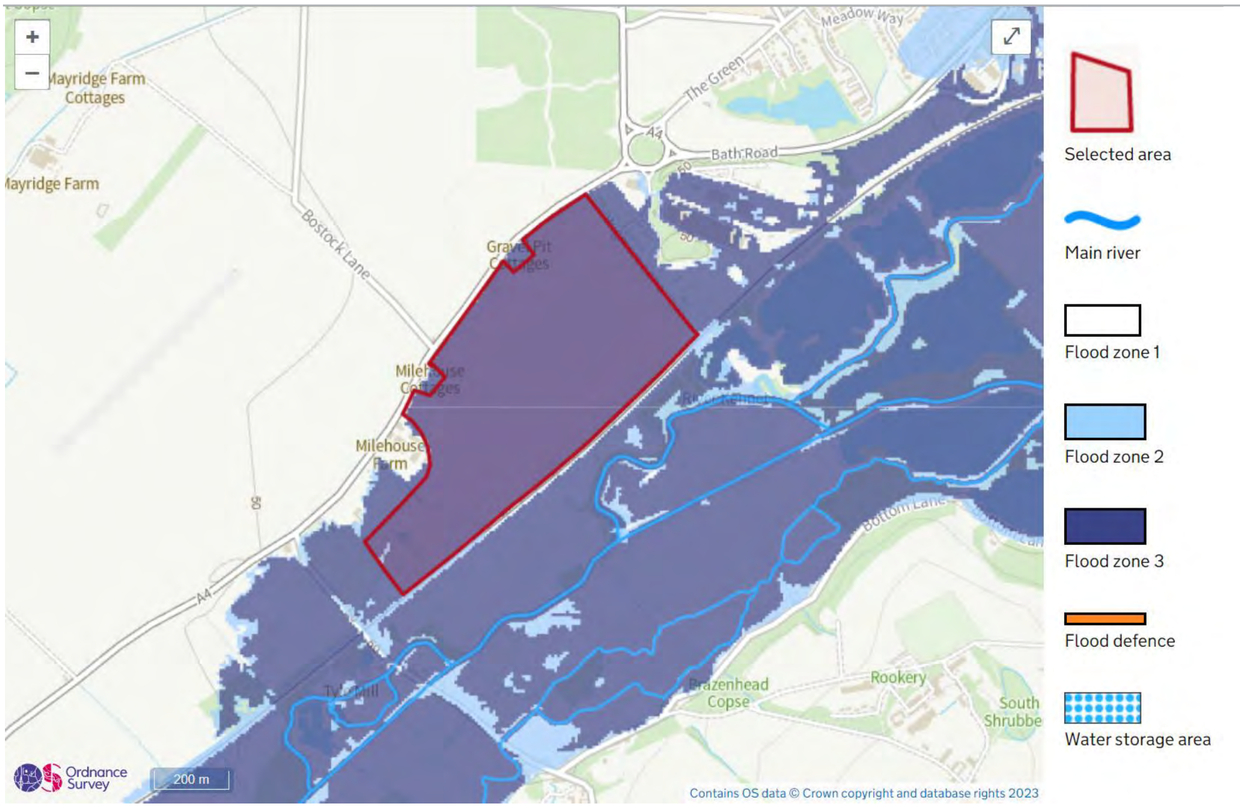


Figure 2: EA Flood Zone Map – (red line referenced as indicative development area)[1]

[1] https://flood-map-for-planning.service.gov.uk/ accessed 23rd January 2023

3.2 The EA Flood zone data shown in indicates the site (and proposals for development) lie within Flood Zone 3 High Probability of fluvial flooding. The site is remote from the sea and therefore will not be affected by Tidal Flooding.

3.3 The EA Flood Maps do not distinguish between Flood Zone 3a High Probability and 3b Functional Floodplain. Further review of the modelled EA data is required to define the extents of Zone 3b. However, the WBC SFRA[2] Flood Zone maps class all of the proposed developed area being within Zone 3b. It should be noted that most of the site is clear of recorded flood outline extent within the SFRA (Appx E). Indicating that flood waters from the river Kennet may be held back at the embankment of the railway.

3.4 Figure 3 below is an extract from the Environment Agency's detailed flood map the 'Flood & Drainage Appraisal' for the adjacent site to the east 'Wigmore Lane, Theale', planning reference 21/02298/PAD563 on the West Berkshire Council planning portal and undertaken for Beftonforth Ltd. This shows the southern part of the site, adjacent to the mainline railway, to be within the 20% AEP flood outline (purple shading). This indicates fluvial flooding with a 1 in 5-year return period. The northern part of the site is shown to be within the 5% AEP flood outline (dark blue shading), which indicates fluvial flooding with a 1 in 20-year return period. Typically, the extent of Flood Zone 3b is defined by the 1 in 20 or 1 in 25-year return period. This therefore suggests that the whole site is located in Flood Zone 3b

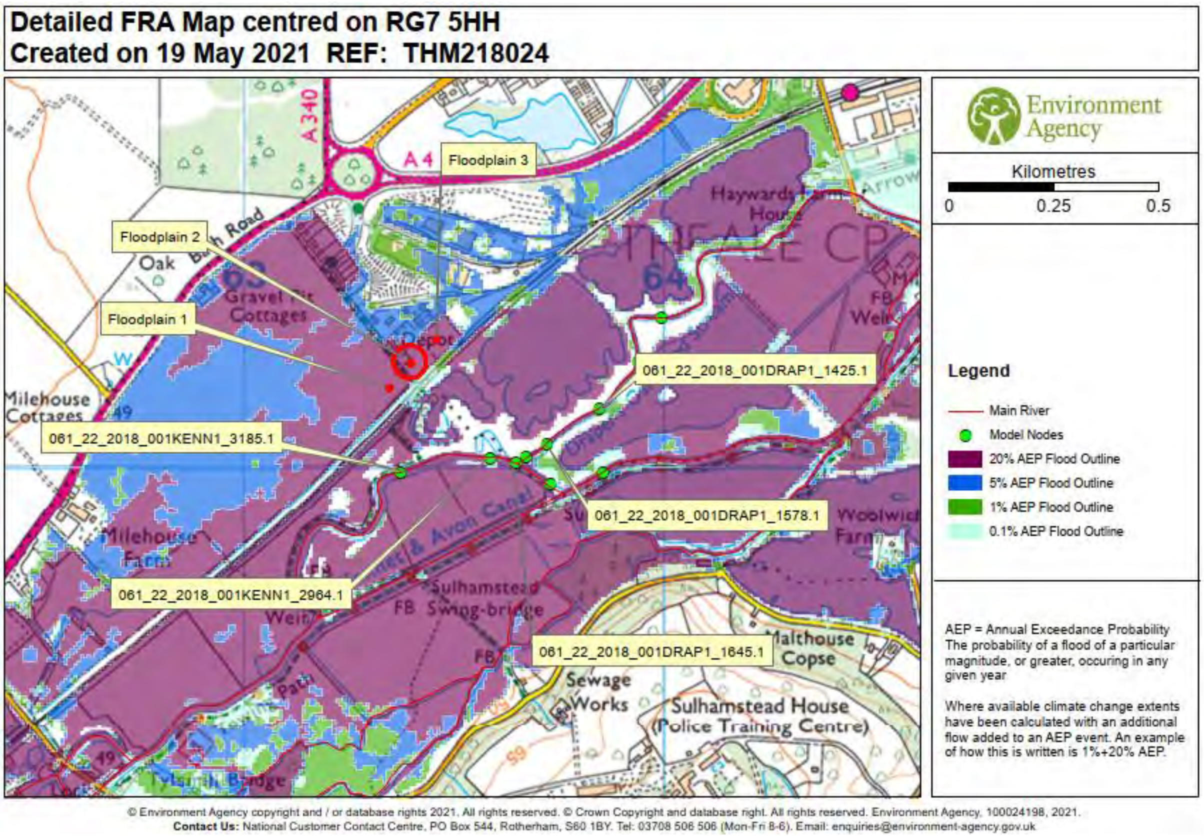


Figure 3: Beftonforth FRA Flood Modelling Outputs

3.5 The EA Flood Map from Surface Water shown in Figure 4 indicates most of the site is at Very Low Risk – less than 1 in 1000 annual probability (0.1% AEP) from surface water flooding. There are localized areas of Low Risk shown – between 1 in 100 (1%) and 1 in 1000 (0.1%) annual probability. These are likely to occur at topographical low points within the site.

3.6 Reference to the West Berkshire Council Level 1 SFRA (Nov 22) has been made for assessment of risk of flooding from other sources

[2] https://www.westberks.gov.uk/sfra accessed 23rd January 2023
[3] https://publicaccess.westberks.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=QZ5VMBRD09N00

3.7 The EA Flood Map from Surface Water shown in Figure 4 indicates most of the site is at Very Low Risk – less than 1 in 1000 annual probability (0.1% AEP) from surface water flooding. There are localized areas of Low Risk shown – between 1 in 100 (1%) and 1 in 1000 (0.1%) annual probability. These are likely to occur at topographical low points within the site.

3.8 Reference to the West Berkshire Council Level 1 SFRA (Nov 22) has been made for assessment of risk of flooding from other sources.

3.9 No groundwater emergence is shown on the site from the mapping contained in Appendix K of the SFRA. However, groundwater flood mapping in Appendix L shows the site is subject to groundwater levels at or very near (within 0.025m) of the ground surface.

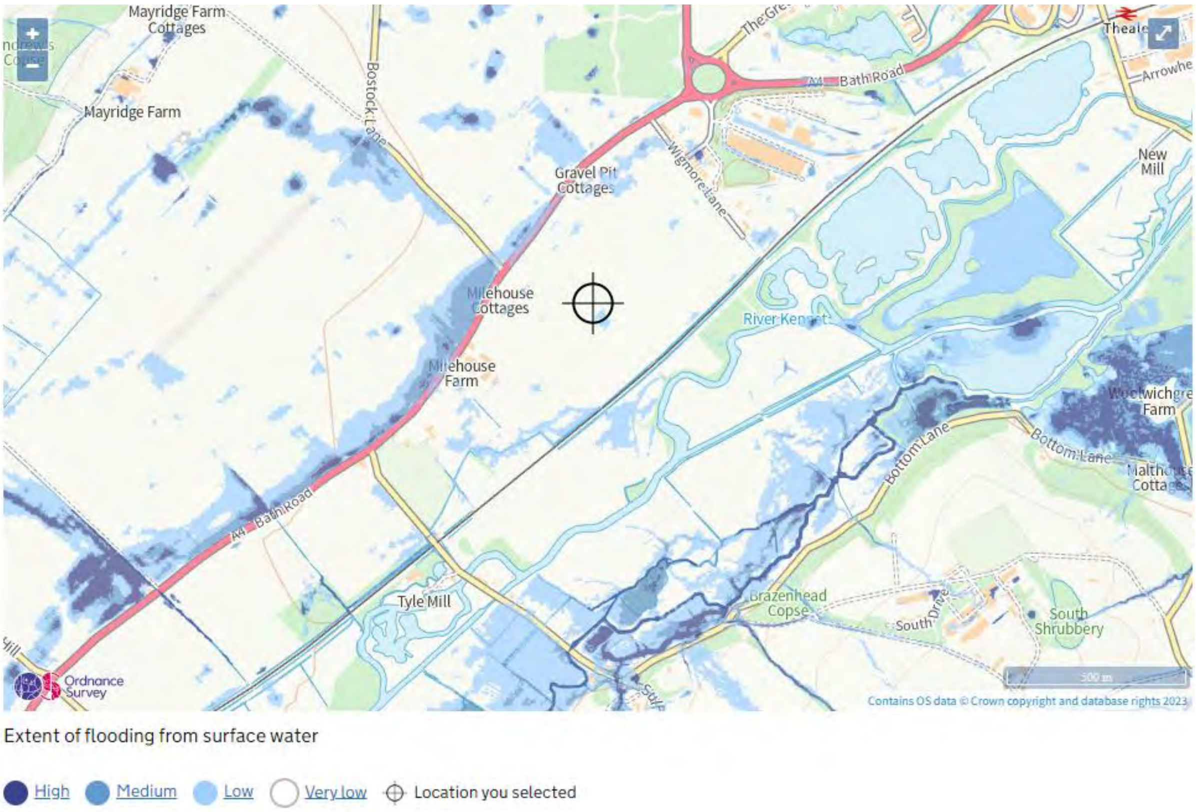


Figure 4: EA Flood Risk Map from Surface Water[7]

3.10 The site is not shown to be at risk of flooding from reservoirs or other artificial sources, as indicated within Appendix M of the WBC SFRA.

[7] https://check-long-term-flood-risk.service.gov.uk/risk accessed 23rd January 2023

4. National Planning Policy

4.1 The LPA has a statutory obligation to consult the EA on all applications within or partially within Flood Zones 2 or 3. The EA will then consider the effects of flood risk in accordance with the NPPF.

4.2 The NPPF classifies different types of land use and development in accordance with their vulnerability to flooding. This uses a classification of Highly Vulnerable, More Vulnerable and Low Vulnerable also Essential Infrastructure and Water Compatible Development.

4.3 The NPPF sets out a matrix based on the results of the Flood Zones and the Flood Risk Vulnerability Classification to indicate whether the proposed land use or development would normally be considered appropriate for location in that area.

4.4 From the NPPF guidance, the proposed development would be classified as Essential Infrastructure.

4.5 Based on the flood risk vulnerability and flood zone compatibility advice in the NPPF, Essential Infrastructure is considered to be appropriate for locating in Flood Zones 1 and 2. The Exception Test would need to be passed for locating Essential Infrastructure in Flood Zone 3a and Flood Zone 3b.

4.6 In accordance with the NPPF, a sequential test is required for major and non-major development if it is:

- In flood zone 2 or 3;
- In flood zone 1 and the LPA's SFRA shows it to be at risk of flooding from rivers and sea in the future;
- At risk of flooding from other sources, or could be in the future.

The sequential test compares the proposed site with other available sites and it aims to steer new development to areas with the lowest risk of flooding.

4.7 A rail industry led, Great British Railways Transition Team (GBRTT), national review of potential Intermodal Rail freight Interchange (IRFI) sites was undertaken in Spring 2022. This worked through a sequence of a) existing operational sites, b) non-operational sites with existing main line connections, c) sites with previous main line connections, and d) other sites with potential merit in terms of location and accessibility by rail. The overall objective was to identify a future pipeline of sites able to provide additional capacity in the event of existing Intermodal or Strategic Rail Freight Interchange facilities being exhausted, and/or where no material capacity exists at present to serve particular regions or sub-regions (e.g. South West or South-East). Those sites which passed the initial identification and sifting process were then assessed against a number of key criteria, namely:

- Site topography – overall levels/gradients across the site (rail needing relatively flat sites)
- Rail topography – extent to which rail access was constrained by cuttings or embankments
- Rail loading gauge (W6-W12) – the larger the gauge, the greater the range of rail service options
- Rail routing availability (RA1-RA8) – the larger the availability, the greater the wagon payload
- Rail main line connection – existing, previous or no previous connection
- Highway topography – extent to which road access could be achieved between railway and highway
- Nearest highways access – capability of local highway network to accommodate HGV traffic at scale
- Flood risk – extent to which sites might be affected by flooding
- Maximum site length – RFI will need to accommodate trains 450 -775m clear of the main line
- Maximum site width – sufficient to accommodate the sidings and handling area (typically > 30m)
- Maximum site extent – a view on how far site could be assembled around other uses/boundaries
- Nearest settlement – how close would potential residents be (and be potentially concerned)
- Electricity Transmission Lines – the presence of high voltage lines could fetter crane operations
- Local Plan allocation/status – extent to which RFI development would align with local plan policies
- Current usage – how far might existing uses/user complement or conflict with RFI development

4.8 From an original long list of over 600 sites nationally, the high-level search for suitable locations for IRFI identified only 24 sites following the first sift, with only 4 of those identified within the South East, namely:

- Northfleet (Kent)
- Salfords (west Sussex)
- Crawley Goods Yard (West Sussex)
- Theale (Berkshire)

4.9 Of the 4 sites identified within the South East land west of Wigmore Lane (and west of the existing Theale Rail-Road Site) has been identified as the only site capable of serving the western end of the region. The assessment concluded that scope existed to create an intermodal facility, subject to land availability (land is not in the ownership of the rail industry) and flood risk mitigation.

4.10 Network Rail Operational Division and Engineering Team have looked in detail at all existing rail sidings at Theale and their relationship to the mainline and regional railway lines, and they have concluded that the only site that can accommodate an IRFI is the land west of Wigmore Lane.

4.11 Whilst sequential test considerations will need to be reviewed more fully at pre-application and application stage, the rail industry assessment work conducted to date both by GBRTT and NR is clear in demonstrating that there are no reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding within the LPR area or for some significant distance beyond. Given the extremely limited number of candidate sites for IRFI across the southeast, one of the largest concentrations of economic and freight transport activity in the country, there are clear sustainability advantages which would arise from the proposals. Moreover one of the key benefits of locating the proposed development at Theale is that it allows the potential for connection to the mainline via the existing freight facility. On this basis it is concluded at this stage and due to the very specific requirements of the development envisaged, that it is not possible for the development to be located in an area with a lower risk of flooding and therefore that the sequential test would be passed. Taking into account wider sustainable development objectives, the Exception test would need to be applied.

4.12 In addition, sites with an area greater than 1 ha would also require an FRA to be provided. This is due to the potential for the development of such a land area to impact upon the surface water runoff regime and, therefore, to change the flooding over the site and surrounding area.

4.13 Where new development is proposed in areas of higher risk, the policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.

4.14 In flood-affected areas, the Exception Test is a method to demonstrate that the flood risk to people and property will be managed satisfactorily. This can allow necessary development to go ahead in situations where suitable sites at a lower level of risk are not available.

4.15 The NPPF confirms that to pass the Exception Test it should be demonstrated that:

a) the development would provide wider sustainability benefits to the community that outweigh the flood risk and:

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, reduce flood risk overall.

4.16 With regard to point a), and as detailed in the Firstplan Statement of Response to the LPR consultation, the sustainability and environmental benefits that would be secured by additional rail freight development on land west of Wigmore Lane are significant. Through increasing the use of rail transport and securing modal shift from road to rail, the benefits include: reducing long distance HGV movements, reducing Greenhouse Gas (GHG) emissions and supporting the achievement of net zero objectives as well as .wider sustainability benefits linked to the local economy and the ability to serve regional manufacturers, suppliers and consumer markets.

4.17 With regard to point b), the development will be raised above the projected flood levels for the area. Where the development footprint impacts upon the existing flood zone 3, flood compensation will be provided on a level for level basis following detailed modelling, and can be provided on land under ownership of the same landowner.

5. EA Modelled Flood Data

5.1 Latest EA product 4 has not yet been obtained. However, The EA provided modelled flood data from the 'Lower Kennet (Tyle Mill to Thames Confluence)' 2018 flood model for the Englefield Flood Risk Scoping Assessment (2021). This model is considered to be the best available information for assessing flood risk to the site. The Englefield Flood Risk Scoping Assessment (2021) had also obtained the Product 5/6/7 data (i.e. the hydraulic model and outputs) and interrogated this to extract site-specific data.

5.2 In considering flood risk to the site, it is necessary to fully consider the potential impacts of climate change for the lifetime of the development within the mitigation measures based on EA guidance.

5.3 The conditions at the site and consequent peak river flow allowances to be considered depend on the flood risk vulnerability of the proposed development, the river basin and the anticipated lifetime of the development. The 2022 peak river flow climate change allowances would therefore vary from the 'Central' +21% allowance to the 'Higher Central' +35% allowance (typically the EA benchmark for considering mitigation), with the +35% or 'Upper End' +76% allowance used as a sensitivity test for considering residual risk.

5.4 The extract below from the Product 4 data previously obtained has been used in conjunction with the LiDAR topo levels in or near the proposed development footprint to establish an approximate depth of flood water displacement resulting from the development and assuming finished surface levels for the proposed development will be above the flood level taken.

				flood levels (mAOD)						
2D grid cell reference	Model	Easting	Northing	20% AEP	5% AEP	1% AEP	1% AEP (+25% increase in flows)	1% AEP (+35% increase in flows)	1% AEP (+70% increase in flows)	0.1% AEP
Floodplain 1	Kennet (Tyle Mill to Thames Confuence) 2018	463,347	170,186	47.51	48.15	48.24	48.29	48.30	48.35	48.30

Table 1: Product 4 Data Flood Levels, 2018

5.5 From Table 1 above the highest flood level of 48.35 m AOD was used. It should be noted that any future modelling undertaken on the site should comply with the latest climate change allowance for the river which are noted in 5.3 above.

5.6 An initial assessment of flood compensation volumes and band depths has then been made. The results of which are shown on the Plan of Site and Proposed Development Hardstanding included in Appendix B.

5.7 Full modelling will be required to be undertaken as part of the scheme design at the appropriate stage and in particular to support any planning application submission which may be made. Future modelling will need to use the appropriate climate change allowance and the extents of the level for level compensation will be determined accurately, and as a result the full requirements for land providing flood compensation established.

5.8 Possible flood compensation areas are highlighted with cross hatch in Figure 4 below. Land ownership by the Englefield Estate covers a much larger area to the west of the subject site (see Appendix C for details for full plan) which could support provision of flood compensation areas.

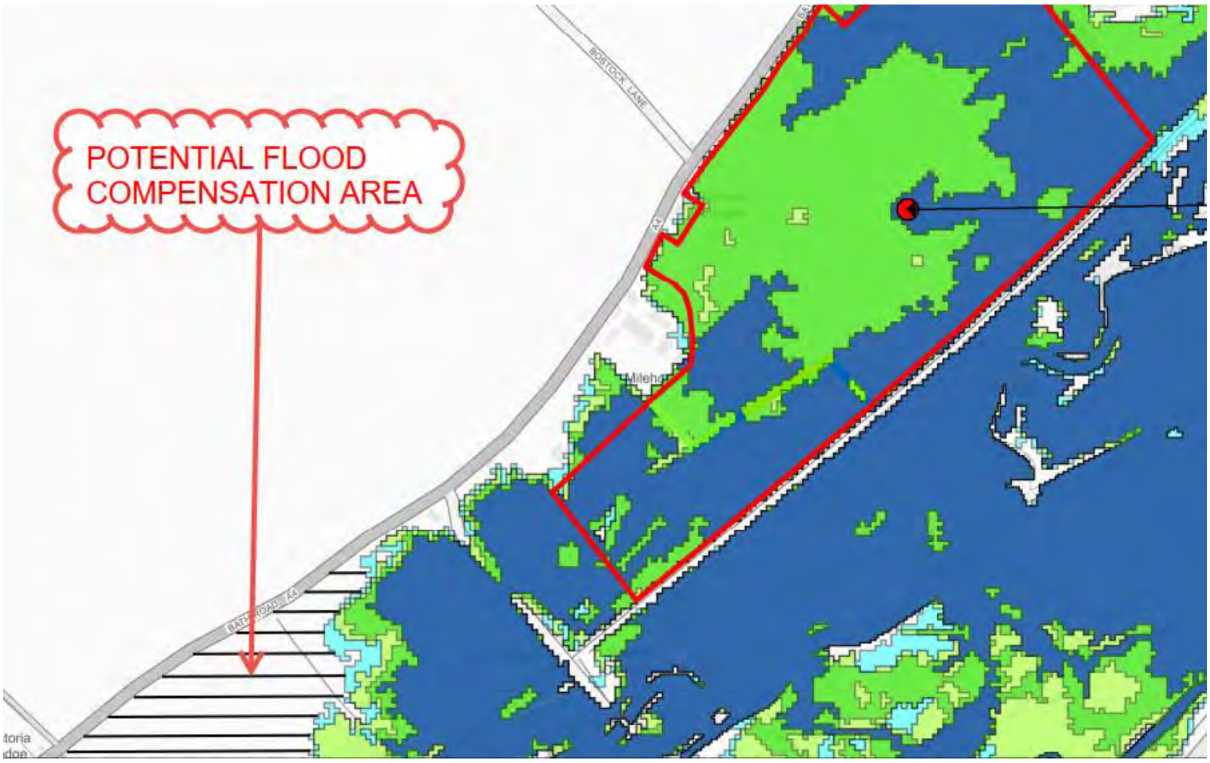


Figure 5: Potential Flood Compensation Areas[8]

[8] https://publicaccess.westberks.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=QZ5VMBRD09N00

6. Conceptual Drainage Strategy

6.1 It is assumed due to the expected high ground water level that infiltration is unlikely to be feasible however this should be investigated, and ground water levels confirmed.

6.2 Similarly, swales at the base of embankments from the access road and sidings platform may need to be shallow which could limit their effectiveness.

6.3 Provisionally the drainage concept is for filter drains or swale and filter underdrain adjacent to the hard standings with road gully or drain channel connections discharging to them. This would preferably be discharge to a grassed swale at a lower level than the finished road, but above the existing ground levels. Filter underdrains could provide storage and pollutant trapping. It is noted this arrangement would increase the compensation volumes required.

6.4 Although there are ditch courses on site and also rail-side ditches, it is not clear that an eventual outfall to a main watercourse is available.

6.5 Drainage features would be incorporated into the proposed development to manage the surface water runoff and outlet to greenfield rates, therefore requiring attenuation.

6.6 The surface water drainage strategy for the proposed development would be progressed and agreed with LLFA at a later stage in the planning and design process.

7. Conclusion

7.1 The site is located in Flood Zone 3 – floodplain of the River Kennet.

7.2 The proposed development of rail sidings and access road is considered 'Essential Infrastructure' and is an expansion of the Theale Rail Freight Depot immediately to the east of the site. Should the Sequential Test be passed, an Exception Test will then need to be justified.

7.3 Whilst sequential test considerations will need to be reviewed more fully at pre-application and application stage – certainly the rail industry assessment work conducted to date both by GBRTT and NR is clear in demonstrating that there are no reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding within the LPR area or indeed for some significant distance beyond. Given the extremely limited number of candidate sites for IRFI across the southeast, one of the largest concentrations of economic and freight transport activity in the country, there are clear sustainability advantages which would arise from the proposals. Moreover, one of the key benefits of locating at Theale is that it allows the potential for connection to the mainline via the existing freight facility. On this basis it is concluded at this stage that due to the very specific requirements of the development envisaged that it is not possible for the development to be located in an area with a lower risk of flooding and that the sequential test would be passed. Taking into account wider sustainable development objectives, the Exception test would need to be applied.

7.4 The site is expected to pass the Exception Test in that the sustainability and environmental benefits that would be secured by additional rail freight development on land west of Wigmore Lane are significant. Through increasing the use of rail transport and securing modal shift from road to rail, the benefits include: reducing long distance HGV movements, reducing Greenhouse Gas (GHG) emissions and supporting the achievement of net zero objectives as well as wider sustainability benefits linked to the local economy and the ability to serve regional manufacturers, suppliers and consumer markets. In addition, the development will be raised above the projected flood levels for the area. Where the development footprint impacts upon the existing flood zone 3, flood compensation will be provided on a level for level basis following detailed modelling, and can be provided on land under ownership of the same landowner.

7.5 Flood water displacement that would be caused by the proposed development could be offset by compensation on other areas of land within the Client's ownership and in close proximity to the proposed development. The exact volume of displacement and locations for flood compensation will need to be determined through flood modelling of the final scheme proposals and the local area at the appropriate design stage.

7.6 The proposed development would need to demonstrate wider sustainability benefits to the community that outweigh the flood risk location and demonstrate that it will be safe for its lifetime without increasing flood risk elsewhere and where possible to reduce flood risk overall.

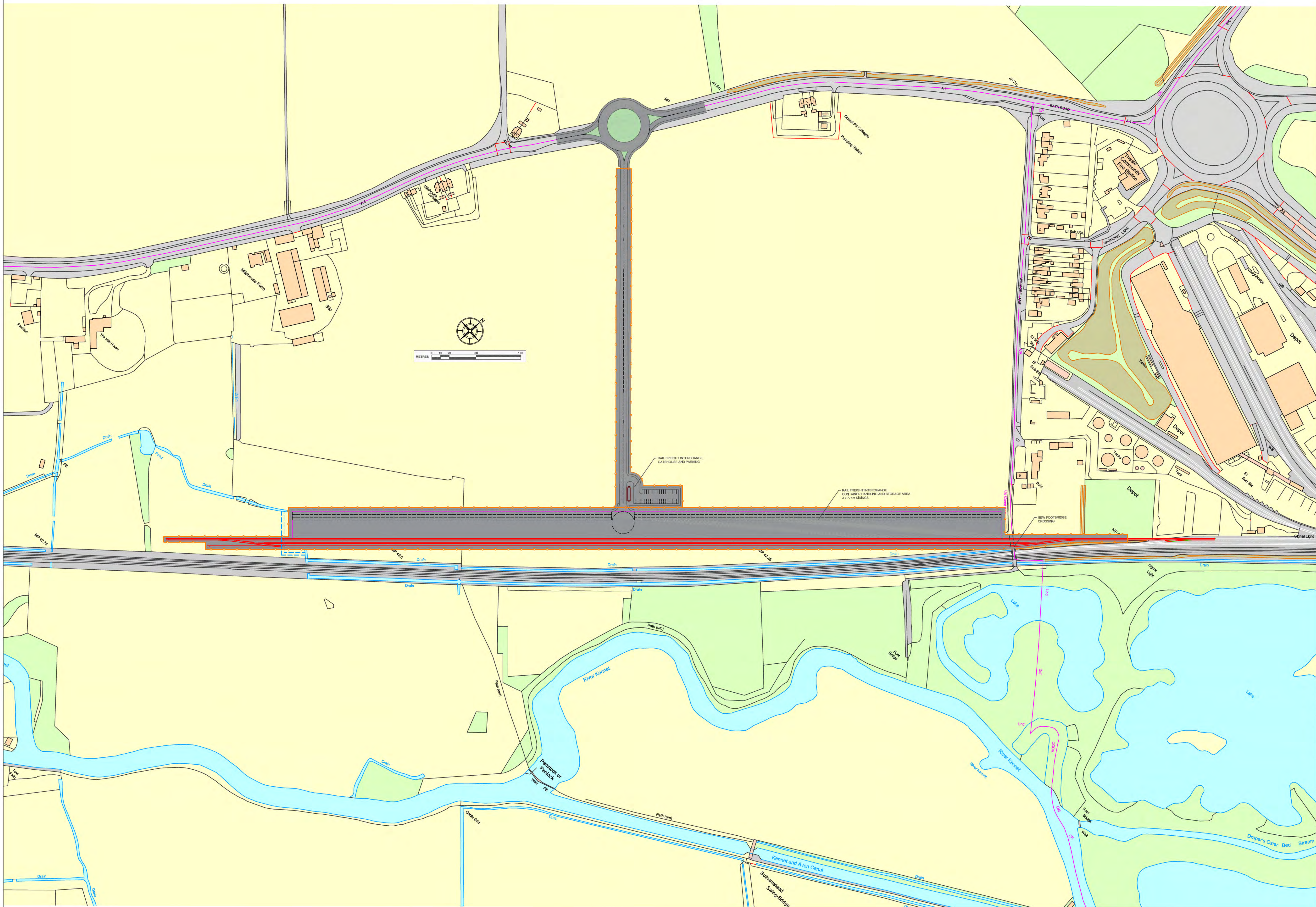
7.7 Surface water flooding, sewerage and infrastructure flooding and flood from artificial sources have been assessed as low risk to the site. The groundwater table has been noted as high and future designs of the proposed development may need to take account of this following confirmation by ground investigation.

7.8 The surface water drainage strategy should include a source control system and will manage runoff from the site.

7.9 Therefore, the proposals for expansion of rail freight development on land west of Wigmore Lane can be fully supported through further flood modelling of the scheme design, consultation with the Environment Agency on the flood model and an approved drainage strategy agreed with the Lead Local flood Authority.

Appendix A

A.1 Illustrative General Arrangement – Proposed Development



NOTES:

This drawing, the works and concepts depicted are the copyright of Intermodality and may not be reproduced without express written consent.

Chainages, levels and co-ordinates are show in metres. All other dimensions are in millimetres, unless otherwise stated. All clearances and track intervals are quoted to running edge (RE).

This design is based on survey data. Variations to the existing arrangement may have occurred since the survey was completed.

North point is to an approximate orientation.

Track gauge to be nominal 1435mm, unless otherwise stated.

Clearance Point = Fouling Point (1970mm) + 5860mm.

This drawing indicates indicative alignments only, specific work limits are to be confirmed by third parties following option selection.

The installation methodology, staging requirements and track access should be confirmed prior to any design development.

PLAN KEY:

Note not all symbols may be used on the associated plan

Black - Existing or unchanged

Blue - Modified or to be moved

Green - Redundant or to be removed

Red - Proposed or additional

Pink - works by others/Temporary Works

CP Clearance Point

FP Fouling Point

SITE LOCATION:

ELR: BHL

Chainage(s): Mileposts 41 to 43

Rev	Amendments	Reviewed by	Date
P01.01	Draft Submission	NTG	23/01/2023

Status DRAFT work in progress

Client ENGLEFIELD ESTATE

Project THEALE RAIL FREIGHT INTERCHANGE

Title Illustrative General Arrangement Drawing **Sheet** 1 of 1

Project	Originator	Volume	Level	Type	Role	Number
200307 -	IMT -	XXX -	XX -	DRG -	EMF -	00001

Internal project reference: 200307

Suitability / Suitable for: S0 - Work In Progress

Scale	Created	Revision
Refer to scale bar	23/01/2023	P01

Project Lead: NG | Drawn: NG | Checked:
Reviewed: | Approved for Issue:

intermodality
transport strategy & delivery

Sheet Size A1 841mm x 594mm
Drawing Template 23/01/23

Appendix B

B.1 Provisional flood compensation volumes

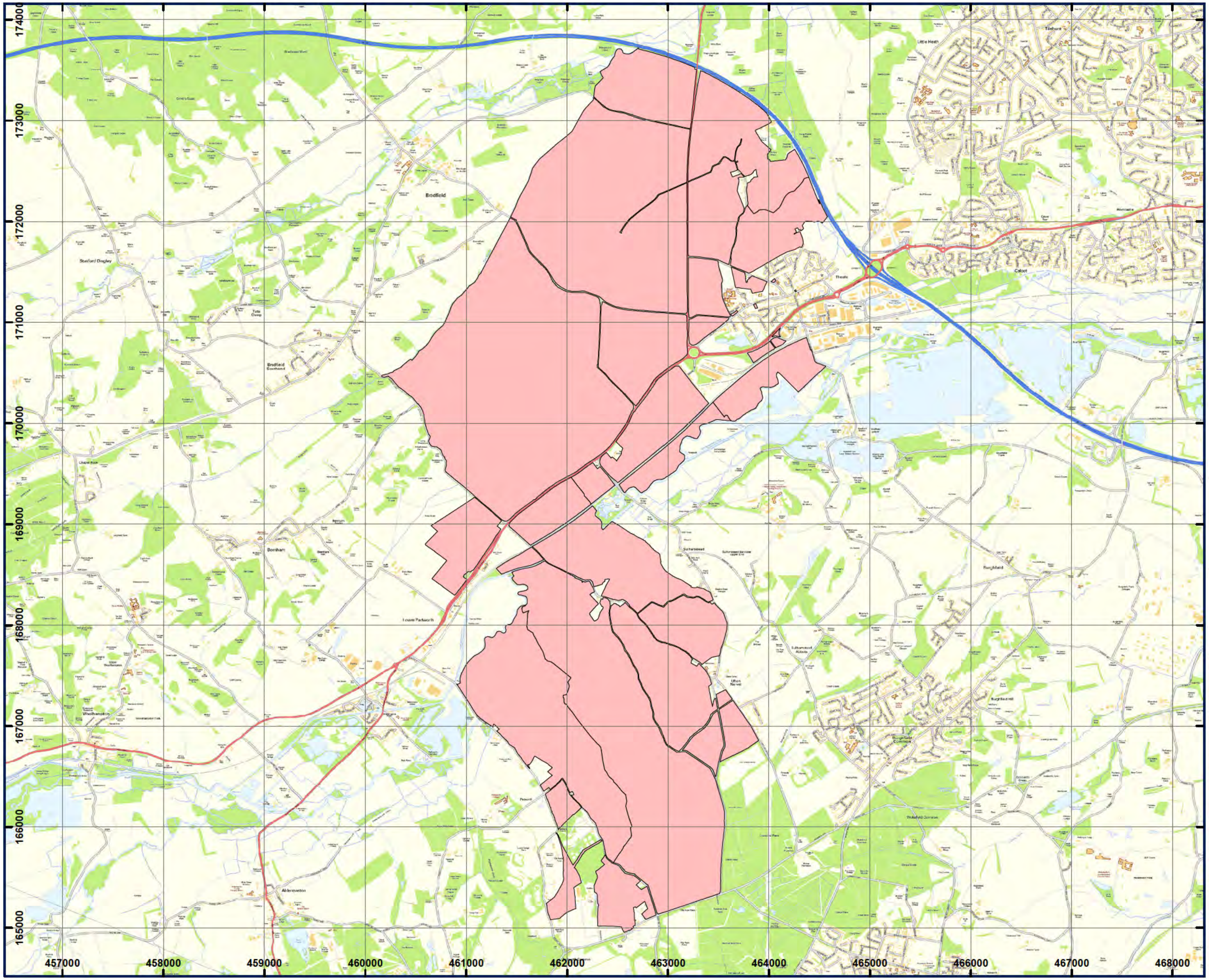

A4 - BATH ROAD
WIGMORE LANE
THEALE RAIL FREIGHT DEPOT
AVE EXTG GRD LEVEL 47.83
HARD STANDING 2426 m2
(0.243 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 0.52
AVE EXTG GRD LEVEL 47.28
HARD STANDING 11307 m2
(1.131 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 1.07m
AVE EXTG GRD LEVEL 47.97
HARD STANDING 1944 m2
(0.194 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 0.38
NEW DEVELOPED HARD
PAVED AREA = 49677 m2
(4.968 ha)
O/A AVERAGE GL 47.67
FLOOD LEVEL 48.35
AVE' FLOOD DEPTH 0.68m
AVE EXTG GRD LEVEL 47.87
HARD STANDING 2309 m2
(0.231 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 0.48m
DEPTH BAND (m) AND CULMATIVE FLOOD COMPENSATION VOLUMES (m3) REQUIRED
1.1 - 1.0 1131
1.0 - 0.9 1856
0.9 - 0.8 1856
0.8 - 0.7 2454
0.7 - 0.6 4304
0.6 - 0.5 4547
0.5 - 0.4 4778
0.4 - 0.3 4972
0.3 - 0.2 4972
0.2 - 0.1 4972
0.1 - TFL 4972
(Total) 40814
AVE EXTG GRD LEVEL
47.400
HARD STANDING 7247 m2
(0.725 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 0.95m
A4 - BATH ROAD
AVE EXTG GRD LEVEL
47.650
HARD STANDING 5976 m2
(0.598 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 0.7m
AVE EXTG GRD LEVEL
47.700
HARD STANDING 5698 m2
(0.570 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 0.65m
RIVER KENNET
AVE EXTG GRD LEVEL
47.700
HARD STANDING 12809 m2
(1.281 ha)
FLOOD LEVEL 48.35
FLOOD DEPTH 0.65m
RAIL LINE
PLAN ON SITE AND PROPOSED
DEVELOPMENT HARDSTANDING
0 50 100 200
1 to 2000 at A1

Appendix C

C.1 Englefield Estate Land Ownership Plan

Englefield Estate land for CAD file near Theale

0 780 1,560 2,340 3,120 Meters



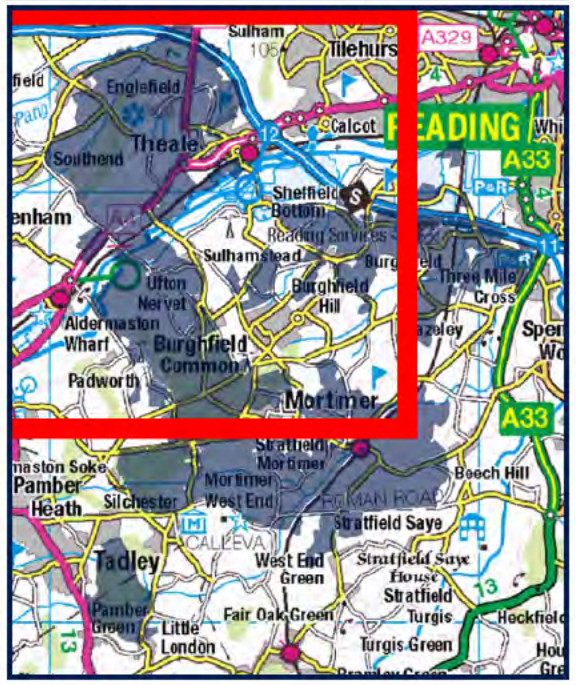
Legend

EE land ownership near Theale- CAD file

ENGLEFIELD ESTATE

Date: 09/01/2023
1:35,987 @A3

The Englefield Estate,
Estate Office,
Englefield Road,
Theale, Berkshire,
RG7 5DU, Tel: 0118 930 2504,
Web: www.englefieldestate.co.uk



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Landscape and Visual Appraisal

Englefield Estate

Potential IRFI at Land West of Wigmore Lane, Theale

Ref:	22-1917
Version:	1
Date:	8th February 2023
Author:	Ian Dudley
Position:	Associate

Northamptonshire Office
7-8 Melbourne House
Corbygate Business Park
Weldon
Northamptonshire
NN17 5JG
01536 408 840
contact@nicholsonsgb.com

Oxfordshire Office
The Park
North Aston
Oxfordshire
OX25 6HL

01869 340342
contact@nicholsonsgb.com

www.nicholsonsgb.com

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DOCUMENT CONTROL SHEET

Landscape Planning and Design Team	
Ian Dudley BSc(Hons) MICFor CEnv CMLI	Associate and Principal Landscape Consultant
Alison Barrett BSc(Hons)	Senior Mapping Specialist & Landscape Consultant
Julie Hutton-Attenborough PGDipLA RIBA	Senior Landscape Architect/Chartered Architect
Jonathan King BA(Hons) DipLA MIHort CMLI	Senior Landscape Architect
Charles Barrett	Landscape and Garden Designer
Simon Muddiman BA(Hons) Grad Dip LA	Landscape Architect
Harriet Smith BSc(Hons)	Graduate Landscape Consultant
Jade Tomlinson BSc(Hons)	Project Administrator

REVISION HISTORY

Rev	Description of change	Date	Initials
1	Original draft	08.02.2023	ID

TABLE OF CONTENTS

1. INTRODUCTION

Instruction

1.1 This Landscape and Visual Appraisal (LVA) has been prepared by Nicholsons to support representations being made by Firstplan Ltd on behalf of the Englefield Estate to the West Berkshire Proposed Submission (Regulation 19) Local Plan Review ('LPR') consultation. The representations principally relate to the omission of the LPR to appropriately identify the potential for the existing Theale Rail-Road Transfer Site to expand and grow (as has previously been the case) and that this growth could be accommodated on land west of Wigmore Lane (hereinafter referred to as the 'Site'). The built components of the Intermodal Rail Freight Interchange (IRFI) would be located in the southern portion of the land in question, adjacent to the railway line, with the balance of the Site remaining as open land with the potential to provide environmental mitigation.

Scope

1.2 This appraisal was undertaken using an established methodology, derived from the Landscape Institute and Institute of Environmental Management and Assessment jointly published Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3).

1.3 A copy of this methodology is included within **Appendix 2** of this report.

1.4 The purposes of this report and initial assessment are as follows:

- To assess the baseline landscape and visual characteristics of the Site, including desk survey information and first-hand field evidence; and
- To consider the potential landscape and visual implications of the proposals as currently envisaged, and where appropriate, provide recommendations in relation to likely landscape and visual mitigation requirements.

1.5 A number of plans and photographs have been prepared to illustrate the character and visual environment of the site and its context, and these are appended to this report.

1.6 The proposed development is at an early stage and at the appropriate time will need to be reviewed via pre-application consultation with West Berkshire Council and be subject to detailed design development and full assessment, including in landscape and visual terms, as part of any formal planning application submission which may be made.

Site Location

1.7 The Site is located to the west of Wigmore Lane, to the south-west of the settlement of Theale. The Site central grid reference is SU 62972 70120 and it occupies an approximate area of 36.3 hectares. The indicative site boundary is presented on the Baseline Information Map ref. 22-1873 within **Appendix 1**.

2. PLANNING POLICY BACKGROUND

National Planning Policy Background

National Planning Policy Framework (NPPF)

2.1 The latest version of the NPPF was published in July 2021, replacing a previous version of this document. It sets out the Government's planning policies for England, and how these should be applied, as well as setting out a framework for the production of locally prepared housing and development plans.

2.2 Paragraph 100 states that planning policies and decisions should protect and enhance Public Rights of Way and access, including taking opportunities to improve users' facilities and to create additional connections to existing networks.

2.3 Chapter 12 of the NPPF relates to the achievement of well-designed places. In particular, it recognises that good design is a key aspect of sustainable development, creates better places in which to live and work and helps to make development acceptable to communities, and it establishes the creation of high quality, beautiful and sustainable places as a fundamental goal of the planning and development process.

2.4 Paragraph 130 sets out a number of positive design criteria that planning policies and decisions should ensure. These include contributing to the overall character of an area in the long term, being visually attractive, being sympathetic to local character and history, establishing or maintaining a strong sense of place, and creating safe, inclusive and accessible places that promote health and well-being.

2.5 Paragraph 131 recognises the importance of trees in creating high quality places, and contributing to climate change adaptation and mitigation. It recommends that planning policies and decisions ensure that new streets are tree-lined unless there are clear, justifiable and compelling reasons why this is not appropriate, and also promotes the incorporation of trees elsewhere in developments. To ensure the sustainability of these benefits, it recommends that appropriate measures should be in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible.

2.6 Paragraph 134 states that development that is not well designed should be refused, and it attributes significant weight to development that is in compliance with local design guidance, and/or which is outstanding or innovative, promoting high levels of sustainability.

2.7 Chapter 15 of the NPPF relates to the conservation and enhancement of the natural environment. Paragraph 174 states that planning policies should contribute to and enhance the natural and local environment by a range of measures including protecting and enhancing valued landscapes (in a manner commensurate with their statutory status or identified quality in the development plan) and recognising the intrinsic character and beauty of the countryside.

2.8 Paragraph 176 places great weight upon the conservation and enhancement of landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, and it identifies these areas as having the highest status of protection in relation to these issues. It states that development within these areas should be limited, and also that development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.

National Planning Practice Guidance (PPG)

2.9 Paragraph 034, Reference ID: 8-034-20190721 of the PPG presents the national guidance for landscape and planning. It states that:

"The National Planning Policy Framework is clear that plans should recognise the intrinsic character and beauty of the countryside, and that strategic policies should provide for the conservation and enhancement of landscapes. This can include nationally and locally-designated landscapes but also the wider countryside.

Where landscapes have a particular local value, it is important for policies to identify their special characteristics and be supported by proportionate evidence. Policies may set out criteria against which proposals for development affecting these areas will be assessed. Plans can also include policies to avoid adverse impacts on landscapes and to set out necessary mitigation measures, such as appropriate design principles and visual screening, where necessary. The cumulative impacts of development on the landscape need to be considered carefully."

2.10 Paragraph 041, Reference ID 8-041-20190721 of the PPG specifically addresses the approach to development within National Parks, the Broads and Areas of Outstanding Natural Beauty. It states that:

"The National Planning Policy Framework makes clear that the scale and extent of development in these areas should be limited, in view of the importance of conserving and enhancing their landscapes and scenic beauty. Its policies for protecting these areas may mean that it is not possible to meet objectively assessed needs for development in full through the plan-making process, and they are unlikely to be suitable areas for accommodating unmet needs from adjoining (non-designated) areas. Effective joint working between planning authorities covering designated and adjoining areas, through the preparation and maintenance of statements of common ground, is particularly important in helping to identify how housing and other needs can best be accommodated.

All development in National Parks, the Broads and Areas of Outstanding Beauty will need to be located and designed in a way that reflects their status as landscapes of the highest quality. Where applications for major development come forward, paragraph 172 of the Framework sets out a number of particular considerations that should apply when deciding whether permission should be granted."

2.11 Paragraph 042, Reference ID 8-042-20190721 of the PPG recognises the importance of the setting of National Parks, the Broads and Areas of Outstanding Natural Beauty. It states that:

"Land within the setting of these areas often makes an important contribution to maintaining their natural beauty, and where poorly located or designed development can do significant harm. This is especially the case where long views from or to the designated landscape are identified as important, or where the landscape character of land within and adjoining the designated area is complementary. Development within the settings of these

areas will therefore need sensitive handling that takes these potential impacts into account."

2.12 Under the heading Light Pollution, paragraph 001 (Ref ID: 31-001-20140306), PPG refers to the risk of artificial lighting undermining enjoyment of the night sky in the countryside and, in paragraph 2, considers the potential effect on protected areas of dark skies or intrinsically dark landscapes. PPG then provides guidance for mitigation-by-design of artificial lighting, including location, timing and extent of lighting.

Local Planning Policy

West Berkshire Core Strategy (2006 - 2026) Development Plan Document

2.13 The Core Strategy, adopted in 2012, sets out the overall planning strategy for West Berkshire to 2026. The Core Strategy sets out a list of policies that have been designed to provide an overall strategic framework from which to establish more detailed policies and site-specific proposals.

2.14 Those policies included within the Core Strategy that are considered to be of relevance to the Site and current proposals are included below.

- Area Delivery Plan Policy 5: North Wessex Downs Area of Outstanding Natural Beauty
- Area Delivery Plan Policy 6: East Kennet Valley
- Policy CS 18: Green Infrastructure

West Berkshire Local Plan Review

2.15 West Berkshire Council is currently in the process of preparing a new Local Plan, covering the period to 2039. This is at a relatively advanced stage of preparation, with the version of the Local Plan that Council proposes to submit to the Secretary of State for public examination currently under public consultation. The consultation is anticipated to close in early March 2023.

2.16 Within the emerging Local Plan, the following draft policies are considered to be of relevance to the Site and current proposals:

- Draft Policy SP2: North Wessex Downs AONB
- Draft Policy SP8: Landscape Character
- Draft Policy SP10: Green Infrastructure

North Wessex Downs AONB Management Plan 2019-2024

2.17 The North Wessex Downs AONB Management Plan identifies key issues facing the AONB and sets out objectives for its long-term future.

2.18 It identifies a number of Special Qualities that make the AONB a unique and nationally valuable landscape, and which are worthy of protection. In landscape terms, the Management Plan relates Special Qualities to the Landscape Character Types identified within the area, with the following relevant to the Site:

> *The Lowland Mosaic, curving around Newbury and the lower Kennet Valley has a varied geology of clays, silts and sands giving rise to a diverse mix of soils and, in turn, a mosaic of ancient semi-natural woodlands, plantations, remnant heathland and more open farmland areas where sunken lanes heighten the sense of seclusion.*

2.19 The Management Plan sets out a number of specific policies to achieve its aspirations for the Special Qualities. Policy LA06 specifically relates to the treatment of the setting of the AONB, and reads as follows:

> *Ensure that all development in or affecting the setting of the AONB conserves and enhances the character, qualities and heritage of the North Wessex Downs landscape.*

3. BASELINE ASSESSMENT

Study Area

3.1 For the purpose of this appraisal, a study area with a radius of 2.5km, centred on the Site, was considered to be appropriate given the type of development proposed (Intermodal Rail Freight Interchange).

Site Overview

3.2 The Site comprises a single field of open and largely intensive arable land located to the south-west of Theale within the floodplain of the Kennet Valley. The only notable features within the Site are two narrow strips of land running east to west through the central part of the Site comprising rough vegetation, with the remainder of the land under arable cultivation.

3.3 The Site exhibits a level topography consistent with the wide valley floor, with distant outward views to wooded valley slopes to the north and south. The soils within the Site are stony and alluvial in character.

3.4 The A4 Bath Road defines the north-western boundary of the Site, with a managed hedgerow separating the two uses. Two groups of dwellings (Gravel Pit Cottages and Milehouse Cottages) are located along this boundary, indented into the Site. The public highway is a source of significance audible and visual disturbance to the Site's tranquillity, and it combines with the dwellings to impart a human influence.

3.5 The Site is bound to the north-east by Wigmore Lane, a minor road from which it is separated by a well-developed but occasionally gappy hedgerow. Public Footpath SULH/2/2 also follows the alignment of this route for the southernmost two-thirds of the Site boundary. The eastern side of Wigmore Lane is lined to the north by ribbon development of 20th Century residential dwellings and to the south by industrial and commercial structures. The upper storeys of the residential dwellings are clearly visible from the Site and impart an urbanising influence upon its character, with more distant tall industrial elements visible above them.

3.6 The Great Western Railway Reading to Taunton Branch follows the south-eastern boundary of the Site. The boundary delineation between these uses comprises a post and wire fence with patchy scrub of blackthorn and bramble and therefore the line, with its overhead gantries and frequent passenger and freight services, is visible from all parts of the Site. The frequent traffic on the railway line is an additional source of audible and visual disturbance, especially as the trains sound their horns as they approach the level crossing of Public Footpath SULH/2/1 adjacent to the eastern corner of the Site.

3.7 The south-western boundary of the Site comprises an intermittent hedgerow beyond which lies small pastoral fields. At the western corner of the Site is Milehouse Farm, which is a combination of farmstead and commercial uses.

The Site Context

3.8 The principal influences upon the landscape context of the Site are its position on the wide floodplain of the Kennet Valley, and the human activity within its immediate setting.

3.9 The Kennet Valley floodplain to the south-east of the Site is characterised by wet pasture and meadows, strongly treed boundaries, woodland blocks and flat topography contained by wooded slopes. The railway and A4 Bath Road are detracting human features and along with the Kennet and Avon Canal they highlight the long history of the valley as a key transport route. The valley possesses a moderate level of recreational access via public footpaths and the canal towpath, although there are no areas of accessible land in the vicinity of the Site.

3.10 North of the railway line, the land use changes abruptly to intensive arable in rectilinear fields with geometric woodland blocks, which continues to the base of the wooded valley slopes. The Site forms part of this arable land complex. The valley slopes support mainly native woodland, some of which is ancient, and this serves to reduce visibility between the slopes and valley floor. These slopes provide a strong topographic backdrop to outward views from the valley bottom, and treed horizons.

3.11 To the north-east of the Site, beyond the ribbon development on Wigmore Lane lies Theale Rail Freight Depot. This rail served industrial facility comprises mainly aggregate suppliers housed in large buildings with connected rail sidings. Frequent freight traffic was observed on the railway line at the time of inspection. The tall FM Conway industrial buildings are visible above the Wigmore Lane dwellings from most parts of the Site.

3.12 To the east of the Site, the valley bottom has been subject to extensive gravel extraction, resulting in the creation of large water bodies, although intervening vegetation means that there is no perceptible relationship between these areas and the Site.

Topography & Landform

3.13 The Site is located within the level floodplain of the Kennet Valley, which flows from south-west to north-east within the Study Area, at an approximate altitude of 50m AOD. The floodplain is approximately 2.4km wide at the Site's location, with steeply rising ground at its edges. Consistent with the floodplain, the Site itself expresses a level topography.

3.14 To the north-west, the land rises steeply with wooded slopes to a local ridge at approximately 90m AOD before descending into the steeply incised minor valley of the River Bourne. Beyond this the landform rises again to 90m AOD at Bradfield before descending again into the valley of the River Pang.

3.15 To the south-east, the land rises moderately to approximately 90m AOD at Home Farm. Beyond this the landform comprises an undulating plateau, incised with the minor valleys of tributaries to the River Kennet.

3.16 To the south-west and north-east, the landform is relatively level and uniform, consistent with the broad base of the Kennet Valley.

Public Rights of Way

3.17 The desktop assessment identified that there are currently no Public Rights of Way (PRoW) within the Site, or any other form of public access.

3.18 There are a number of PRoW within the setting of the Site that have the potential to be affected by the proposed development, as follows:

- Public Footpath SULH/2/2 that follows Wigmore Lane.
- Public Footpath SULH/2/1 that follows the alignment of the River Kennet to the south-east of the Site
- Public Footpaths SULH/1/1, SULH/1/2 and UFTO/18/1 that follow the towpath of the Kennet and Avon Canal.
- Public Footpath ENGL/5/3 crossing the valley floor to the west of the Site.
- Public Bridleways ENGL/6/2 and ENGL/6/4 that follow the top of the north-western valley slopes.

Statutory Designations

Area of Outstanding Natural Beauty

3.19 The North Wessex Downs Area of Outstanding Natural Beauty (AONB) lies directly to the north-west of the Site, with its boundary falling on the opposite side of the A4 public highway. The Site therefore forms part of the setting of the AONB.

3.20 The published landscape character of the AONB is presented in Section 4.

Non-Statutory Designations

Registered Parks and Gardens

3.21 *Englefield House* is a Grade II Registered Park and Garden that lies approximately 520m to the north of the Site (closest boundary), within the North Wessex Downs AONB. It is defined by an estate wall that follows the public highway network to the south and the east, and areas of woodland are present on its southern boundary, although there is the potential for a perceptual relationship with the development where intervening tall vegetation is absent.

3.22 *Folly Farm* is a Grade II* Registered Park and Garden in the village of Sulhamstead. This designated landscape lies around 685m south of the closest Site boundary, and it is well divided from the Site by intervening vegetation and structures to the extent that no perceptual relationship exists.

4. LANDSCAPE BASELINE

Overview

4.1 In order to accurately define the quality and character of the receiving landscape, it is important to identify and assess those landscape receptors and/or features that form part of the landscape and help to characterise it.

4.2 The identification of these features will be informed through:

- Review of Ordnance Survey mapping, historical map data and aerial and other remote sensing imagery where appropriate.
- Review of relevant published landscape character assessment at national, regional and local levels as appropriate.
- Identification of landscape-based designations.
- Identification and description of individual elements, features, aesthetic and perceptual aspects of the landscape which contribute to its character.
- Assessment of the general condition of the receiving landscape.
- Judgement of the susceptibility of the receiving landscape to a change of the type proposed.
- Judgement of the relative value of the receiving landscape.
- Combination of judgements of landscape susceptibility and value to derive an overall judgement of landscape sensitivity.

Review of Published Landscape Character Assessments

National Level Assessment

4.3 Natural England's National Character Assessment places the Site within the boundary of the Thames Basin Heaths National Character Area (NCA 129). The Site lies in the north-western part of this NCA, close to the boundary with the Thames Valley NCA (see below).

4.4 The key characteristics of the Thames Basin Heaths are defined as follows, with those considered to be representative of the Site and its setting highlighted with bold text:

- Plateaux of Tertiary sands and gravels in the London Basin, with intervening river valleys floored by London Clay. **In the far west, Chalk forms the Hampshire Downs escarpment and the river beds of the Kennet and Pang.**
- **High woodland cover, offering an array of colour in the autumn. Conifers and large plantations on former heathland are dominant features in the east, while the west is scattered with small, semi-natural woodlands on ancient sites**.
- Acid, leached soils mean that farming on the plateaux is limited to rough pasture, and that alternative land uses (such as forestry, golf courses and horse paddocks) have emerged. Heather, gorse, oak and birch all thrive here. **Arable land and improved pasture are found in the valleys, on alluvium.**

- **Beyond the large areas of heathland and woodland, there is a patchwork of small to medium-sized fields with woods. The legacy of historic hunting forests includes veteran trees, ancient woods, ancient hedgerows and parklands. Historic meadows remain as fragments along watercourses.**
- Prehistoric earthworks such as barrows and hill forts mark promontories on the plateaux. Archaeology is well preserved on historic heathland. Mosaics of open heathland and grassland with scrub, secondary woodland and plantation. **Valley bogs, ponds and streams enhance diversity.** Large, continuous mosaics are found in the east: they include Thursley, Ash, Pirbright and Chobham Special Area of Conservation (SAC), and Chobham Common National Nature Reserve (NNR).
- **Historic commons offer tranquillity and unenclosed views, while other rights of access are enjoyed across farmland, canals and downland**. Ministry of Defence ownership restricts (but does not entirely prevent) public enjoyment.
- 'Churring' nightjars, dragonflies and purple heather are all readily identified with heathland. The Thames Basin Heaths SPA protects internationally important populations of woodlark, nightjar and Dartford warbler.
- **Valley floors are wet with ditches, numerous watercourses, ponds, waterfilled gravel pits, reedbeds and carr.** Historic features include mills, relict water meadows, and canals such as the River Wey Navigations.
- 20th-century conurbations, including Camberley, sprawl along the Blackwater Valley, with associated roads (including the M3) dissecting heathland and woodland into blocks. Elsewhere, there are winding lanes and historic dispersed villages and farmsteads of traditional, locally-made brick and tile.

4.5 Part of the wider study area falls within the Thames Valley NCA (NCA 115), which lies to the east of the Site towards Reading. There is little connection between the Site and this landscape, however.

North Wessex Downs AONB Landscape Character Assessment (2002)

4.6 The North Wessex Downs AONB Landscape Character Assessment was written for the Countryside Agency by Land Use Consultants in 2002. The report defines the AONB landscape to the west of the Site as Lowland Mosaic Landscape Type, which is described as follows:

> *"The lowland mosaic is a distinct landscape in the eastern part of the North Wessex Downs occupying the low lying basin of gravel beds and clays which rise either side of the Kennet Valley. The area has a strong woodland character, with its origins as part of the medieval forests. In the early 17th century the forests were subject to gradual piecemeal enclosure, the legacy of which is reflected in numerous dispersed small settlements and farms. Today the area is characterised by irregular fields, cut out from the woodland during the medieval or post medieval period, interspersed with parcels of woodland and commons. Although in some areas, a more open landscape dominated by large-scale arable farmland is found.*

One of the most densely inhabited parts of the North Wessex Downs, this lowland area has a diverse range of settlements ranging from large manor houses associated with the many parklands to the network of hamlets, lines of houses and villages that occur along the lanes and roads. Many villages have a clear nucleus, typically associated with a village green or church whilst others follow a more dispersed pattern typical of post medieval 'squatter' settlement. Red brick and tile are the principal building materials.

It is generally a small-scale intimate landscape with the widespread settlements linked by an intricate network of narrow rural lanes, winding through ancient semi-natural woodlands, plantations and more open farmland areas. The lanes are frequently overhung by deep grassy or woodland banks and contribute to the 'secluded' enclosed character. Small areas of heathland on the drier gravel ridges are a distinctive and important feature, although many formerly open areas have reverted to scrub or woodland. The network of ancient semi-natural woodland, connecting hedgerows, areas of parkland including wood pasture and veteran trees create considerable ecological interest. Former medieval deer parks are a particular feature, with a number of these being refashioned in the eighteenth century as formal designed parks and gardens.

4.7 The report continues to define the following key characteristics for this Landscape Type, with those considered representative of that part of the AONB in the Site's setting highlighted in bold text:

- **Underlain by a geology of clays, silts, sands and gravel, in strong contrast to the chalk. The pattern essentially comprises clay on the lower land, separated by gravel ridges.**
- **A low lying undulating area enclosed by the chalk to the north, south and west and forming a part of the Thames Basin Heaths which extend to the east of the AONB.**
- **A mosaic of landcover including fragments of remnant heathland, extensive woodlands and pasture, as well as more open areas of arable land.**
- Ecologically important habitats including: **ancient woodland**, wood pasture, **parkland**, ancient hedgerows, neutral grassland, hay meadows, heathland, acid grassland, bogs, fens and open water.
- **Parklands, including many originating as medieval deer parks, with subsequent designed landscape schemes, are a particular feature of the area.**
- Varied field pattern with irregular fields, interspersed with parcels of woodland and commons indicative of medieval and post medieval assarts. Fields with parallel and sinuous boundaries predominate and represent 'ladder' fields probably resulting from the 17th and 18th century informal enclosure. Plus **large regular fields of Parliamentary enclosure**.
- **One of the most densely settled landscape types, with a diverse range of settlements ranging from large manor houses, villages, numerous hamlets and lines of houses along the roads and lanes.**

- Varied settlements with villages often having a clear nucleus, typically associated with a village green or a church. A more dispersed pattern may derive from 'squatter' settlement of disafforested areas. The principal building material is red brick.
- **An intricate network of wooded rural lanes, plus a large number of footpaths, bridleways, and byways form an excellent resource for informal recreation. Visitor attractions include a number of historic houses and parklands.**
- Well settled landscape with a rising population due to proximity and accessibility to centres such as Reading, Newbury and Basingstoke - manifest in pressures for residential development, commuter villages and an increase in traffic on the rural lanes.

4.8 The part of the AONB adjacent to the Site is defined as the Hermitage Wooded Commons Landscape Character Area. The Landscape Character Assessment describes this as follows:

"The Hermitage Wooded Commons character area is distinctive for its varied geological pattern of clays, silts, sands and gravels, which result in the nutrient poor soils that dominate the area. The landform forms a broad lowland plateau dissected by the River Pang.

The landcover, reflecting the diverse geology, is highly variable with an intricate mosaic of woodland, pasture and small areas of remnant heathland. More open areas of arable land can be found locally across the area, notably, on the slopes dropping towards the Pang Valley and to the south-east near Beenham. Elsewhere the large, inter-connected woodland blocks and strong hedgerow pattern with mature trees restrict views and create a very enclosed landscape. The sense of intimacy is enhanced by when travelling along the wooded rural lanes. Many of the woodlands are ancient/semi-natural in origin, with some larger plantation woodlands also present. Formerly heathland commons, now covered by regenerating wooded, such as Ashampstead Common, Bucklebury Common and Upper Common, are a particular feature of the area. Small remnant areas of heath can also be found, though these are often colonising with gorse, willow and birch. Woodlands frequently cap ridges across the area, such as Brickiln Wood and Ash Plantation and these create low wooded horizons adding further to the sense of enclosure and containment. The area contains many features of biodiversity interest with seven SSSI, including a unique rock sequence at Fognam Chalk Quarry, the heathland, dry and wet woodland and bog at Snelsmore Common, and areas of ancient woodland and wet meadow at Coombe Wood.

Hermitage Wooded Commons is a very well-populated landscape with settlements ranging from large nucleated villages such as Upper Bucklebury, linear villages such as Southend and Beenham to smaller lines of estate cottages at Englefield Village as well as many scattered farmsteads and residential country houses dispersed across the area along the intricate network of rural lanes. Red brick is the most common building material. Manor houses with associated parklands are a feature, many of which are now in institutional use.

The M4 runs east-west through the area, with a small section of the A34 running north-south. The road infrastructure, including the intersection at Chievely has a significant local *impact, severing the area. Generally, away from the road corridors the area retains a quiet rural character, apart from at the eastern edge where there are views to Reading and Theale.*

4.9 The key characteristics are defined as follows. Those characteristics that are of particular relevance to the Site and its setting are highlighted in bold text.

- **Lowland area at the base of the chalk dipslope, underlain by clays, silts, sands and gravels of the Reading and Bagshot Beds and London Clay, giving rise to nutrient poor, often acidic, soils.**
- **A broad undulating plateau falling towards the Kennet Valley to the south east and dissected by River Pang.**
- Variable land cover forming an intricate mosaic of woodland, pasture and small areas of remnant heathland. **Some more open areas of arable land can be found on the slopes that drop to the Pang Valley and to the south east near Beenham**.
- **Large, interconnected woodland blocks and strong hedgerow pattern with mature trees restrict views and create an enclosed and intimate character. Low wooded horizons are a feature.**
- **Numerous semi-natural woodlands of ancient origin, with some large commercial plantations.** Wooded commons and small areas of remnant heath are a distinctive element.
- Many features of biodiversity interest including heathland, dry and wet woodland, bog and areas of wet meadow.
- Dominated by small irregular fields of informal and piecemeal enclosures, of medieval and post-medieval date with **some larger, more regular and straight edged, formal Parliamentary enclosure on flatter terrain in the south-east and west**.
- Dispersed pattern of settlement characteristic of encroachment into areas of common and woodland. Includes large nucleated villages, lines of estate cottages, loose roadside settlements as well as many dispersed farmsteads and residential country houses.
- **Intricate network of rural lanes, many sunken and overhung by woodland plus more intrusive road infrastructure.**
- **Historic parkland based on medieval deer parks and manor houses with associated ornamental parklands with gardens, rides and plantings are a particular feature.**

West Berkshire Landscape Character Assessment (2019)

4.10 The West Berkshire Landscape Character Assessment (2019) was produced by Land Use Consultants for West Berkshire District Council and provides an up-to-date assessment for the District. It has superseded the Newbury District Landscape Assessment (1993) and Berkshire Landscape Character Assessment (2003). The updated landscape character assessment will sit alongside the North Wessex Downs Area of Outstanding Natural Beauty (AONB) Landscape Character Assessment, which extends beyond West Berkshire.

4.11 The West Berkshire Landscape Character Assessment places the Site within the Kennet Lower River Valley (LV1) Landscape Character Area, associated with the Lower River Valley Landscape Character Type.

4.12 The Kennet Lower River Valley Landscape Character Area is broadly described as follows:

"A valley formed by the River Kennet and its tributaries, characterised by a flat and wide valley floor. Pasture fields line the river course, with arable fields present further away from the Kennet. Mature woodland along the valley creates a semi-enclosed character, and provides a rural setting to Thatcham and Newbury. The area is well used for recreation, with Newbury Racecourse, the Kennet and Avon Canal/towpath and many public rights of way attracting visitors.

The area is centred on the wide valley floodplain of the River Kennet from Newbury in the west to near Theale in the east. It is bounded to the north and south by a change in topography, marking the rising slopes of the immediate valley sides. The northern edge of the floodplain (north of the A4), forms part of the North Wessex Downs AONB."

4.13 The Key Characteristics of the LCA are noted to be as follows, with those relevant to the Site and its setting highlighted in bold text:

- **Distinctive flat and open lowland landscape, created by the River Kennet and associated channels and drainage ditches.**
- **Principally pasture farmland used for cattle grazing, with some larger arable fields. Woodland occurs along the river corridor.**
- Internationally and nationally important wetland habitats along the valley floor.
- Sense of time-depth with visible heritage features and historic settlements.
- Sparsely settled, although influenced by Newbury and Thatcham.
- **Many public rights of way, particularly along the river.**
- **Transportation routes, often parallel to the river corridor.**
- **Visually semi-enclosed, with strong rural qualities away from large settlements.**

4.14 The overall landscape strategy for this LCA is as follows:

- Conserve and enhance the special qualities of the nationally designated AONB landscape.
- Conserve and restore the traditional valley landscape.
- Restore, extend and manage wetland habitats that occur along the floodplain.
- Conserve the valley floor woodland.
- Conserve and enhance heritage features in the landscape.
- Manage recreational pressure.
- Conserve the distinct identities of individual settlements.

Appraisal of Landscape Character and Local Representation

4.15 The Site and its setting are relatively typical of the prevailing character of the lower Kennet Valley, both in terms of their natural elements and human influences.

4.16 The valley bottom is wide and flat in this location, with the River Kennet following a meandering and braided course at its centre, and the Kennet and Avon providing a more formalised and navigable channel. The land surrounding the river is predominantly a combination of wet pasture and woodland, with riparian trees and treed hedgerows contributing to a wooded character.

4.17 The railway line, which passes parallel to and to the north of the River Kennet, marks an abrupt transition within the landscape. North of the railway, the land expresses an intensive arable character with geometric fields extending to the north-western valley slopes. The Site itself forms part of this arable complex, being located directly to the north of the railway line. The A4 Bath Road also passes through this landscape, defining the north-western boundary of the Site and combining with the railway to reduce the area's tranquillity.

4.18 The Site is located directly adjacent to ribbon residential development along Wigmore Lane, and beyond this lies Theale Rail Freight Depot, representing the existing edge of the settlement of Theale. The existing depot contains large industrial structures that are visible for a considerable distance, as well as railway sidings.

4.19 The valley landscape is contained to the north-west and south-east by wooded valley slopes. This woodland serves to prevent most views towards the Site from the sloping ground and the plateau areas beyond.

4.20 The land directly to the north-west of the Site, beyond the A4 Bath Road, forms part of the North Wessex Downs AONB, a nationally important and protected landscape. Whilst the valley slopes and woods on the valley bottom prevent exposure of the Site to much of the AONB, the Site forms part of the setting of the wooded slopes and arable land on the valley bottom.

4.21 In general, the Site and its setting are considered to be representative of the prevailing landscape character, although it is noted that human influences have affected the condition and tranquillity of this landscape.

4.22 For the purposes of this appraisal, the relevant landscape receptors are considered to be the following physical, perceptual and geographic elements:

- Intensive arable land use with rough grassland.
- Riparian landscape to the south of the railway line.
- Wooded valley slopes providing topographic backdrop.
- Influence of human activity from adjacent settlement and transport routes.
- Overall character of the Site.
- Overall character of the setting of the Site.

Appraisal of Baseline Landscape Sensitivity

Appraisal of Landscape Value

4.23 In absence of external measures of landscape value, such as the North Wessex Downs AONB designation to the north-west of the Site, the value of each landscape receptor has been considered in relation to the following suggested indicators of value as set out in Landscape Institute Technical Guidance Note 02/21:

- Natural heritage
- Cultural heritage
- Landscape condition
- Associations
- Distinctiveness
- Recreational value
- Perceptual value (scenic)
- Perceptual value (wildness and tranquillity)
- Functional value

4.24 With regard to the individual landscape receptors outlined above, the value of each characteristic is judged to be as follows:

- *Intensive arable land use with rough grassland:* The Site is currently subject to intensive arable farming, although two narrow strips of rough grassland have been retained through the central part of the field. This is indicative of a strong level of human intervention and therefore the Site does not possess a wild, tranquil or scenic character. The rough grassland is likely to confer some ecological value and the Site land use performs natural capital functions in terms of food production and potential flood water storage. There is no recreational access to the Site and whilst it can be seen from adjacent public footpaths, human elements generally occur in the foreground of the views. Taking these factors into account, the value of the Site's existing land use is judged to be **Low**.
- *Riparian landscape to the south of the railway line:* This receptor represents the character of the core of the Kennet Valley, comprising both wet meadow and woodland following the course of the river. This landscape is generally in good condition, with the naturalistic habitats likely to possess a good degree of natural heritage value, whilst the historic engineered canal provides cultural value. This landscape possesses some wilderness value in comparison to its surroundings, although any sense of tranquillity is frequently interrupted by rail traffic and other human activity. The valley is well served by Public Rights of Way, following the alignment of the valley and providing a degree of recreational value, although there is no accessible land. Overall, the value of this receptor is judged to be **Medium**.
- *Wooded valley slopes providing topographic backdrop:* The rising slopes to the north-west and south-east contribute to the Site's character and scenic value, providing an

attractive backdrop to outward views and a wooded horizon. They therefore contribute to the condition of the valley landscape, and the ancient woodland on the slopes to the north-west is likely to possess a degree of natural heritage value. The value of this receptor is therefore judged to be **Medium**.

- *Influence of human activity from adjacent settlement and transport routes:* The busy transport routes to the north-west and south-east of the Site, as well as the adjacent settlement edge and visually dominant structures of the existing Theale Rail Freight Depot, all combine to reduce the tranquillity, condition and scenic value of the Site and its setting. They are identified within the published landscape character assessments as detracting features. The value of this receptor is therefore judged to be **Negligible**.
- *Overall character of the Site:* The Site represents an area of predominantly intensive farmland located between two transport routes and with the settlement edge of Theale comprising residential and industrial areas directly to the east. These elements all combine to reduce the natural heritage and condition of the Site, as well as its tranquillity. It is largely devoid of internal features, and its topography is flat, consistent with the wider floodplain of the Kennet Valley. Outward views are available to the wooded valley slopes, conferring a degree of scenic value, although views north-east along the valley are dominated by tall industrial structures and residential dwellings. There is no recreational access within the Site, and whilst Public Footpath SULH/2/2 follows its north-eastern boundary, this route runs along a residential access road. Taking these factors into account, the overall value of the Site is judged to be **Low**.
- *Overall character of the setting of the Site:* The arable landscape and wooded slopes to the north-west of the Site are located within the North Wessex Downs AONB and are therefore of national value as a landscape resource. To the south-east, the landscape beyond the railway line comprises the naturalistic riparian corridor of the River Kennet, including the historic Kennet and Avon Canal, with rising wooded slopes beyond this. The value of this receptor is therefore judged to be **High**.

Appraisal of Landscape Susceptibility

4.25 With regard to the individual landscape receptors listed above, the susceptibility of each receptor to the type of development envisaged is judged to be as follows:

- *Intensive arable land use with rough grassland:* The type of development envisaged is anticipated to lead to a direct loss of part of the arable land within the Site and the introduction of features of an industrial character. Whilst the Site represents an area of open farmland, this is intensive in character and the presence of the railway line and the industrial and residential areas to the east reduce its rural character and set a precedent for this type of development. The Site does, however, form part of a wider arable complex that characterises the north-western slopes of the Kennet Valley. Taking these factors in balance, the susceptibility of this receptor to the type of change proposed is judged to be **Medium**.

- *Riparian landscape to the south of the railway line:* The riparian landscape at the core of the Kennet Valley is generally in good condition, although frequent traffic on the railway line serves to reduce its tranquillity. The development of a rail yard within the Site is not anticipated to directly affect this landscape, although there is the potential for indirect influences upon its character. The susceptibility of this receptor to the type of change proposed is therefore judged to be **Medium**.
- *Wooded valley slopes providing topographic backdrop:* The rising valley slopes serve to define and contain the Kennet Valley, whilst providing an attractive backdrop to views from the valley bottom. Whilst there is some settlement activity on the south-eastern slopes, this is largely obscured by the strong vegetation and the only property that is clearly visible is Sulhamstead House, a distinctive and attractive historic building. The introduction of a rail yard would not result in direct effects upon the slopes themselves due to geographic separation, but it would have the potential to interfere with the visual relationship between the valley bottom and slopes from certain locations. Taking these factors into account, the susceptibility of this receptor is judged to be **Medium**.
- *Influence of human activity from adjacent settlement and transport routes:* This receptor represents a range of detracting human activities within the setting of the Site, which impact upon its character. The type of development envisaged has the potential to increase this level of disturbance through the extension of the existing industrial facility and the associated activity that would accompany it. The susceptibility of this receptor to the type of change proposed is therefore judged to be **Low**.
- *Overall character of the Site:* The Site represents an area of arable farmland that is in relatively intact condition, and which has been in arable use for at least the last century. The character of the Site is subject to disruption from a range of human activities taking place in its immediate vicinity, including busy transport routes, residential areas and industrial and commercial facilities. The conversion of part of the Site to a rail yard would lead to the direct loss of arable land and the intensification of the human disturbance, although it is clear that this activity is not without precedent. Taking these factors into account, the susceptibility of this receptor is judged to be **Medium**.
- *Overall character of the setting of the Site:* The setting of the Site to the north-west falls within the nationally important North Wessex Downs AONB, although the character of this setting is already influenced by the existing Theale Rail Freight Depot and the busy transport routes of the A4 Bath Road and railway line. The setting of the Site to the north-east is heavily urbanised, whilst the setting to the south-east and south-west is more rural and naturalistic in character, representing the riparian core of the Kennet Valley. Wooded slopes define the valley landscape, screening settlement activity and providing an attractive backdrop. The envisaged development is anticipated to introduce additional visual and audible disturbance into this landscape, although this would build upon an existing precedent. The susceptibility

of the setting of the Site to the type of change proposed is therefore judged to be **High**.

Defining Landscape Sensitivity

4.26 Based upon the judgements of susceptibility and value set out above and in Table 3 at **Appendix 2**, the overall sensitivity of the identified landscape receptors to the type of change proposed is judged to be as follows:

- Intensive arable land use with rough grassland: **Low/Medium sensitivity**.
- Riparian landscape to the south of the railway line: **Medium sensitivity**.
- Wooded valley slopes providing topographic backdrop: **Medium sensitivity**.
- Influence of human activity from adjacent settlement and transport routes: **Low/Negligible sensitivity**.
- Overall character of the Site: **Low/Medium sensitivity**.
- Overall character of the setting of the Site: **High sensitivity**.

5. VISUAL BASELINE

Overview

5.1 On the basis of the baseline assessment and field survey analysis, visual receptors are identified and classified as to their sensitivity to change. This will involve the identification of the visual receptors through:

- Identification of the area in which the development may be visible (the visual envelope).
- Identification of publicly accessible, representative, viewpoints where views will be affected and the nature of those views.
- Identification of any recognised viewpoints (i.e. known viewpoints from a key landmark or local feature).
- Identification of those views which can be considered characteristic of the landscape character area.
- Identification of the different groups of people who may experience views of the development (visual receptors).

Description of Representative Views

5.2 The following sections will describe the view from each visual receptor that has been confirmed through the field assessment. These viewpoints, along with a plan showing their locations, are presented at **Appendix 3**.

5.3 This description will then be used to assess the sensitivity of each receptor, in line with the criteria presented within Table 6 at **Appendix 2**.

Viewpoint 1: Eastern part of the Site, looking north-east

Grid reference: SU 63060 70385

Distance from Site: N/A – within Site

Nature of receptor: Residents of dwellings on Wigmore Lane, users of Public Footpath SULH/2/2 (reverse views)

5.4 This view was taken from the eastern central part of the Site, looking outwards towards Wigmore Lane and the settlement edge of Theale. It forms a reverse view to represent the experience of the residents of the existing dwellings on Wigmore Lane and the public footpath that runs along this route, and it also illustrates the nature of the relationship between the Site and the existing urban edge.

5.5 As the view shows, the dwellings on Wigmore Lane are clearly visible from the Site, with the industrial elements of Theale Rail Freight Depot partially visible above and to the right of the dwellings but filtered by existing vegetation. The Site boundary hedgerow with Wigmore Lane is generally strong and well-managed preventing eye-level views, although some gaps exist as seen towards the right of the view.

5.6 With regard to the residents of the dwellings on Wigmore Lane, these currently experience outward views across the open Site, although these views are restricted to upper storey windows and will also encompass the railway line with its overhead gantries. The sensitivity of this receptor is therefore judged to be **Medium**.

5.7 With regard to the users of Public Footpath SULH/2/2, views into the Site from this route are mainly prevented by the existing dense boundary hedgerow, even in winter months, although glimpsed views are available where gaps exist. Given the sub-urban context of this route and the influence of the palisade security fencing visible to the right of the view, the sensitivity of this receptor is judged to be **Medium**.

Viewpoint 2: South-eastern Site boundary, looking north-west

Grid reference: SU 63202 70016

Distance from Site: N/A – within Site

Nature of receptor: Passengers on railway line

5.8 This view was taken from the central part of the southern Site boundary, looking across the Site towards the wooded north-western valley slopes that fall within the North Wessex Downs AONB. It represents the experience of rail passengers passing the Site, and it also illustrates the relationship of the Site with the AONB.

5.9 In the foreground of the view, the flat, arable character of the Site can be seen. Beyond the Site boundary lies the A4 Bath Road, and the scattered properties that are located along this highway. In the background of the view, the valley slopes provide an elevated, wooded horizon.

5.10 With regard to passengers on the railway line, these will be travelling at speed and views across the Site will be fleeting. This receptor is therefore judged to be of **Low** sensitivity.

Viewpoint 3: South-eastern Site boundary, looking east

Grid reference: SU 62902 69863

Distance from Site: N/A – within Site

Nature of receptor: Residents of dwellings on Wigmore Lane, users of Public Footpath SULH/2/2 (reverse views)

5.11 This view was taken in the southern part of the Site, and it illustrates a more distant view towards the settlement edge of Theale, as well as the featureless arable character of the Site.

5.12 In this view, the industrial structures beyond Wigmore Lane are far more apparent that in Viewpoint 2, as the less acute view angle enables them to be seen above screening vegetation.

5.13 To the left of the view, the dwellings on Wigmore Lane can be seen, and above them the new Theale Fire Station building. The centre of the view is occupied by the structures of Theale Rail Freight Depot, with the lower parts of these buildings obscured by conifer trees.

5.14 The railway line is identifiable to the right of the view by its regular overhead gantries supporting electricity lines, whilst beyond this lies a block of ash dominated woodland associated with the riparian valley core.

5.15 With regard to the residents of the dwellings on Wigmore Lane, these have been found above to be of **Medium** sensitivity and this view supports this judgement.

5.16 With regard to the users of Public Footpath SULH/2/2, these have been found above to be of Medium sensitivity and this view supports this judgement.

Viewpoint 4: North-western Site boundary, looking south-east

Grid reference: SU 62810 70283

Distance from Site: N/A – within Site

Nature of receptor: Users of A4 Bath Road, Residents of dwellings on A4 Bath Road

5.17 This view was taken from the central part of the Site's north-western boundary, between Milehouse Cottages to the west and Gravel Pit Cottages to the east. It represents the experience of users of the A4 Bath Road and those living on the properties along it, and it also illustrates the Site's relationship with the wider valley landscape to the south-east.

5.18 In the foreground of the view lies the flat, arable land of the Site and beyond this, the lack of boundary vegetation to the south-east provides clear views to the railway line, marked by its overhead gantries.

5.19 Beyond the railway line the character of the landscape abruptly changes, to the wet and wooded corridor of the River Kennet. In the background of the view, the wooded slopes of the valley side can be seen, with Sulhamstead House prominent on the upper slopes and all other settlement activity screened by vegetation.

5.20 With regard to the users of the A4 Bath Road, these are likely to be travelling at speed along this busy public highway, with the roadside hedgerow preventing clear views into the Site from most locations. The sensitivity of this receptor is therefore judged to be **Low**.

5.21 With regard to the residents of Milehouse Cottages and Gravel Pit Cottages, these are likely to experience outward views from the rear upper floor windows of their properties across the open arable land of the Site towards the wooded valley bottom and sides, with views from the ground floor screened by garden boundary vegetation. The gantries and traffic on the railway line will provide some disturbance to the view, but otherwise it will be open and rural in nature. Taking these factors into account, the sensitivity of this receptor is judged to be **Medium**.

Viewpoint 5: Public Footpath SULH/2/1, looking north towards the Site

Grid reference: SU 63191 69882

Distance from Site: 90m

Nature of receptor: Users of Public Footpath SULH/2/1

5.22 This view was taken from Public Footpath SULH/2/1 as it follows the north bank of the River Kennet, to the south of the Site. Views towards the Site are generally filtered by trees along this route, but in this location an area of open rough grassland permits views towards the Site.

5.23 The railway line and its associated infrastructure are dominant features within this view, with the Site located directly behind it. To the right of the view, the ribbon development along Wigmore Lane can be seen. The background of the view comprises woodland, with the valley slopes to the left of the view and a block of woodland on the valley floor to the right.

5.24 With regard to the users of Public Footpath SULH/2/1, these will be seeking a recreational experience in the countryside, although the scenic quality and tranquillity of this experience will be negatively affected by the railway line. As such, this receptor is judged to be of **Medium** sensitivity.

Viewpoint 6: Public Footpath SULH/1/2 at Sulhamstead Swing Bridge, looking north-west towards the Site

Grid reference: SU 63409 69732

Distance from Site: 338m

Nature of receptor: Users of Public Footpath SULH/1/2, users of Kennet and Avon Canal

5.25 This view was taken from Public Footpath SULH/1/2 on the southern towpath of the Kennet and Avon Canal, next to Sulhamstead Swing Bridge. From this location, views towards the Site are heavily filtered by riparian vegetation to the extent that the Site is barely visible.

5.26 With regard to the users of Public Footpath SULH/1/2, these will be seeking an attractive recreational experience in the countryside and as such, they are judged to be of **High** sensitivity.

5.27 With regard to users of the Kennet and Avon Canal, these are likely to be recreational boaters enjoying the rural setting of the waterway and they are therefore judged to be of **High** sensitivity.

Viewpoint 7: Public Footpath SULH/1/2, looking north towards the Site

Grid reference: SU 63022 69448

Distance from Site: 312m

Nature of receptor: Users of Public Footpath SULH/1/2

5.28 This view was taken from Public Footpath SULH/1/2 on the towpath of the Kennet and Avon Canal, directly to the south of the Site at a point at which the absence of tall bankside vegetation permits views towards the Site and the countryside beyond.

5.29 For the majority of the view, a mature hedgerow prevents views to the ground level views of the Site, but there is a short stretch to the right where this vegetation is not present.

5.30 The railway line is clearly identifiable in the foreground of the Site, identifiable by its overhead gantries, and the properties on the southern side of the A4 Bath Road can be seen beyond the Site. The backdrop of the view is formed by the wooded north-western Kennet Valley slopes, and the distinctive Englefield House can be seen on the valley side towards the right of the view.

5.31 With regard to the users of Public Footpath SULH/1/2, these have been judged above to be of **High** sensitivity and this viewpoint supports this judgement.

5.32 With regard to the users of the Kennet and Avon Canal, these have been judged above to be of **High** sensitivity and this viewpoint supports this judgement.

Viewpoint 8: Public Bridleway ENGL/6/2, looking south-east towards the Site

Grid reference: SU 61227 70710

Distance from Site: 1,534m

Nature of receptor: Users of Public Bridleway ENGL/6/2

5.33 This view was taken from Public Bridleway ENGL/6/2, which passes along the upper edge of the north-western valley slopes within the North Wessex Downs AONB. The wooded nature of the slopes is such that this viewpoint location is the only point from which the Site is visible, due to vegetation clearance along the power line corridor.

5.34 The view is heavily framed by the surrounding woodland, and is generally aligned towards the eastern part of the Site. A timber pole supporting the power lines is present in the centre of the view corridor, dividing the framed view. The farmhouse at Mayridge Farm can be seen in the middle ground, with a block of coniferous woodland on the valley floor behind it.

5.35 The existing dwellings along Wigmore Lane are clearly visible in the background due to their brightly rendered finishes, with the large industrial structures of Theale Rail Freight Depot visible behind them, but partly screened by woodland. Beyond this, the south-eastern valley slopes provide a wooded horizon.

5.36 With regard to the users of Public Bridleway ENGL/6/2, these will be seeking an attractive recreational experience within the North Wessex Downs AONB and therefore they are judged to be of **Very High** sensitivity.

Viewpoint 9: Common Hill at Parker's Corner, looking south towards the Site

Grid reference: SU 62319 71248

Distance from Site: 1,000m

Nature of receptor: Users of Common Hill

5.37 This view was taken from Parker's Corner within the North Wessex Downs AONB, adjacent to an entrance to the Grade II Registered park surrounding Englefield House. It represents the experience of those travelling south on Common Hill, and it also illustrates the relationship between the Site and historic park.

5.38 The traditional estate boundary wall can be seen to the left of the view, with rough grassland and woodland within the park. In the middle ground, a well-managed hedgerow serves to screen the Site at ground level from this location, and this hedgerow is present for the majority of the length of Common Hill. Beyond the hedgerow in the left hand side of the view, a substantial block of coniferous woodland entirely screens views towards the Site and the existing Theale Rail Freight Depot.

5.39 To the right of the view, the junction of Common Hill and Bostock Lane sits in the foreground. Beyond the roadside hedge, the south-eastern valley slopes provide a distant wooded horizon.

5.40 With regard to the users of Common Hill, this is an attractive rural lane descending the wooded valley slopes and emerging onto the valley floor on the approach to Theale. Users are likely to be travelling at vehicular speeds and the strong hedgerows flanking the route mean that attention is likely to be focussed along the road. The sensitivity of this receptor is therefore judged to be **Medium**.

Viewpoint 10: Bostock Lane, looking south-east towards the Site

Grid reference: SU 62308 70558

Distance from Site: 573m

Nature of receptor: Users of Bostock Lane

5.41 This view was taken from an agricultural gateway on Bostock Lane within the North Wessex Downs AONB, which is the only location from which eye level views towards the Site can be gained from this public highway. It represents the experience of the users of Bostock Lane, and it illustrates the relationship between the arable valley floor land within the AONB and the Site.

5.42 As the view shows, the Site is seen in context with a range of built elements, including Theale Fire Station, the dwellings on Wigmore Lane, Theale Rail Freight Depot and Gravel Pit Cottages. Sulhamstead House is also present on the opposing valley slopes, and the A4 Bath Road can be identified by lighting columns and passing traffic.

5.43 With regard to the users of Bostock Lane, this is a relatively tranquil rural highway that is contained by hedgerows. Users are likely to be travelling at vehicular speeds due to a lack of footway and narrow verges. The sensitivity of this receptor is therefore judged to be **Medium**.

Summary of Visual Environment

5.44 The visual environment of the Site is defined by its valley location, and surrounding vegetation and structures.

5.45 Whilst the Site is located within a level valley bottom landscape with facing valley side, its visual envelope is remarkably limited, as demonstrated by the viewpoints. This is because of the combined effect of valley floor vegetation, including woodland blocks, riparian woodland and well managed hedgerows, existing structures directly to the north-east, and the wooded nature of the valley slopes, preventing meaningful views.

5.46 The only notable and sensitive views of the Site are from the public footpaths and residential dwellings within its immediate vicinity, in particular the routes following the River Kennet and Kennet and Avon Canal to the south. These views are intermittent, with riparian trees and other vegetation filtering views towards the Site for much of these routes.

6. THE PROPOSALS

Overview

6.1 To facilitate understanding of the proposals and initial assessment for the purposes of the LPR consultation response an initial illustrative option of one way in which the proposed IRFI could come forward has been developed by Intermodality (appointed rail freight consultant).

6.2 The illustrative layout for the IRFI, and envisaged development at this stage, broadly comprises the following elements:

- A level area of hardstanding enclosed by securing fencing to prevent unauthorised access (concrete pad circa 700m in length and minimum 30m in width);
- Main line access which could be provided via the existing complex of freight sidings serving the Wigmore Lane site immediately to the east;
- Highways access direct from the A4 into the site from the north;
- Sidings within the site capable of accommodating 1-2 x 775m length trains simultaneously;
- Portable modular buildings providing gatehouse and ancillary office/amenities for staff and visitors;
- Container handling equipment, typically “reachstacker” units;
- Temporary container storage stacking up to 3-4 high (9-12m); and
- Lighting columns, typically up to 18m in height around the perimeter, with directional lighting to minimise light spill onto adjacent areas.

Recommended Landscape Mitigation Measures

6.3 Drawing upon the baseline landscape and visual analysis undertaken in the preceding sections, it is recommended that the following suite of measures be considered as part of the development design from the outset to avoid any significant impacts upon the identified receptors, and in particular the North Wessex Downs AONB.

- Creation of a mosaic of wet woodland, wet meadow and open water habitat in the north-western part of the Site to protect the setting of the AONB. The ground can be remodelled to excavate ponds and use the resulting spoil to create raised planting areas to reduce the effects of seasonal inundation on trees and to provide additional height for visual mitigation. Trees and shrub species selection should be tolerant of flooding and reflective of the adjacent riparian corridor, such as willow, alder and aspen. Coppicing can be used to improve overall structural diversity and to increase screening and biodiversity value. Consideration should be given to the establishment of this area ahead of development to avoid construction and completion period impacts upon the character of the AONB.
- Careful consideration of need to Limit the container stacks to a 12m height ceiling, to enable the planted woodland and other features within the landscape to fully screen these elements. This approximately equates to four stacked containers. It is

acknowledged this may require an extended concrete pad area to accommodate storage capacity, but this is preferable to additional height.

- Careful consideration of lighting design to minimise the effects of lighting columns and night time light shed upon the character of the AONB countryside.
- Retention and ongoing management of all existing Site boundary vegetation.

7. APPRAISAL OF POTENTIAL EFFECTS AND RECOMMENDATIONS

Landscape Character Appraisal

Overview and Summary of Baseline Sensitivity

7.1 This section will consider the likely implications of the envisaged development of the Site upon the landscape receptors identified above, taking into account the suite of mitigation measures that are recommended to be considered at detailed development design stage to address these sensitivities.

7.2 For reference, the defining characteristics of the Site and its setting which were determined to be landscape receptors, and their respective sensitivities are as follows:

- Intensive arable land use with rough grassland: **Low/Medium sensitivity**.
- Riparian landscape to the south of the railway line: **Medium sensitivity**.
- Wooded valley slopes providing topographic backdrop: **Medium sensitivity**.
- Influence of human activity from adjacent settlement and transport routes: **Low/Negligible sensitivity**.
- Overall character of the Site: **Low/Medium sensitivity**.
- Overall character of the setting of the Site: **High sensitivity**.

Appraisal of Potential Landscape Effects

7.3 The baseline landscape appraisal has determined that the most sensitive receptor relates to the relationship between the Site and its landscape setting, and in particular the North Wessex Downs AONB.

7.4 The AONB, which occupies the land to the north-west of the A4 Bath Road, is a nationally important landscape with strong policy requirements for the protection, conservation and enhancement of its Special Qualities. The logical location of the built components within the south-eastern part of the Site naturally locates them as far as possible from the AONB boundary, and additionally leaves significant opportunity for landscape mitigation.

7.5 The proposal to establish a substantial area of wet woodland, wet meadow and open water will serve to protect the character of the AONB through the visual separation of the proposed IRFI from the AONB boundary, and the naturally fast-growing nature of wet woodland species will achieve this within a relatively short timescale. Furthermore, this will also achieve the separation of the AONB from other components the currently impact upon its character such as the railway line and dwellings on Wigmore Lane, essentially enhancing its character and Special Quality. Additional environmental benefits are also likely to be derived from this land use change, such as a substantial gain in the Site’s biodiversity value, an improvement in its flood storage capacity, localised air quality improvements, and an improvement in its soil condition and retention.

7.6 It is therefore anticipated that the development, taken as a whole, would result in an overall improvement in the Site’s contribution to the conservation of the Special Qualities of the AONB and therefore policy requirements would be met.

7.7 The Site itself has been deemed to be of Low/Medium landscape sensitivity, owing to its intensive arable land use and external influences. Whilst the envisaged development would lead to the direct loss of arable land and the introduction of additional noise and movement, the recommended environmental mitigation scheme including significant planting would result in substantial environmental gain, through the conversion of arable land to a mosaic of priority habitats that reflect the character of the adjacent corridor of the River Kennet. This land use change would also improve the aesthetic value of the Site, introducing structural diversity, seasonal variation and a wider range of sensory stimuli.

7.8 It is therefore considered that the envisaged development would result in an overall improvement in the existing character of the Site, with the environmental improvements outweighing the anticipated negative landscape effects.

7.9 The remaining landscape receptors of Medium sensitivity relate to the relationship of the Site with the adjacent floodplain and wider valley slopes. As noted above, the recommended habitat creation within the Site would reflect and expand upon the character of the adjacent riparian area, although it is noted that the developed area would occur in the intervening space. With regard to the valley slopes, it has been identified above that the woodland that cloaks these areas serves to control outward views to the extent that the existing Theale Rail Freight Depot has a limited effect upon their character and it is therefore anticipated that the same principle will apply to the proposed development.

7.10 It is therefore concluded that whilst the envisaged development would introduce a degree of visual and audible disturbance to its receiving landscape, the existing railway line and Rail Freight Depot set a precedent for this form of development and the mitigation scheme recommended as part of the development as currently envisaged would serve to reduce all potential adverse landscape impacts to a non-significant level, including upon the North Wessex Downs AONB. Furthermore, the strength of the mitigation scheme which could be achieved in comparison with the development proposals is such that it is anticipated to result in an overall improvement in the Site's character and relationship with its landscape setting.

Visual Appraisal

Overview and Summary of Baseline Sensitivity

7.11 This section will consider the likely implications of the development of the Site upon the visual receptors identified above, taking into account the suite of mitigation measures that have been recommended to address these sensitivities:

7.12 For reference, the confirmed visual receptors and their respective sensitivities are as follows:

- Residents of dwellings on Wigmore Lane: **Medium sensitivity**.
- Users of Public Footpath SULH/2/2: **Medium sensitivity**.
- Passengers on the railway line: **Low sensitivity**.
- Users of A4 Bath Road: **Low sensitivity**.
- Residents of dwellings on A4 Bath Road: **Medium sensitivity**.
- Users of Public Footpath SULH/2/1: **Medium sensitivity**.

- Users of Public Footpath SULH/1/2: **High sensitivity**.
- Users of the Kennet and Avon Canal: **High sensitivity**.
- Users of Public Bridleway ENGL/6/2: **Very High sensitivity**.
- Users of Common Hill: **Medium sensitivity**.
- Users of Bostock Lane: **Medium sensitivity**.

Occupants of private dwellings

7.13 The baseline appraisal identified a number of private dwellings within the immediate setting of the Site from which views of the development could potentially be possible. All of these properties were subject to boundary screening of their lower storey windows and therefore their sensitivity was judged to be Medium.

7.14 With regard to those properties to the north-east, along Wigmore Lane, the position of these properties in the northern part of the lane means that views towards the development site are likely to be oblique. In any case, the recommended woodland creation within the north-western part of the Site is anticipated to prevent any significant visibility of the proposed development, whilst also introducing attractive habitat areas into the outward views. The impact upon these residents is therefore considered to be unlikely to be significant.

7.15 With regard to those properties along the A4 Bath Road, the rear aspects of these dwellings directly face the development area, giving rise to the potential for clear views from upper floor windows. The recommended woodland planting is anticipated to be effective such that it is considered unlikely that the scheme as a whole will result in a deterioration of these views, and therefore significant adverse effects are not anticipated.

Public Right of Way and waterway users

7.16 The most sensitive receptor within this category was identified as the users of Public Bridleway ENGL/6/2, who were considered to be of Very High sensitivity because of the rural character of the route and its position within the North Wessex Downs AONB. The field survey revealed, however, that the intervening woodland on the valley slopes is sufficiently dense even in winter that the only available view towards the Site is the glimpsed view along a power line corridor as represented by Viewpoint 8. The fleeting nature of this view, combined with the recommended mitigation scheme, is such that the envisaged development is anticipated to be barely perceptible from this route, and no significant effect is anticipated.

7.17 A number of receptors of High and Medium sensitivity were identified to the south of the Site, associated with the recreational routes following the River Kennet and Kennet and Avon Canal, as well as the canal itself. The requirement of the sidings directly adjacent to the existing railway line means that it is not practically possible to achieve intervening planting between these routes and the proposed sidings and container stacks, although some visual precedent is set by the existing railway line and the embanked nature of the railway line is such that the envisaged sidings and concrete pad are not likely to be visible. Nonetheless, it is anticipated that the envisaged development is likely to result in significant adverse effects upon the users of these routes, and these should be considered in the overall planning balance against the relative merits of the development.

7.18 The users of Public Footpath SULH/2/2, which runs along Wigmore Lane, are already influenced by a number of urbanising components, including the existing Theale Rail Freight Depot and railway line. The envisaged development is anticipated to introduce new components within close proximity to this route, although they would remain separated from it by the existing hedgerow along Wigmore Lane, and the recommended new woodland planting would serve to screen views from much of the route. It is therefore considered that there would not be significant adverse effects upon the users of this route.

Users of transport routes

7.19 The most sensitive receptors within this category were identified to be the users of the rural lanes running through the AONB countryside to the north-west of the Site. The strength of the roadside hedgerows flanking these routes is such that the only clear views towards the development site are anticipated to be fleeting glimpses through agricultural gateways. The recommended mitigation scheme is anticipated to substantially screen the developed components from these views, and it is also likely that it will also screen additional urbanising components such as residential dwellings and the overhead gantries of the railway line, resulting in an overall improvement to the views.

7.20 With regard to the users of the A4 Bath Road and railway line, these were found to be of Low sensitivity and therefore significant adverse effects are considered to be unlikely. In the case of the users of Bath Road, the intervening mitigation planting is anticipated to result in an improvement to the setting of the public highway.

8. SUMMARY AND CONCLUSIONS

Landscape Summary

8.1 The baseline landscape appraisal found that the most sensitive receptor is the setting of the Site, and in particular the countryside to the north-west that falls within the North Wessex Downs AONB, a nationally important landscape. Other sensitive receptors related to the Site's relationship with specific aspects of its landscape setting, namely the riparian core of the Kennet Valley and the wooded valley slopes. The Site itself, as an area of intensive arable land with existing disturbance within its immediate setting, was determined to be of relatively low sensitivity.

8.2 The robust mitigation scheme recommended to support the envisaged development, principally comprising the retention of existing boundary vegetation and the creation of a substantial area of wet woodland, wet meadow and open water habitat between the developed area and AONB boundary, together with further consideration of heights at which containers would be stacked and lighting, is anticipated to prevent any significant adverse effects upon the identified receptors. Furthermore, the positive contribution of the proposed habitat mosaic to the character of the surrounding countryside is such that the envisaged development as a whole is anticipated to result in an improvement to the character of the Site and the setting and Special Qualities of the North Wessex Downs AONB.

Visual Summary

8.3 The visual appraisal found that the Site occupies a relatively restricted visual envelope, on account of the containment provided by the local valley topography and the strength of existing vegetation (woodland, riparian trees and hedgerows) within its landscape setting.

8.4 The most sensitive visual receptor was found to be the users of Public Rights of Way, and whilst no significant effects are anticipated upon receptors within the North Wessex Downs AONB, some unavoidable adverse effects are anticipated upon the users of routes to the south of the Site where a lack of vegetation permits inward views.

8.5 A number of existing residential properties located immediately adjacent to the Site were found to experience inward views from upper storey windows, although the recommended mitigation scheme is anticipated to reduce any effects to a non-significant level.

8.6 In terms of local transport routes, some fleeting glimpses towards the Site are anticipated from rural lanes within the North Wessex Downs AONB, although the recommended mitigation scheme is anticipated to intercept these views, preventing significant adverse impacts. In addition, the mitigation scheme is anticipated to result in an overall improvement to the outlook from the A4 Bath Road for the users of this public highway.

Conclusion

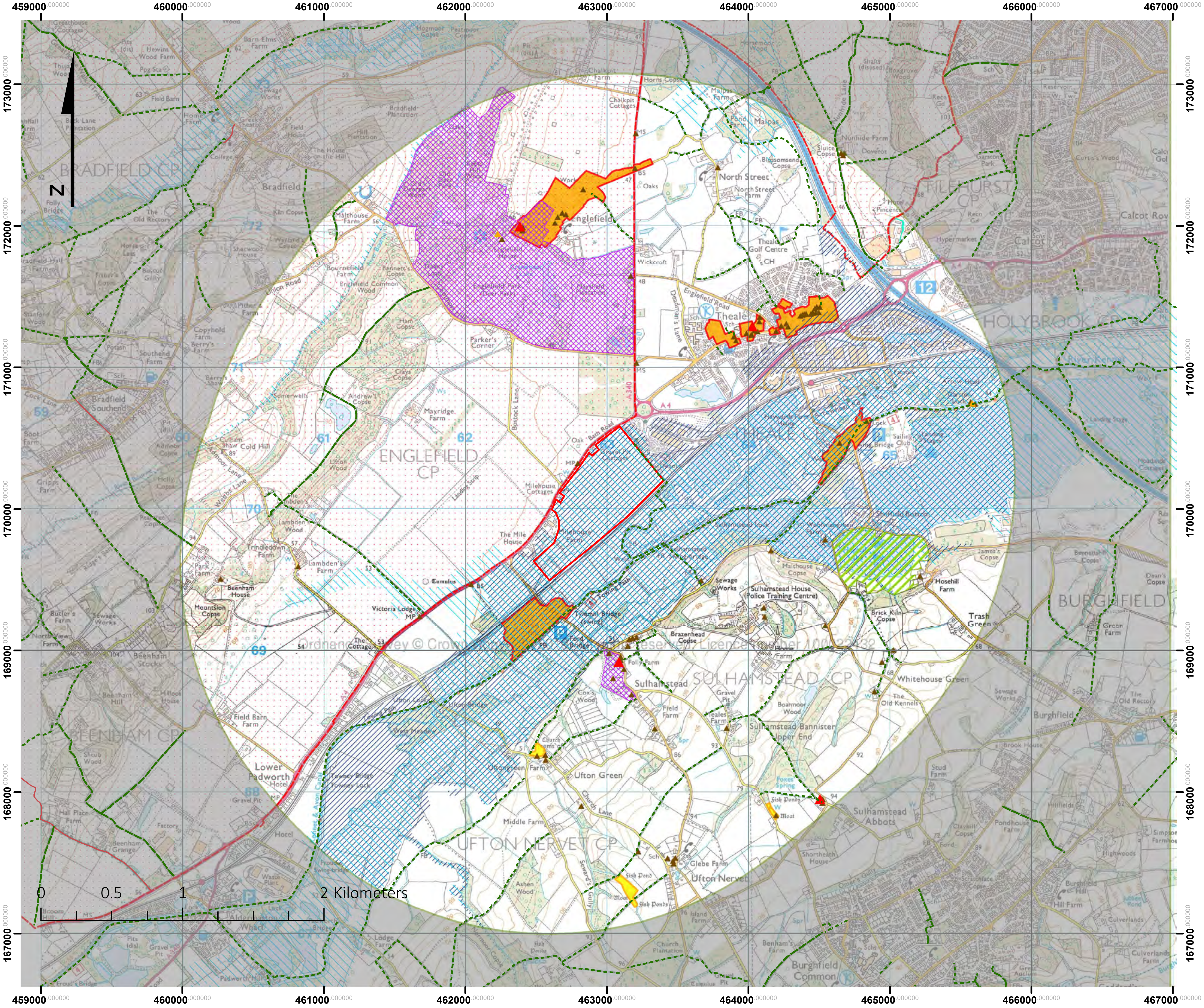
8.7 It is the conclusion of this Landscape and Visual Appraisal that the envisaged Intermodal Rail Freight Interchange located to the south-eastern part of the Site could be acceptable in the context of landscape and visual grounds if supported by an appropriate and robust habitat creation and mitigation scheme for which key recommendations have been made. In particular, no adverse impacts are anticipated upon the character and Special Qualities of the North Wessex Downs AONB, and the recommended mitigation scheme has the potential to result in an improvement to the setting of this nationally important landscape.

8.8 The only significant adverse impacts anticipated are upon the users of recreational routes directly to the south of the Site, which cannot be mitigated within the Site for practical reasons, and these should be considered against the overall merits of the development.

9. APPENDICES

Appendix 1: Plans

Baseline Study Plan Ref. 22-1873



LEGEND:

- Site Boundary
- WIGMORE_LANE_STUDY_AREA
- Area of Outstanding Natural Beauty
- Conservation Area
- Flood Zone 2
- Flood Zone 3
- Local Nature Reserve
- Registered Park and Garden
- Scheduled Monument
- Site of Special Scientific Interest

Listed Buildings:

- Grade I
- Grade II*
- Grade II

Public Rights of Way:

- Bridleway
- Footpath
- Restricted Byway

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Leading solutions for the natural environment

TITLE: Baseline Study	
PROJECT/SITE: Potential Rail Project.Theale	
CLIENT: Englefield Estate	
MAP REF: 3959/07/22-1873	
VERSION: v2	
DATE: 01/03/23	SCALE: 1:25,000 @A3
APPROVED BY: ID	PRODUCED BY: SM

The Park
North Aston
Oxfordshire
OX25 6HL
01869 340342

7 - 8 Melbourne House
Corbygate Business Park
Weldon, Corby
Northamptonshire NN17 5JG
01536 408840

www.nicholsonsgb.com

Appendix 2: Nicholsons Assessment Methodology

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Landscape & Visual Impact Assessment Methodology

2021

Northamptonshire Office
7-8 Melbourne House
Corbygate Business Park
Weldon
Northamptonshire
NN17 5JG
01536 408 840
contact@nicholsonsgb.com

Oxfordshire Office
The Park
North Aston
Oxfordshire
OX25 6HL

01869 340342
contact@nicholsonsgb.com

www.nicholsonsgb.com

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Table of Contents

1. INTRODUCTION

1.1. This methodology is derived from the Guidelines for Landscape and Visual Impact Assessment Third Edition (2013) (GLVIA 3), jointly published by the Landscape Institute and the Institute of Environmental Management and Assessment. This publication gives guidance on carrying out a Landscape and Visual Impact Assessment (LVIA), either as a standalone appraisal or part of an Environmental Impact Assessment (EIA).

1.2. In the context of this methodology, the term “landscape” should be taken to include townscape and seascape considerations where relevant.

2. DEFINING THE STUDY AREA

2.1. Prior to any assessment being undertaken, it is important to consider the scope and extent of the study area. Typically the study area will be defined through the preparation and assessment of a Zone of Theoretical Visibility (ZTV) and/ or desk based study and site assessment. This process will allow the identification of a delimited visual envelope, one which is defined by the prevailing topography, vegetation and built form.

2.2. A landscape study may extend beyond a relatively confined visual envelope, where there is clear evidence that the site is part of, or intrinsically linked to a wider character area. The detail of such studies will be appropriate to the scale of the development, for instance where tall structures such as wind turbines may have an influence over a larger distance, the assessment will take this into account.

3. DESCRIPTION OF EFFECTS

3.1. The level of effect on both landscape and visual receptors should be identified in respect of the different components of the proposed development. In order to assess the significance of the effect upon a receiving environment, it is necessary to consider the effect magnitude, i.e. the degree of change, together with the sensitivity of the receptor.

3.2. This assessment will identify whether the effects are:

- Adverse, Beneficial or Neutral - Adverse effects would typically occur where there is loss of landscape elements, or the proposal detracts from the recognised landscape quality and character of an area or view. Neutral effects would include changes that neither add to nor detract from the quality and character of an area or view, but which nonetheless result in an identifiable change. Beneficial effects would typically occur where a development could positively contribute to the landscape character or view, for example through the replacement of incongruous elements with more appropriate uses.
- Direct or Indirect – A direct effect will be one where a development will affect a view or the character of an area, either beneficially or adversely. An indirect effect will occur as a result of associated development i.e. a development may result in an increase of traffic on a particular route.
- Short, Medium or Long Term – this relates to the expected duration and magnitude of a development. Within this assessment the potential effects are assessed during the Construction Phase, then at Years 1 and 15, of the Operational Phase.
- Reversible or Irreversible – this is the assessment of whether the resulting effect of a development can be mitigated or not, and the effectiveness of the proposed mitigation at reducing the effect.

Significance of Effects (EIA only)

3.3. A final judgment is then made as to whether the identified effect is likely to be significant, as required by the Environmental Impact Assessment Regulations 2011. In summarising the effects consideration should be given to the key issues, and an identification of the scope for reducing any negative/adverse effects will be undertaken. Mitigation measures should be identified in order to reduce, where possible, the final judgement on the significance of any residual adverse effects in the long term.

4. METHODOLOGY FOR ASSESSING LANDSCAPE EFFECTS

Identifying and Assessing the Landscape Baseline

4.1. In order to accurately define the quality and character of the receiving landscaping it is important to identify and assess those landscape receptors and/or features that form part of the landscape and help to characterise it.

4.2. The identification of these features will be informed through:

- Review of Ordnance Survey mapping, historical map data and aerial and other remote sensing imagery where appropriate;
- Review of relevant published landscape character assessment at national, regional and local levels as appropriate;
- Identification of landscape-based designations;
- Identification and description of individual elements, features, aesthetic and perceptual aspects of the landscape which contribute to its character;
- Assessment of the general condition of the receiving landscape;
- Assessment of the relative value of the receiving landscape (see below);
- Judgement of the susceptibility of the receiving landscape to a change of the type proposed (see below).

4.3. Where appropriate, and where the published character assessments do not reflect the specific characteristics of the receiving environment at a relevant scale, the LVIA will identify local landscape character areas for assessment. These character areas are determined through the site assessment, and will make reference to published landscape character assessments and the application of sound professional judgement based upon the evidence at hand.

4.4. Criteria for the selection of local landscape character areas within the likely study area include:

- Proximity and influence on the site;
- Physical connections with the site (for example public rights of way, roads, vegetation and vegetation belts); and
- Visual connection with the site (particularly where the view is a key characteristic of the local area).

Assessing Landscape Sensitivity

4.5. The sensitivity of the landscape is determined by combining the value of the landscape with its susceptibility to the type of change proposed.

4.6. **Susceptibility** is defined as the inherent sensitivity of the landscape and its ability to accommodate a particular change, and can apply to specific landscape features, the character of the site as a whole, or the character of the surrounding landscape, and other Landscape Character Areas defined within the published assessments or similar.

Table 1: Landscape Susceptibility to Change

Susceptibility	Assessment Criteria
Very High	• No or very few detracting features; • Townscapes are likely to include a high proportion of historic assets; • Typical examples may be nationally designated e.g. World Heritage Sites, National Parks, Heritage Coasts, AONB's etc.
High	• Landscapes would be considered to have a high degree of intimacy, generally strong landscape structure, a high level of intactness and contain features worthy of protection; • Few detracting features; • Has some potential to accommodate change which is in keeping with the positive aspects of local character. • Townscapes may include a high proportion of historic assets; • Typical examples may be of Regional or County importance e.g. within the setting of National Parks, AONB's, Conservation Areas etc.
Medium	• Landscapes would be considered of good landscape structure, with some detracting features or evidence of recent change. • Townscapes may include a proportion of historic assets or of cultural value locally. • Demonstrates some potential to accommodate change through appropriate mitigation.
Low	• Landscapes that contain strong evidence of previous landscape change and little representation of their former character; • Degraded landscape structure, characteristic patterns and combinations of landform and land cover are compromised by land use.
Negligible	• Typical landscapes are likely to be heavily degraded, of weak landscape structure, support intensive land uses, and require landscape restoration.

Landscape Value

4.7. The value of a landscape is derived from the value or importance given to the area by society, statutory bodies, local and national government, local communities and society at large. National designations include National Parks and Areas of Outstanding Natural Beauty.

4.8. At a local level, Local Planning Authorities may have local landscape designations in their Local Plans. However, GLVIA 3 notes that the fact that an area is not covered by such a designation does not mean that it is not valued and in this case reference should be made to published character assessments, local planning policies and guidance. GLVIA 3 also notes that there should not be an over-reliance on designations, favouring a process of assessment and the application of sound, evidence-based professional judgement.

4.9. The National Planning Policy Framework (NPPF) however, places greater weight on the importance of National level designations such as AONB's and National Parks. At a local level, any assessment of local value should be supported by a prescriptive, criteria based, NPPF compliant assessment (NPPF para 170). In the absence of such an assessment it is the role of the professional as part of the LVIA process to objectively assess the value of the receiving landscape in relation to a set of appropriate criteria, such as those suggested in Box 5.1 of GLVIA3.

Table 2: Landscape Value

Value	Typical Criteria	Typical Scale	Examples
Very High	Landscape is recognised as an area of great importance, quality and rarity. Almost always recognised by national or international designation.	International National	World Heritage Sites National Parks Areas of Outstanding Natural Beauty
High	Landscape is recognised as being of high quality, importance and rarity, representing a number of recognised value criteria. Often identified through local landscape designations.	Regional Local	Wild or picturesque landscapes. Settings of designated landscapes. Areas whose value is expressed through published assessments or cultural celebration, e.g. art, history or literature.
Medium	Landscape is recognised as being of medium quality, importance and rarity. Typically undesignated but value may be expressed through published assessment. Represents some recognised value criteria.	Regional Local	Generally intact rural landscapes. Landscapes that are representative of published character.
Low	Landscape is of low quality, importance and rarity. Typically degraded with detracting features and in poor condition, but with some potential for restoration or improvement.	Local	Intensive arable landscapes. Landscapes with strong human influence or intensive management, e.g. golf courses.
Negligible	Landscape is of very low quality, importance and rarity. Typically degraded with many detracting features, and poorly managed. Change is likely to improve these landscapes.	Site	Unrestored mineral workings. Industrial landscapes.

Table 3: Overall Landscape Sensitivity

Vs. Identified Susceptibility / Identified Landscape Value	Very High Value	High Value	Medium Value	Low Value	Very Low Value
Very High Susceptibility	Very High	High	High / Medium	X	X
High Susceptibility	High	High	Medium / High	Medium / Low	X
Medium Susceptibility	High / Medium	Medium / High	Medium	Low / Medium	Low
Low Susceptibility	X	Medium / Low	Low / Medium	Low	Low / Negligible
Negligible Susceptibility	X	X	Low	Low / Negligible	Negligible

Sensitivity

Landscape Magnitude of Change

4.10. The magnitude of change relates to the degree in which proposed development alters the fabric of the receiving landscape. This change is characterised as high, medium, low, negligible or none.

Table 4: Magnitude to Change to Landscape Receptors

Magnitude	Definition
High	Change resulting in a high degree of deterioration or improvement, or introduction of prominent new elements that are considered to fundamentally change the character of a landscape.
Medium	Change resulting in a moderate degree of deterioration or improvement, or constitutes a perceptible change within a landscape.
Low	Change resulting in a low degree of deterioration or improvement to a landscape or view, or constitutes only a minor component within a landscape.
Negligible	Change resulting in a barely perceptible degree of deterioration or improvement to a landscape.

4.11. When assessing the magnitude of change consideration will be given to:

- **The size or scale of the development:** the extent of the change to existing landscape receptors is considered, with weight given to the proportion of the total extent of the site that this represents and the contribution that the receptor makes to the overall character of the landscape;
- **The extent of the development –** consideration is given to the geographical area within which the landscape effects may be perceived. This is assessed at:
  - Site level;
  - Immediate setting;
  - At the scale of the local landscape character area; and
  - On a larger scale affecting a number of local landscape areas or National Character Areas (if required).
- **The permanency of the development:** consideration is given to whether the proposals will result in a long term or short term effect; whether the development is reversible or changes the status of the site (for example to previously developed land); and whether for example restoration to baseline conditions is envisaged at the end of this term;
- **The change to the key characteristics of the receiving landscape:** taking into account:
  - Changes to the appearance of the site;
  - Changes to identified landscape features;
  - Changes to key or special qualities or characteristics of the landscape; and
  - Changes in the landscape setting of heritage assets and landscape-related designations.

- **The proposed mitigation:** consideration should be given to the extent to which the development effects can be mitigated, through positive design, the provision of replacement or enhanced landscape features, or limiting effects on the wider landscape.

Significance of Landscape Effect

4.12. The level of effect upon the receptor should be identified in respect of the different components of the proposed development. In order to assess the significance of the effect on the receiving environment, it is necessary to consider the magnitude, i.e. the degree of change, together with the sensitivity of each identified receptor.

4.13. This will identify whether the effects are:

- **Adverse or Beneficial** - beneficial effects would typically occur where a development could positively contribute to the landscape character. Neutral effects would include changes that neither add nor detract from the quality and character of an area or view. Adverse effects would typically occur where there is loss of characteristic landscape elements, or the proposal detracts from the landscape quality and character of an area or view;
- **Direct or Indirect** – A direct effect is where a development will affect the character of an area either beneficially or adversely. An indirect effect would be associated with a development, i.e. an increase of traffic on a particular route.
- **Short, Medium or Long Term** – this relates to the expected duration and magnitude of a development. Within this assessment the potential effects are assessed during the construction phase, then at years 1 and 10 following completion of the development.

- **Reversible or Irreversible** – This is the judgement of whether the resulting effect of a development can be mitigated or not, and whether the result of the mitigation is beneficial.

4.14. The significance of landscape effect is determined by cross-referencing the sensitivity of the receptor with the magnitude of change expected as a result of the development. Table 5 below outlines how the assessment of significance is undertaken.

Table 5: Landscape Significance of Effect*

Vs.	Sensitivity of Landscape Receptor					
Magnitude of Change		**Very High**	**High**	**Medium**	**Low**	**Negligible**
	High	Substantial	Major	Major / Moderate	Moderate	Moderate / Minor
	Medium	Major	Major / Moderate	Moderate	Moderate / Minor	Minor
	Low	Major / Moderate	Moderate	Moderate / Minor	Minor	Negligible
	Negligible	Moderate	Moderate / Minor	Minor	Negligible	Negligible / None
	Significance of Landscape Effect					

* To be read in conjunction with Table 9 below.

5. METHODOLOGY FOR THE ASSESSMENT OF VISUAL EFFECTS

5.1. As set out within section 2 above, the visual baseline is identified through a process of desk study, Zone of Theoretical Visibility (ZTV), the extent of the visual envelope is then defined and tested through field assessment.

5.2. On the basis of the baseline assessment and field survey analysis, visual receptors are identified and classified as to their sensitivity to change. This will involve the identification of the visual receptors through:

- Identification of the area in which the development may be visible (the visual envelope;
- Identification of publicly accessible, representative, viewpoints where views will be affected and the nature of those views;
- Identification of any recognised viewpoints (i.e. known viewpoints from a key landmark or local feature);
- Identification of those views which can be considered characteristic of the landscape character area;
- Identification of the different groups of people who may experience views of the development.

Sensitivity of Visual Receptors

5.3. The sensitivity of a visual receptor should be established. This sensitivity will be dependent on the value attached to the view and the susceptibility of the visual receptor(s) to a change of the type proposed. This may be linked to the type of activity that the person is engaged in – for example someone walking in the countryside would be more sensitive to a change to the view than a person working in an office.

Table 6: Visual Sensitivity Thresholds

Visual Sensitivity	Threshold Definition
Very High	Viewers on public rights of way or accessible land whose prime focus is on the high quality of the surrounding landscape, and who are often very aware of its value. Examples include viewers within nationally designated landscapes such as National Parks or AONB's and users of National Trails.
High	Viewers on public rights of way whose prime focus is on the landscape around, or occupiers of residential properties with primary views affected by the development. Examples include viewers within regional/local landscape designations, users of Long Distance Routes or Sustrans cycle routes, or the setting of a listed building.
Medium	Viewers engaged in outdoor recreation with some appreciation of the landscape, occupiers of residential properties with oblique views affected by the development, and users of rural lanes and roads. Examples include viewers within moderate quality landscapes, local recreation grounds, and outdoor pursuits.
Low	Viewers engaged in outdoor sport or recreation whose prime focus is on their activity, or people passing through the area on main transport routes whose attention is focused away from an appreciation of the landscape.
Negligible	Viewers whose attention is focused on their work or activity and not susceptible to changes in the surrounding landscape.

Magnitude of Change of Visual Receptors

5.4. The following definitions are used to assess the magnitude of change to visual receptors. As with the assessment of the magnitude of change for landscape receptors, consideration is given to:

- **The size or scale of the development:** taking into account:
  - The mass and scale of the development visible and the change experienced from an identified location; and
  - The loss or addition of features within the view and the changes to the view's composition (including the proportion of the view occupied by the proposed development and the degree of contrast or integration of the proposed development within the context of the existing landscape elements) and the nature of the view in terms of duration and degree of visibility.
- **The extent of the development** – the extent of the development will vary between each identified viewpoint and will likely reflect the extent of the development visible in the view alongside the distance of the viewpoint from the proposed development.
- **The permanency of the development**: considering whether:

  - The proposals will result in a long term or short term effect;
  - The development is reversible or changes the status of the site (for example to previously developed land); and
  - Restoration to baseline conditions is envisaged at the end of this term.
- **The proposed mitigation:** Judging the extent to which the landscape proposals will be able to mitigate the visual effects of the development by screening, or through design of the development (e.g. siting, use of visually recessive colours and materials and location of open space).

Table 7: Magnitude of Change to Visual Receptors

Magnitude	Definition
High	Change resulting in a high degree of deterioration or improvement, or introduction of prominent new elements that are considered to make a major alteration to a view.
Medium	Change resulting in a moderate degree of deterioration or improvement, or constitutes a perceptible change within a view.
Low	Change resulting in a low degree of deterioration or improvement to a landscape or view, or constitutes only a minor component within a landscape.
Negligible	Change resulting in a barely perceptible degree of deterioration or improvement to a view.
No Change	It is also possible for a view to experience no change due to it being totally compatible with the character of the visual environment or not visible due to intervening structures or vegetation.

Significance of Visual Effect

5.5. The significance of visual effect is determined by cross referencing the sensitivity of the receptor with the magnitude of change expected as a result of the development. Table 8 below outlines how the assessment of significance is undertaken.

Table 8: Visual Significance of Effect*

Vs. Magnitude of Change / Sensitivity of Visual Receptor	Very High	High	Medium	Low	Negligible
High	Substantial	Major	Major / Moderate	Moderate	Moderate / Minor
Medium	Major	Major / Moderate	Moderate	Moderate / Minor	Minor
Low	Major / Moderate	Moderate	Moderate / Minor	Minor	Negligible
Negligible	Moderate	Moderate / Minor	Minor	Negligible	Negligible / None
No Change	None	None	None	None	None
	Significance of Landscape Effect				

* To be read in conjunction with Table 9 below.

6. UNDERSTANDING SIGNIFICANT EFFECTS

6.1. For the purposes of the impact assessment beneficial or adverse effects of substantial, major and major/moderate effects are considered to be significant and to be of key importance in decision making. Moderate adverse effects should also be taken into account when considering the overall effects of the development in decision making.

6.2. It is important to consider that change does not necessarily result in an adverse effect or harm to a particular landscape or visual environment.

6.3. The landscape assessor, in determining the significance of effect, will apply a defined assessment methodology, in combination with sound professional judgement upon which the identification of significant effects should be based.

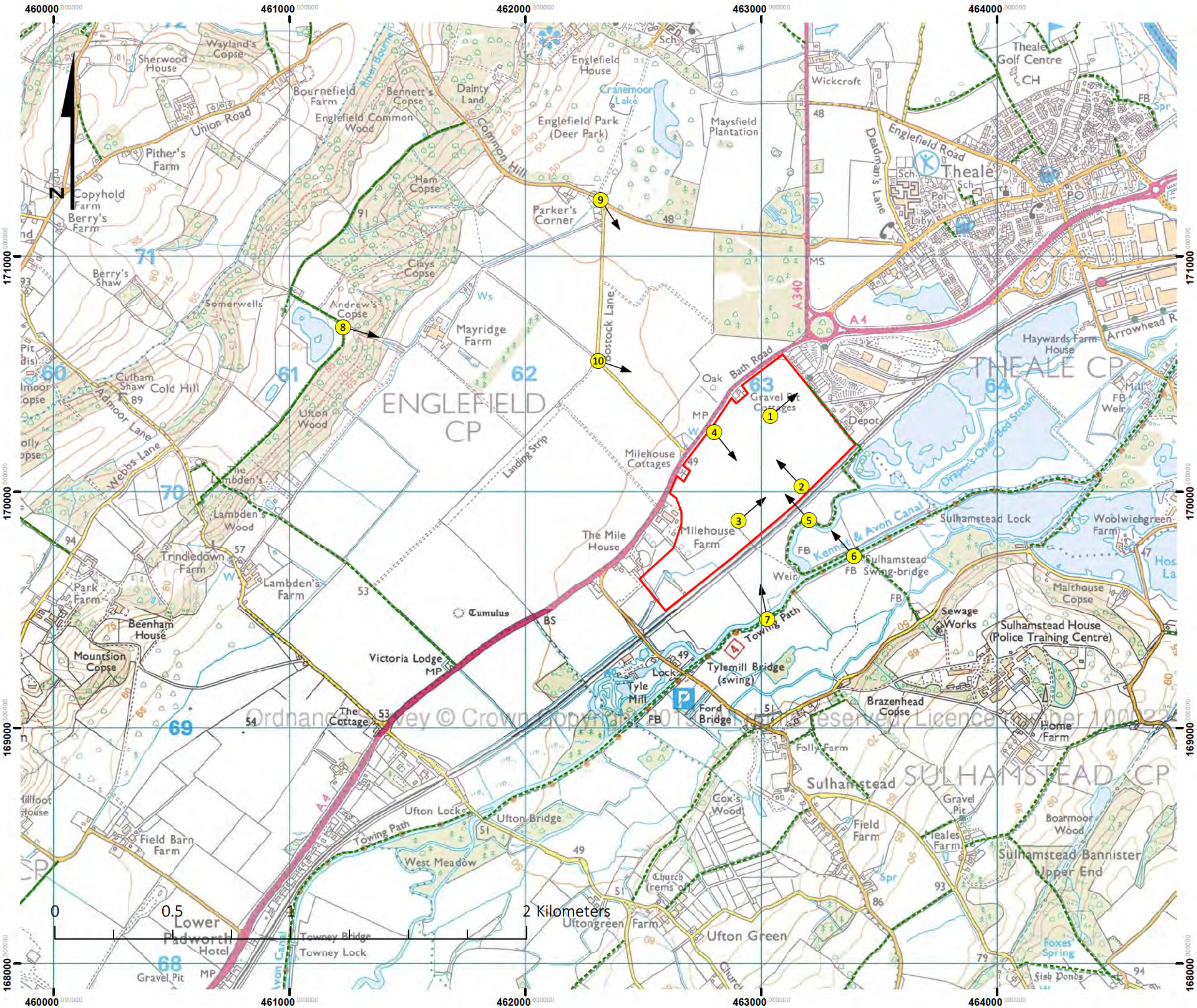
Definition of Significance Thresholds

Table 9: Significance Thresholds

Significance	Threshold Definition
Substantial	A very high magnitude of change that materially affects a landscape or view of national / international importance that has little or no ability to accommodate change.
Major	A high magnitude of change that materially affects a landscape or view that has limited ability to accommodate change.
Moderate	A medium magnitude of change that materially affects a landscape or view that may have the ability to accommodate change. Positive effects will typically occur in a lower quality landscape.
Minor	A low magnitude of change that materially affects a landscape that has the ability to accommodate change. Positive effects will typically occur in a lower quality landscape or view.
Negligible	A negligible magnitude of change that has little effect on a landscape that has the ability to accommodate change.
None	It is also possible for a magnitude of change to occur that results in an effect of neutral significance due to the change being compatible with local character or not visible.

Appendix 3: Photographic Viewpoints

Viewpoint Location Plan Ref. 22-1942
Photographic Viewpoints Ref. 22-1925



LEGEND:

Site Boundary

Viewpoint Location and Direction

Public Rights of Way:

Bridleway

Footpath

Restricted Byway

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TITLE: Viewpoint Location Plan

PROJECT/SITE: Potential Rail Project.Theale

CLIENT: Englefield Estate

MAP REF: 3959/07/22-1942

VERSION: v2

DATE: 01/03/23

SCALE: 1:15,000 @A3

APPROVED BY: ID

PRODUCED BY: SM

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Site occupies full width of view

Ribbon development along Wigmore Lane

Industrial structures at Theale Rail Freight Depot

Location: Eastern part of the Site, looking north-east.

Grid Reference: SU 63060 70385

N.B. IMAGES TO ILLUSTRATE THE EXISTING LANDSCAPE CONTEXT ONLY. Panoramas are created from multiple photographs taken using a digital equivalent of a 35mm camera with 50mm lens in line with best practice and current guidance. Images illustrate a horizontal field of view of 68° and when reproduced at A3, should be viewed at a distance of 330mm curved through an identical radius in order to correctly illustrate the existing landscape context. To ensure considered judgements are accurately assessed, images should not be used as a substitute for visiting the viewpoint.

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TITLE:	Viewpoint 1
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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Site occupies full width of view

Location: South-eastern Site boundary, looking north-west.

Grid Reference: SU 63202 70016

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TITLE:	Viewpoint 2
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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Location: South-eastern Site boundary, looking east.

Grid Reference: SU 62902 69863

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TITLE:	Viewpoint 3
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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Location: North-western Site boundary, looking south-east.

Grid Reference: SU 62810 70283

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TITLE:	Viewpoint 4
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
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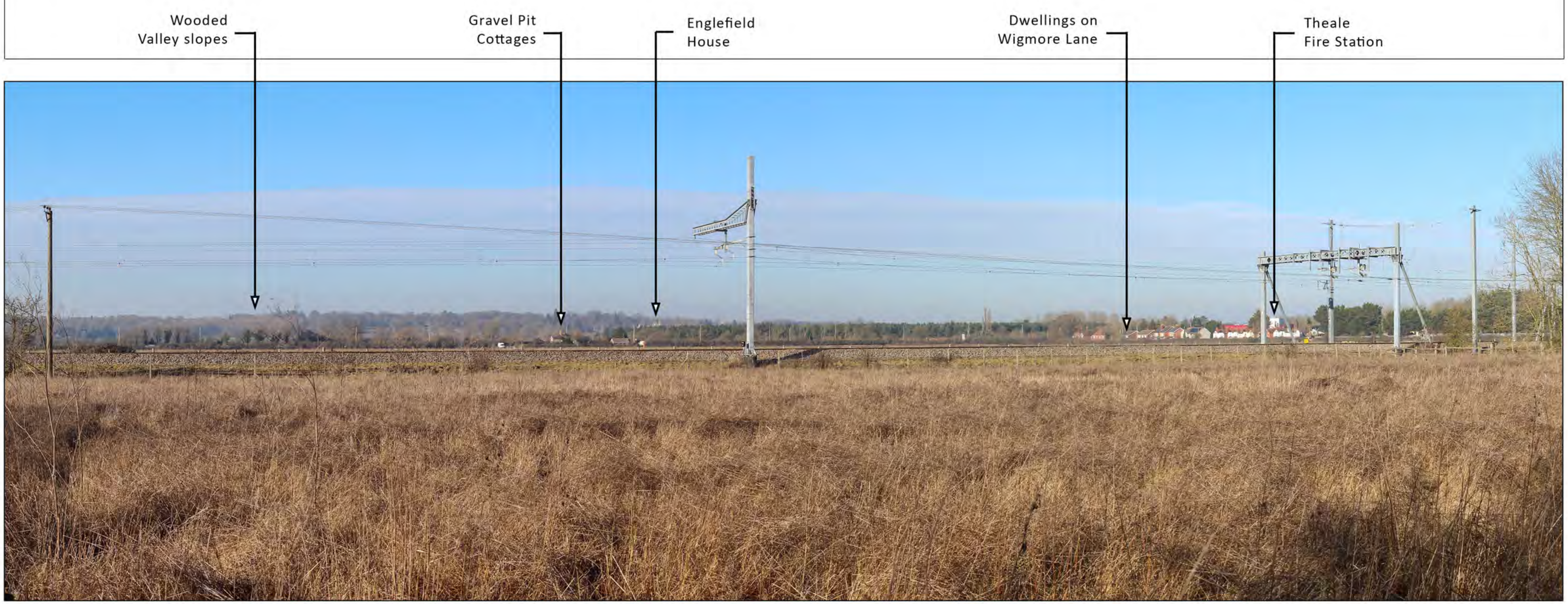
Site occupies full width of view



Location: Public Footpath SULH/2/1, looking north towards the Site.

Grid Reference: SU 63191 69882

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TITLE:	Viewpoint 5
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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Approximate
Site location

Location: Public Footpath SULH/1/2 at Sulhamstead Swing Bridge, looking north-west towards the Site.

Grid Reference: SU 63409 69732

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TITLE:	Viewpoint 6
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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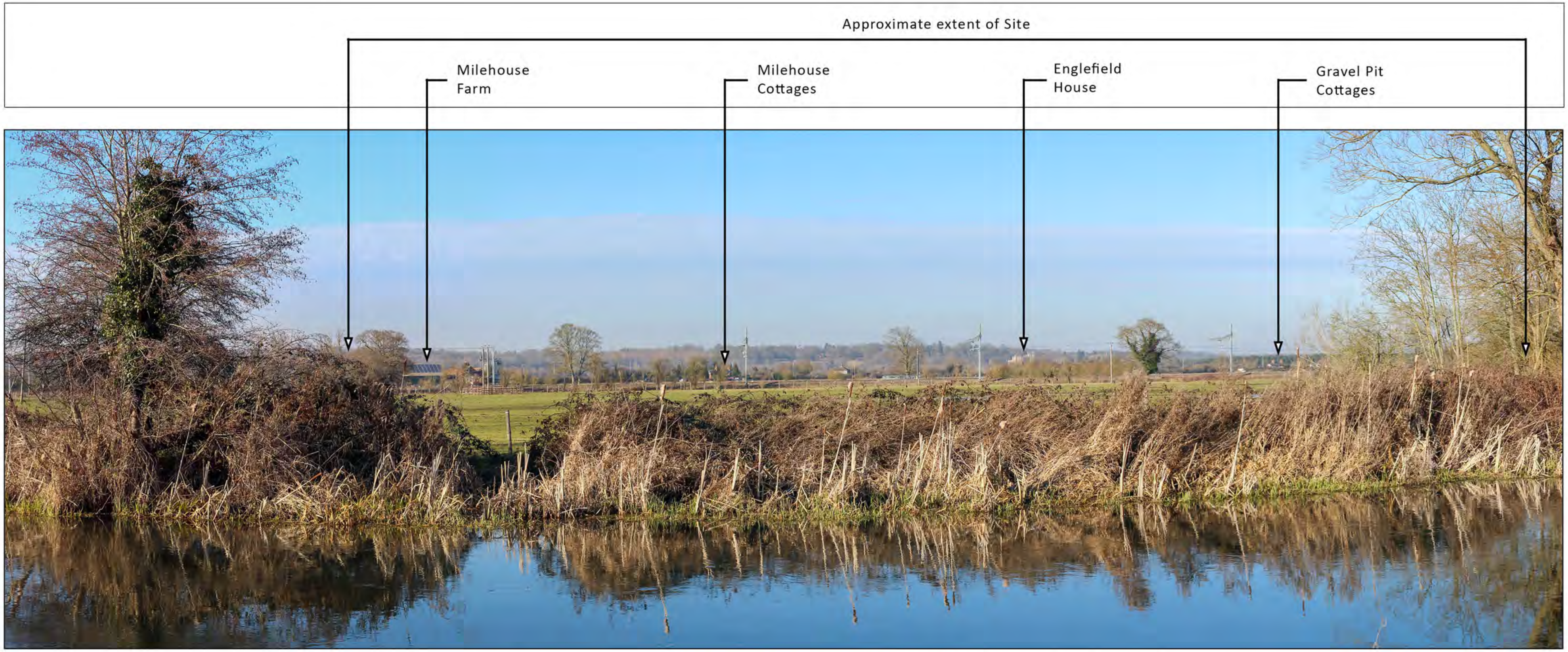

Location: Public Footpath SULH/1/2, looking north towards the Site.

Grid Reference: SU 63022 69448

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TITLE:	Viewpoint 7
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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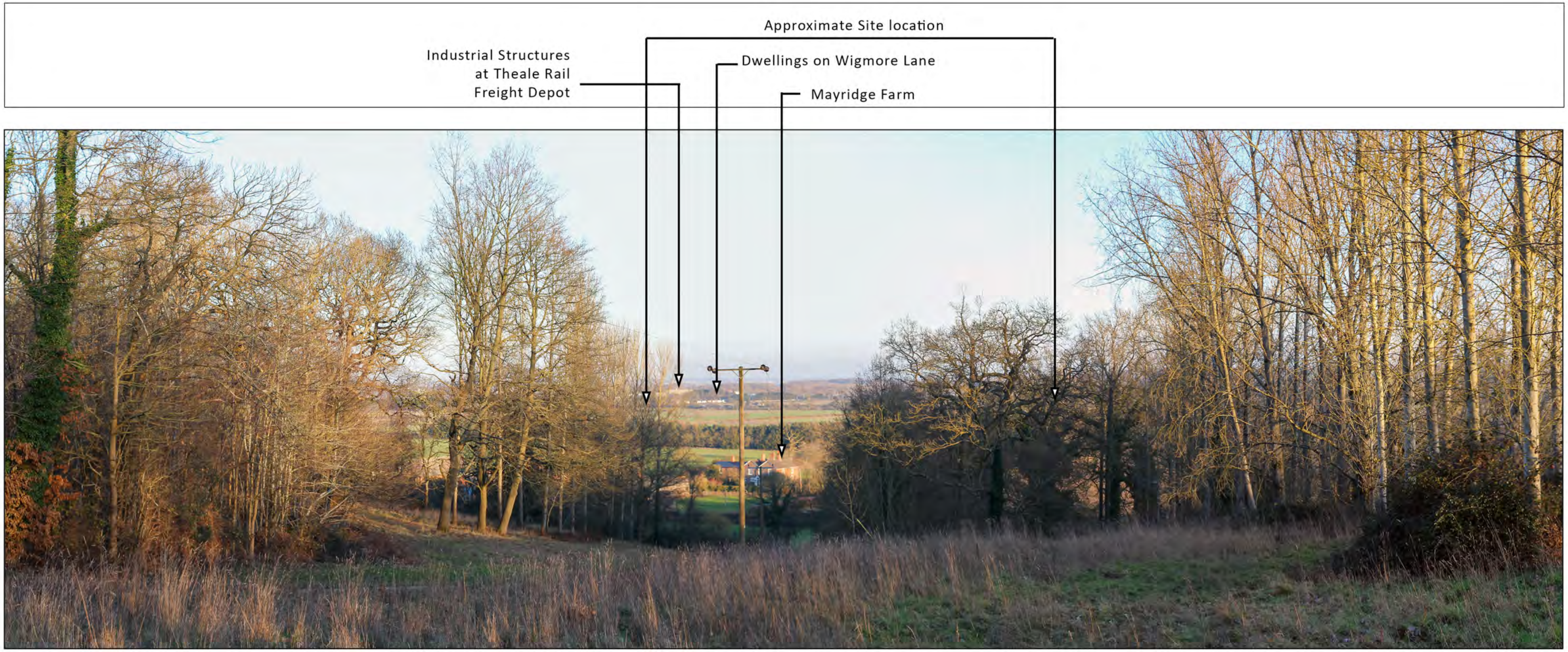

Location: Public Bridleway ENGL/6/2, looking south-east towards the Site.

Grid Reference: SU 61227 70710

N.B. IMAGES TO ILLUSTRATE THE EXISTING LANDSCAPE CONTEXT ONLY. Panoramas are created from multiple photographs taken using a digital equivalent of a 35mm camera with 50mm lens in line with best practice and current guidance. Images illustrate a horizontal field of view of 68° and when reproduced at A3, should be viewed at a distance of 330mm curved through an identical radius in order to correctly illustrate the existing landscape context. To ensure considered judgements are accurately assessed, images should not be used as a substitute for visiting the viewpoint.

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TITLE:	Viewpoint 8
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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Location: Common Hill at Parker's Corner, looking south towards the Site.

Grid Reference: SU 62319 71248

N.B. IMAGES TO ILLUSTRATE THE EXISTING LANDSCAPE CONTEXT ONLY. Panoramas are created from multiple photographs taken using a digital equivalent of a 35mm camera with 50mm lens in line with best practice and current guidance. Images illustrate a horizontal field of view of 68° and when reproduced at A3, should be viewed at a distance of 330mm curved through an identical radius in order to correctly illustrate the existing landscape context. To ensure considered judgements are accurately assessed, images should not be used as a substitute for visiting the viewpoint.

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TITLE:	Viewpoint 9
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
APPROVED BY: ID	PRODUCED BY: JTO

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Location: Bostock Lane, looking south-east towards the Site.

Grid Reference: SU 62308 70558

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TITLE:	Viewpoint 10
PROJECT/SITE:	Potential Rail Project, Theale
CLIENT:	Englefield Estate
MAP REF:	22-1925
VERSION:	V1
DATE:	2023
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Ecology and Biodiversity Net Gain
Green Infrastructure
Landscape and Visual Impact Assessment (LVIA)
Expert Witness
Natural Capital Appraisal
Building with Nature
Soils and Land Restoration

Garden & Landscape Design and Construction

Garden Design and Construction
Landscape Design and Construction
Landscape Contracting
Garden & Landscape Maintenance

Forestry, Woodland and Tree Management

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Oxfordshire: The Park, North Aston, OX25 6HL | 01869 340342
Northamptonshire: 7-8 Melbourne House, Corbygate Business Park, Weldon, NN17 5JG | 01536 408840

contact@nicholsonsgb.com | www.nicholsonsgb.com

Why the UK needs more intermodal rail freight

- Help the UK achieve net zero carbon emissions
- Improve air quality and reduce road congestion
- Improve efficiency of freight transport
- Support post-Covid-19 recovery and economic growth

2020 / 2021

UKMPG RFG Rail Freight Group

What is intermodal freight?

Containers are transported by ship, road and/or rail and those that are carried on rail are called 'intermodal rail freight'. Containers carry a great variety of the goods which we use every day – food, clothes, furniture, electronics – as well as components for production lines and many of the UK's main export products.

In the UK, intermodal rail freight has doubled in the last 20 years and now one in four containers transported to/from a port is carried by rail. Domestic volumes have also increased as more companies recognise the benefits of using rail to move freight within Britain.

The benefits: economic, social, environmental

Intermodal rail freight is fast, efficient, reliable – helping businesses to run with lower inventory and base their operations throughout the UK. It is much more environmentally friendly than road freight. Each train takes 76 HGVs (heavy good vehicles) off the road which equals 1.66 billion fewer HGV kilometres a year, reducing congestion and accidents.

CASE STUDIES:

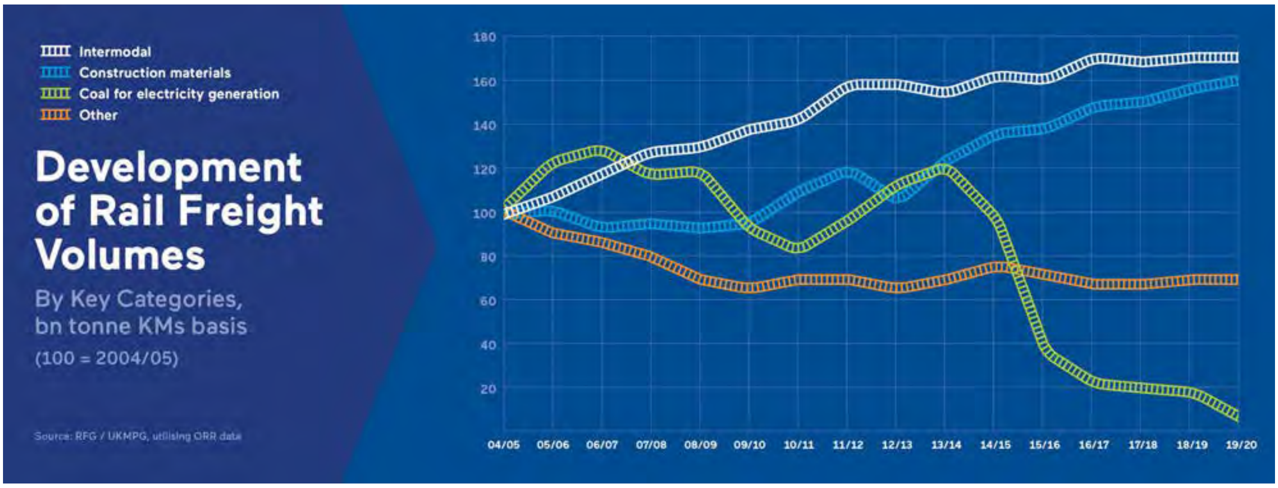
DRS and Stobart Rail are working to remove an additional 100,000 containers a year off the roads for Tesco. The first step to achieving this has been the introduction of a fifth daily service from Tesco's Daventry distribution centre – this time to/from Doncaster and Teesport. This train operates with capacity for 40 containers in each direction, removing another 24,960 Tesco containers from the road annually.

The UK risks missing out on the potential benefits of intermodal rail freight

Port operators have invested heavily in terminals and other facilities to improve productivity and speed up the delivery of import and export containers to customers.

At the same time, more rail-connected inland terminals and warehouses where the containers are unloaded and emptied have been developed to meet customer demand. Rail freight operating companies have invested in more efficient, cleaner and quieter locomotives and wagons. Working with logistics companies, they are using digitisation and automation to increase load factors and maximise resources.

However, despite an encouraging long-term growth in intermodal volumes, recent years have seen a flattening of the upward trend. **There is real demand from rail freight users to increase their usage. The problem is that the potential of intermodal rail freight is being constrained.**



The potential is clear when we look forward. Expert forecasts, as a 'base case' rather than using optimistic assumptions, project that there is sufficient demand to double again the amount of freight moved by rail in the next 15 years. That's almost an extra 20 million tonnes of freight removed from the UK's roads annually by 2033/4, equivalent to 450,000 HGV journeys saved with the associated emissions reductions and congestion benefits.

Unless we take steps now to remove constraints and support growth, there is significant risk of missing major potential to increase the efficiency of rail freight transport and the environmental and societal benefits that brings.

CASE STUDIES:

iPort Rail in Doncaster, which opened in 2018, was the UK's first inland port to become operational in the last 10 years. Within 18 months Its traffic has grown to five daily services – from Southampton, Teesport and Felixstowe. The terminal took 22,520 long-distance HGV journeys off the road in its first full year.

Helping intermodal rail freight prosper

The growth of intermodal rail freight – doubling in the last 20 years – has been driven by significant private investment to enable longer, faster trains, higher loading factors and overall increased efficiency as well as by government investment in the network. However, it has plateaued in recent years, as the UK rail network has become more congested. Some routes are close to capacity, restricting the ability to increase services. This will need government support.

What we need for growth

1. **The real benefits of rail freight to be recognised and factored into central/local government policy.**
    - Update the planning system to make approvals for inland rail freight terminals easier.
    - Local/regional authorities should prioritise distribution facilities with rail links in local plans.

2. **The restoration of meaningful financial incentives for modal shift and fair pricing.**
    - Reinstate financial incentives at a level that actually shift freight from road to rail/sea.
    - Ensure stable and fair track access changes that recognise that competitive environment.
3. **Rail capacity (paths) to be provided for freight from key ports and terminals.**
    - Increase capacity on the rail network for freight trains through investments in key projects.
    - Safeguard strategic capacity for freight growth on the network.
4. **Putting rail freight at the heart of any new structure for the railways.**
    - Freight services must be planned at a national level in any future structure for the railways.
5. **Support for decarbonisation of rail freight, including electrification of key routes.**
    - Small infill sections of electrification to allow more use of existing locomotives.
    - A rolling programme of electrification of key freight routes.
    - Support for decarbonisation of terminals.

CASE STUDIES:

The Port of Felixstowe increased capacity for daily intermodal trains from 33 to 47 in each direction after Network Rail and the port invested £65m to create a passing loop on the branch line to the port. The port also improved rail facilities and can now handle 1.8 million TEU (20 ft equivalent units) by rail annually.

CASE STUDIES:

PD Ports' two daily services between Teesport and Grangemouth / Mossend in Scotland have removed more than 29,000 HGV moments from the road annually. The development of the Mossend International Railfreight Park by PD Stirling will further stimulate intermodal rail traffic to/from Scotland,

CASE STUDIES:

ABP opened the Barry Intermodal Terminal in 2012 to offer a unique service for partners Dow Chemicals. The facility has grown to handle over 8000 ISO container units per year, with four trains per week from Tilbury and Southampton. In 2019 this dedicated rail service saved over 1 million HGV miles, removing over 4000 trucks from our busy road network and saving 1,131,280kg of CO_2 emissions.

CASE STUDIES:

Forth Ports has created the country's largest freight-only ferry terminal, Tilbury2, with loading capacity for 775m long trains. The group is matching this investment with a £3m overhaul of the Grangemouth rail terminal, providing a hub-to-hub model for customers working across the food, beverage and perishables sectors.

About us

RFG
Rail Freight Group

Contact:
contact@rfg.org.uk
www.rfg.org.uk

Rail Freight Group (RFG) is the representative body for rail freight in the UK. Its members include rail freight operators, logistics companies, ports, equipment suppliers, property developers and support services, as well as retailers, construction companies and other customers. It works with policy makers and others to improve the environment for rail freight and its aim is to increase the volume of goods moved by rail.

UKMPG

Contact:
info@ukmajorports.org.uk
www.ukmajorports.org.uk

The UK Major Ports Group is the trade body for the UK's major port operators. It represents nine of the top ten port operators in UK and its members collectively handle 75% of the UK's port volumes through 40 ports. These include the largest ports in England, Scotland and Northern Ireland. UKMPG members together already invest around £500 million per year in the UK's ports and related infrastructure. Its members are ambitious to further increase their use of rail freight, delivering benefits both to customers and the environment.