



Document 9, Transport Assessment

Marlow Film Studios, Buckinghamshire

May 2022

Waterman Infrastructure & Environment Limited

Pickfords Wharf, Clink Street, London, SE1 9DG
www.watermangroup.com



Client Name: Dido Property Limited
Document Reference: WIE18037.110.R.2.1.3 TA
Project Number: WIE18037

Quality Assurance – Approval Status

This document has been prepared and checked in accordance with
Waterman Group's IMS (BS EN ISO 9001: 2015, BS EN ISO 14001: 2015 and BS EN ISO 45001:2018)

Issue	Date	Prepared by	Checked by	Approved by
2.1.3	May 2022	M. Scroggs Principal Transport Planner	A. Beard Associate Director	M. Powers Technical Director

Comments

Comments



Disclaimer

This report has been prepared by Waterman Infrastructure & Environment Limited, with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporation of our General Terms and Condition of Business and taking account of the resources devoted to us by agreement with the client.

We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at its own risk.

Contents

1. Introduction	1
Overview	1
Covid-19	2
Consultation	2
Report Structure	5
2. Transport Policy Context	6
Development Plan for Buckinghamshire Council	6
Wycombe District Local Plan (2019)	6
National Planning Policy Framework (2021)	7
Planning Practice Guidance (2021)	9
Summary	11
3. Existing Situation	12
Existing Highway Conditions	12
Local Highway Network	12
Strategic Highway Network	15
Accessibility on Foot	16
Existing Footway Network	16
Accessibility by Bicycle	17
Existing Cycle Network	17
Accessibility by Public Transport	18
Existing Bus Network	18
Existing Rail Network	19
Accessibility by Motor Vehicle	20
Method of Travel to Work	21
National Census 2011 Method of Travel to Work	21
Highway Safety	22
Personal Injury Accidents	22
Accessibility Index	24
4. Proposed Development	25
Marlow Film Studios	25
Overview	25
Site Access	26
Internal Mobility Network	27
Active Travel Accessibility	28
Public Transport Accessibility	30

Contents

Servicing	31
Parking	31
Cycle Parking	31
Car and Motorcycle Parking	32
Electric Vehicle – Charging Provision	35
Summary	35
5. Sustainable Transport Strategy	36
Travel Plan	36
Public Transport Strategy	37
Active Travel Strategy	37
Car Parking Strategy	38
Monitor and Manage	39
Mode Shift Targets	39
6. Trip Generation	41
Introduction	41
Existing Trip Generation	41
Proposed Trip Generation	41
Unmanaged Trip Generation	44
Managed (Sustainable Transport Strategy) Trip Generation	44
Net Change in Trip Generation (Managed vs Unmanaged)	45
Trip Distribution	46
7. Baseline and Future Network Traffic Flows	47
Baseline Traffic Data	47
Overview	47
Observed Site Access Junction – 1 July 2021	48
Observed Westhorpe Interchange Junction – 1 July 2021	49
Observed Westhorpe Interchange Junction – 20 June 2017	50
Comparison of 2017 and 2021 flows	52
TEMPRO Growth	53
Baseline Year 2021	53
Assessment Year 2027 Baseline	54
Assessment Year 2027 plus Unmanaged Development	56
Assessment Year 2027 plus Managed (STS) Development	57
Wide Area Network Impact	59
8. Junction Impact Assessment	62
Method of Assessment	62

Contents

Document 9, Transport Assessment

Project Number: WIE18037

Document Reference: WIE18037.110.R.2.1.3 TA

Junction 1: A4155 Little Marlow Road / Parkway Roundabout	63
Junction 2: A404 / A4155 Westhorpe Roundabout	65
Existing Layout	65
Buckinghamshire Council Improvement Scheme.....	67
Left-Turn Slip Lane from A404 Northbound Off-Slip to Parkway Layout.....	67
Partial Signal Control at Roundabout	70
Junction 3: A4155 Marlow Road / Pump Lane South / Site Access Junction	74
Existing Layout	74
Proposed Site Access Signal Controlled Crossroads (Option 1 Layout)	75
Proposed Site Access Signal Controlled Crossroads (Option 2 Layout)	78
Proposed Site Access Signal Controlled Crossroads (Summary).....	82
Results Summary.....	82
9. Summary and Conclusions	84
Summary.....	84
Appropriate Opportunities to Promote Sustainable Transport Modes.....	84
All Users Can Achieve Safe and Suitable Access to the Site	85
Any Significant Impacts from the Development Can be Cost Effectively Mitigated	85
Conclusion	86

Figures

Figure 1: Site Location	1
Figure 2: Site Context	2
Figure 3: Local Highway Network	13
Figure 4: Westhorpe Junction Improvement Scheme	14
Figure 5: Strategic Highway Network	15
Figure 6: Walking catchment	17
Figure 7: Cycling catchment	18
Figure 8: Personal Injury Accidents 2016-2021.....	22
Figure 9: Marlow Film Studios – Land Use Plots.....	25
Figure 10: Site Mobility	27
Figure 11: Active Mobility.....	29
Figure 12: Wider connections to Public Transport.....	30
Figure 13: Cycle Parking Locations	32
Figure 14: Car Parking Locations	34
Figure 15: 2021 Traffic Survey Locations	47
Figure 16: Site access – Observed counts July 2021 (07:00-08:00 and 17:00-18:00)	48
Figure 17: Site access – Observed counts July 2021 (08:00-09:00 and 17:00-18:00)	49

Contents

Figure 18: Westthorpe Interchange – Observed counts July 2021 (07:00-08:00 and 17:00-18:00) ..	49
Figure 19: Westthorpe Interchange – Observed counts July 2021 (08:00-09:00 and 17:00-18:00) ..	50
Figure 20: Westthorpe Interchange – Observed counts June 2017 (07:00-08:00 and 17:00-18:00) ..	51
Figure 21: Westthorpe Interchange – Observed counts June 2017 (08:00-09:00 and 17:00-18:00) ..	51
Figure 22: Westthorpe Interchange – Historic 2017 factored to 2021 (07:00-08:00 and 17:00-18:00) ..	53
Figure 23: Westthorpe Interchange – Historic 2017 factored to 2021 (08:00-09:00 & 17:00-18:00) ..	54
Figure 24: Westthorpe Interchange – Baseline 2021 factored to 2027 (07:00-08:00 and 17:00-18:00) ..	55
Figure 25: Westthorpe Interchange – Baseline 2021 factored to 2027 (08:00-09:00 and 17:00-18:00) ..	55
Figure 26: Westthorpe Interchange – Baseline + Unmanaged Development 2027 (07:00-08:00 and 17:00-18:00) ..	56
Figure 27: Westthorpe Interchange – Baseline + Unmanaged Development 2027 (08:00-09:00 and 17:00-18:00) ..	57
Figure 28: Westthorpe Interchange – Baseline + Managed (STS) Development 2027 (07:00-08:00 and 17:00-18:00) ..	58
Figure 29: Westthorpe Interchange – Baseline + Managed (STS) Development 2027 (08:00-09:00 and 17:00-18:00) ..	58
Figure 30: Stantec Design of Potential Left-turn Slip Lane from A404 NB Off-slip to Parkway	68
Figure 31: Extracts from Stantec Drawings of Signalisation Scheme at A404 Northbound & Southbound Off-Slips	70
Figure 32: AECOM Option 1 Conceptual Design for Proposed A4155 Marlow Road / Site Access / Pump Lane South Signal-Controlled Junction.....	76
Figure 33: Modelled Signal Staging Arrangement at Proposed Junction (Option 1 Layout)	76
Figure 34: AECOM Option 2 Conceptual Design for Proposed A4155 Marlow Road / Site Access / Pump Lane South Signal-Controlled Junction.....	79
Figure 35: Modelled Signal Staging Arrangement at Proposed Junction (Option 2 Layout)	79

Tables

Table 1: Bus Services from A4155 Marlow Road and Wiltshire Road	19
Table 2: Indicative Peak Hour Journey Times by Car	20
Table 3: Method of Travel to Work Workplace Population Mode Split: Wycombe (020)	21
Table 4: Wide Area Vulnerable Road Users Incidents	23
Table 5: Wide Area Collision Data Overview.....	23
Table 6: Summary of proposed cycle parking provision.....	31
Table 7: Summary of Proposed Vehicle Parking Provision.....	33
Table 8: Parking Accumulation (Managed STS scenario).....	35
Table 9: Method of Travel to Work – STS Targets	40
Table 10: Site Access Turning Counts	41
Table 11: TRICS Trip Rates – Shepperton.....	42

Contents

Table 12: Vehicle Trip Rate Comparison.....	43
Table 13: TRICS Trip Generation – Shepperton	43
Table 14: TRICS+ Trip Generation – Average Across Shepperton, Elstree and Pinewood	44
Table 15: Unmanaged Trip Generation	44
Table 16: Managed (STS) Trip Generation	45
Table 17: Net Change in Trip Generation (Managed vs Unmanaged).....	45
Table 18: Strategic trip distribution	46
Table 19: Westhorpe Interchange & Parkway 2017-2021 Traffic Data Comparison	52
Table 20: TEMPro Growth Factors	53
Table 21 External Network Impact AM Peak (07:00-08:00).....	59
Table 22 External Network Impact AM Peak (08:00-09:00).....	60
Table 23 External Network Impact PM Peak (17:00-18:00).....	60
Table 24: Junctions 10 Results for A4155 Little Marlow Road / Parkway Roundabout	63
Table 25: Junctions 10 Results for A404 / A4155 Westhorpe Grade Separated Roundabout	65
Table 26: Junctions 10 Results for A404 / A4155 Westhorpe Roundabout – with Left-Turn Slip from A404 NB Off-Slip to Parkway	68
Table 27: LinSig Results for A404 / A4155 Roundabout with Signalisation Scheme at A404 Northbound & Southbound Off-Slips & Left-turn Slip Lane from A404 Northbound Off-Slip to Parkway	70
Table 28: Junctions 10 Results for A4155 Marlow Road / Pump Lane South / Site Access Crossroads (excessive delay results are marked as *).....	74
Table 29: LinSig Results of Proposed Signalised A4155 / Site Access / Pump Lane South Junction – Option 1 Layout	76
Table 30: LinSig Results of Proposed Signalised A4155 / Site Access / Pump Lane South Junction – Option 2 Layout	80

Appendices

- A. Site Masterplan
- B. 2011 Census 'Travel to Work' Data
- C. Accessibility Index
- D. Conceptual Junction Arrangement (Option 2)
- E. Highway Basis of Report
- F. TRICS Outputs
- G. Trip Rates
- H. Network Flow Diagrams
- I. Junctions 10 Modelling Output
- J. Westhorpe Interchange Improvement Scheme

Contents



K. LinSig Modelling Output

Contents

Document 9, Transport Assessment

Project Number: WIE18037

Document Reference: WIE18037.110.R.2.1.3 TA

1. Introduction

Overview

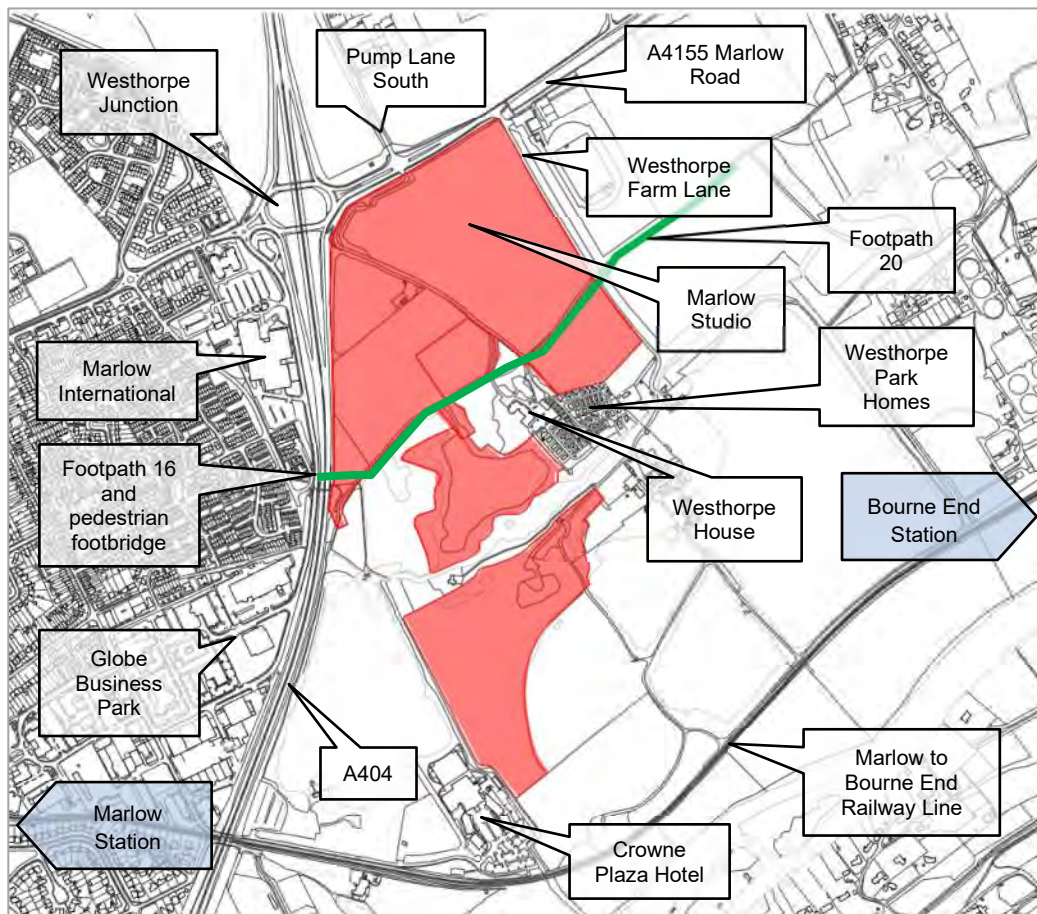
- 1.1. Dido Property Limited (the 'Applicant') have appointed Waterman Infrastructure and Environment ('Waterman') to prepare a Transport Assessment (TA) to support a full planning application for production space and supporting buildings for screen-based media and associated services/industries (the 'Proposed Development') on land to the east of Marlow, Buckinghamshire (the 'Site').
- 1.2. The Site is located within the administrative boundary of Buckinghamshire Council (BC). [Figure 1](#) shows the Site location.

Figure 1: Site Location



- 1.3. The Site is located east of Marlow, circa 1.8 km north-east of Marlow town centre and immediately south-east of the Westthorpe Interchange junction, a grade-separated roundabout forming the interchange between the A404 and A4155 routes. Open grassland covers the Site and the A404 bounds the Site to the west, A4155 Marlow Road to the north, Westthorpe Farm Lane (a private-access road) to the east, and a mixture of residential, hotel and recreational (water sports) land uses to the south.
- 1.4. The Site context is illustrated by [Figure 2](#) below, whilst the Site Masterplan is provided at [Appendix A](#).

Figure 2: Site Context



Covid-19

- 1.5. This TA has been prepared during the current Covid-19 pandemic which has changed the way that people travel, increasing the number of people that work from home and changing the modal share of daily trips. The impact of Covid-19 upon the number of vehicles on the road network has been considered and observed flows compared to pre-Covid data. The extent to which future travel patterns will change because of the pandemic is unknown, the TA therefore utilises pre-Covid travel patterns to provide a robust assessment.

Consultation

- 1.6. Informal pre-application discussions were held with Buckinghamshire Council and Highways England (now National Highways) Officers in August 2021 to inform the developing scope of the assessment and identify key considerations with respect to the local and strategic highway networks.
- 1.7. Formal pre-application consultation has subsequently been undertaken with Buckinghamshire Council (BC) through the Planning Performance Agreement (PPA) process. With respect to transport and highways this included:

Meetings with the Council

- PPA Meeting (Highways) on 10 November 2021;
- Further highways meeting on Friday 21 January 2022;
- Planning Officer Meeting on 25 March 2022;
- PPA Meeting (Highways) on 4 May 2022.

Responses Received from the Council

- BC response to calls/emails from Waterman on 17 November 2021 following an 'internal' meeting on the VISSIM modelling, stating that;
 - the Council would not be in a position to proceed with the modelling until the PPA was signed and an initial deposit paid for the production of the Project Initiation Document (PID);
 - before progressing the modelling the Council would need to agree on the form of access, the trip rates and the trip distributions;
 - expressing concerns with the principle of the access junction proposed as it would result in a signalised junction in very close proximity to the existing Westhorpe Interchange;
 - acknowledging that that these matters were covered in the Technical Note provided and the need for the Council to finalise a review and provide a written response.
- BC response to calls/emails from Waterman on 03 December 2021 advising availability to attend a second PPA meeting and intention to provide a response to Waterman's Technical Note (though not the response itself);
- BC Highway response received 08 December 2021 (in response to Waterman's 11 November 2021 submission) seeking further supporting evidence in respect of the following matters:
 - Raw traffic count data review to understand the implications of the Covid pandemic upon observed traffic flows;
 - Full set of traffic flows diagrams;
 - Plans of existing highway junctions;
 - TRICS data and supporting evidence for trip generation;
 - Census data and calculations to support modal share and trip distribution;
 - Justification for site access as signalised junction rather than roundabout;
 - Modelled outputs for site access junction;
- BC email to Waterman on 19 January 2022 responding to a question on parking policy, confirming that the Council would be looking to secure larger 2.8m x 5m spaces in accordance with the adopted parking standards;
- BC response to calls/emails from Waterman on 01 February 2022 regarding processes for the VISSIM modelling (arranging a Project Initiation Document (PID)) and advising that BC was still reviewing the technical evidence base submitted (on 24 January 2022) in response to previous BC comments;
- BC response to calls/emails from Waterman on 09 February 2022 advising that BC was still reviewing Waterman's technical submission;

- BC Highway response received 11 February 2022 (in response to the 24 January 2022 submission) seeking further supporting evidence and stating that the following matters remained to be agreed:
 - Baseline traffic flows;
 - Average queue lengths;
 - Trip generation rates;
 - Trip distribution calculations;
- BC response to calls/emails from Waterman on 21 March 2022 acknowledging receipt of Waterman’s technical response to BC February comments (submitted on 18 March following Final Design Freeze on 16 March 2022);
- BC email on 25 March 2022 providing the draft PID for Waterman review and comment (Waterman response and comments provided by email on 1 April 2022);
- BC response to email from Waterman on 05 April 2022 advising that BC was still reviewing the technical response submitted (on 18 March 2022) in response to BC February comments.
- Email on 12 April 2022 responding to PID comments raised on 1 April 2022 advising that the draft PID would be updated (further Waterman response and comments provided by email on 20 April 2022).
- Response to calls/emails on 25 April 2022 advising that BC was still reviewing the third technical response and considering further responses raised by Waterman with regard to the draft PID.
- BC Highway response received 29 April 2022 (in response to the 18 March 2022 submission) seeking further supporting evidence and stating that the following matters remained to be agreed:
 - Baseline traffic flows;
 - TEMPRO growth;
 - Queue lengths;
 - Trip distribution.
- Email response on 13 May 2022 acknowledging receipt of Waterman’s technical response to BC April comments (submitted on 13 May 2022) advising that BC will review and respond in due course.

Substantive Outputs (from the above list)

- Four formal responses:
 - 08 December 2021 (Technical response, 4 weeks after submission);
 - 11 February 2022 (Technical response, 3 weeks after submission); and
 - 25 March 2022 (Draft PID); and
 - 29 April 2022 (Technical response, 6 weeks after submission).

Summary Position at Submission

- 1.8. The current position with respect to consultation at the time of submission is:

- Three rounds of formal consultation have been undertaken and three substantive technical response outputs received from BC on 08 December 2021 (4 weeks after submission), 11 February 2022 (3 weeks after submission) and 29 April 2022 (6 weeks after submission);
- One round of formal discussion regarding the scope of the VISSIM modelling and draft PID issued by BC on 25 March 2022;
- Fourth technical response from BC outstanding;
- Revised PID from BC outstanding.

1.9. This TA has regard to and addresses the issues raised as part of the PPA consultation process.

1.10. The Applicant is submitting a planning application for full planning permission for production space and supporting buildings for screen-based media and associated services/industries. The development comprises: sound stages; workshops; office accommodation; Studio Hub; associated outdoor space such as backlots and unit bases; entrance structures and reception; security infrastructure; mobility hub; cafes; parking; bridge; incidental supporting buildings; associated infrastructure; public art; upgraded vehicular access onto Marlow Road; new cycle and pedestrian accesses; a new cultural/ educational/ recreational building; a new community building; and, associated landscaping, publicly accessible recreational land and ecological and environmental enhancements/habitat creation.

Report Structure

1.11. This TA includes:

- Section 2 – Transport Policy Context.
- Section 3 – Existing Situation.
- Section 4 – Proposed Development.
- Section 5 – Sustainable Transport Strategy.
- Section 6 – Trip Generation.
- Section 7 – Baseline and Future Network Traffic Flows.
- Section 8 - Junction Impact Assessment.
- Section 9 - Summary and Conclusions.

2. Transport Policy Context

- 2.1. The transport policy context for Buckinghamshire comprises local policies encompassed within the Development Plan for Buckinghamshire, as well as National policy and guidance. The following key policy and guidance documents set out the transport context for the Proposed Development:
- Wycombe District Local Plan (August 2019).
 - National Planning Policy Framework (July 2021).
 - National Planning Practice Guidance (June 2021).

Development Plan for Buckinghamshire Council

- 2.2. The site is located within the administrative boundaries of Buckinghamshire Council (BC), a Unitary Authority created in April 2020. At present the overall development plan for Buckinghamshire Council is divided into four separate areas based on the historic Local Planning Authority boundaries. The Site sits within the Wycombe area of Buckinghamshire and therefore is subject to the Wycombe District Local Plan.

Wycombe District Local Plan (2019)

- 2.3. The Wycombe District Local Plan defines how future development should take place for the whole area. It sets out the strategic policies as well as distributing new areas for housing and employment growth. The core policies relevant to this document are:

- CP1 – Sustainable Development.

“2. The Council will require all new development to contribute towards delivering sustainable development by contributing to achieving both the objectives of this Plan and the principles for the main places in the District”

- CP5 – Delivering land for business.

“The Council will address the needs of the local economy by:

2. Encouraging a range of development proposals for employment on new and existing employment areas that deliver B use classes or similar sui generis uses.”

- CP7 – Delivering the infrastructure to support growth.

“Provision will be made for new infrastructure to support growth, through planning obligations, the Community Infrastructure Levy (CIL) and other available funding streams as appropriate. Where justified, development will be required to provide or contribute towards delivering the key infrastructure requirements for the District including:

1. Transport – wider connectivity

a) Access to High Wycombe from the M40;

b) Improvements to the A404 Corridor south of High Wycombe including at Marlow;

c) Improved North/South connectivity across Buckinghamshire without causing harm to the Area of Outstanding Natural Beauty;

d) Provision of a strategic walking and cycling route between High Wycombe and Bourne End whilst investigating the strategic case for a ‘London rail bypass’ that links East West Rail and Cross Rail via High Wycombe and Bourne End.

2. Transport – local priorities

...

c) *Improved access and egress to Globe Park from the A404 at Marlow;*

...

f) *New road infrastructure to support growth at Bourne End;*

g) *Achieving better sustainable travel to secure modal shift including more integrated and “smart” public transport provision;*

h) *Improved walking and cycling provision.”*

National Planning Policy Framework (2021)

2.4. The Government updated the National Planning Policy Framework (‘the Framework’) in July 2021, which sets out the Government’s planning policies for England and how to apply them. It sets out a presumption in favour of sustainable development that recognises the importance of transport policies in easing sustainable development, and that planning decisions should regard local circumstances.

2.5. Paragraph 2 of the Framework states:

“Planning law requires that applications for planning permission be determined in accordance with the development plan, unless material considerations indicate otherwise. The National Planning Policy Framework must be taken into account in preparing the development plan, and is a material consideration in planning decisions. Planning policies and decisions must also reflect relevant international obligations and statutory requirements.”

2.6. The Framework presumes in favour of sustainable development and is a material consideration in planning decisions. Paragraph 104 states:

“Transport issues should be considered from the earliest stages of plan-making and development proposals, so that:

a) *the potential impacts of development on transport networks can be addressed;*

b) *opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;*

c) *opportunities to promote walking, cycling and public transport use are identified and pursued;*

d) *the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and*

e) *patterns of movement, streets, parking and other transport considerations are integral to the design schemes, and contribute to making high quality places.”*

2.7. Section 9 of the Framework deals with ‘Promoting sustainable transport’. Paragraph 105 states:

“The planning system should actively manage patterns of growth in support of these objectives. Significant development should be focused on locations which are or can be made sustainable, through limiting the need to travel and offering a genuine choice of transport modes. This can help to reduce congestion and emissions, and improve air quality and public health. However, opportunities to maximise sustainable transport solutions will vary between urban and rural areas, and this should be taken into account in both plan-making and decision-making.”

2.8. Paragraph 107 refers to off-street parking provision, and states:

“If setting local parking standards for residential and non-residential development, polices should take into account:

- a) the accessibility of the development;*
- b) the type, mix and use of development;*
- c) the availability of and opportunities for public transport;*
- d) local car ownership levels; and*
- e) the need to ensure an adequate provision of spaces for charging plug-in and other ultra-low emission vehicles.”*

2.9. Paragraph 108:

“Maximum parking standards for residential and non-residential development should only be set where there is a clear and compelling justification that they are necessary for managing the local road network, or for optimising the density of development in city and town centres and other locations that are well served by public transport (in accordance with chapter 11 of this Framework). In town centres, local authorities should seek to improve the quality of parking so that it is convenient, safe and secure, alongside measures to promote accessibility for pedestrians and cyclists.”

2.10. Paragraph 110 states:

“In assessing Sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) safe and suitable access to the Site can be achieved for all users;*
- c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and National Model Design Code; and*
- d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.”*

2.11. Paragraph 111 sets out the test a determining authority should apply when deciding suitability of a planning application in terms of transport and highways:

“Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.”

2.12. Paragraph 112 states:

“Within this context, applications for development should:

- a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.”*

2.13. Paragraph 113 states:

“All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.”

2.14. The Proposed Development has regard to the criteria set out in the Framework. Furthermore, this TA demonstrates that the Proposed Development is acceptable in transport terms with regard to the tests set out in Paragraph 111 of the Framework.

Planning Practice Guidance (2021)

2.15. The Planning Practice Guidance, which is available on-line via the Department for Levelling Up, Housing and Communities, supports the overarching aims of the Framework. Section ID42 of the Planning Practice Guidance under the heading “Travel Plans, Transport Assessments and Statements” deals with highway and transportation matters.

2.16. Paragraph 11 of ID42 recommends what information travel plans should include:

“Travel Plans should identify the specific required outcomes, targets and measures, and set out clear future monitoring and management arrangements all of which should be proportionate. They should also consider what additional measures may be required to offset unacceptable impacts if the targets should not be met.

Travel Plans should set explicit outcomes rather than just identify processes to be followed (such as encouraging active travel or supporting the use of low emission vehicles). They should address all journeys resulting from a Proposed Development by anyone who may need to visit or stay and they should seek to fit in with wider strategies for transport in the area.

They should evaluate and consider:

benchmark travel data including trip generation databases;

Information concerning the nature of the Proposed Development and the forecast level of trips by all modes of transport likely to be associated with the development;

relevant information about existing travel habits in the surrounding area;
proposals to reduce the need for travel to and from the Site via all modes of transport; and
provision of improve public transport services.

They may also include:

parking strategy options (if appropriate – and having regard to national policy on parking standards and the need to avoid unfairly penalising motorists); and

proposals to enhance the use of existing, new and improved public transport services and facilities for cycling and walking both by users of the development and by the wider community (including possible financial incentives).

These active measures may assist in creating new capacity within the local network that can be utilised to accommodate the residual trip demand of the Site(s) under consideration.

It is often best to retain the ability to establish certain elements of the Travel Plan or review outcomes after the development has started operating so that it can be based upon the occupational and operational characteristics of the development.

Any sanctions (for example financial sanctions on breaching outcomes/processes) need to be reasonable and proportionate, with careful attention paid to the viability of the development. It may often be more appropriate to use non-financial sanctions where outcomes/processes are not adhered to (such as more active or different marketing of sustainable transport modes or additional traffic measures). Relevant implications for planning permission must be set out clearly, including (for example) whether the Travel Plan is secured by a condition or planning obligation.

Travel Plans can only impose such requirements where these are consistent with Government policy on planning obligations.”

2.17. Paragraph 15 of ID42 notes what information transport assessments and statements should include:

“The scope and level of detail in a Transport Assessment or Statement will vary from Site to Site but the following should be considered when setting the scope of the proposed assessment:

information about the Proposed Development, Site layout, (particularly proposed transport access and layout across all modes of transport)

information about neighbouring uses, amenity and character, existing functional classification of the nearby road network;

data about existing public transport provision, including provision/frequency of services and proposed public transport changes;

a qualitative and quantitative description of the travel characteristics of the Proposed Development, including movements across all modes of transport that would result from the development and in the vicinity of the Site;

an assessment of trips from all directly relevant committed development in the area (ie development that there is a reasonable degree of certainty will proceed within the next 3 years);

data about current traffic flows on links and at junctions (including by different modes of transport and the volume and type of vehicles) within the study area and identification of critical links and junctions on the highways network;

an analysis of the injury accident records on the public highway in the vicinity of the Site access for

the most recent 3-year period, or 5-year period if the proposed Site has been identified as within a high risk accident area;

an assessment of the likely associated environmental impacts of transport related to the development, particularly in relation to proximity to environmentally sensitive areas (such as air quality management areas or noise sensitive areas);

measures to improve the accessibility of the location (such as provision/enhancement of nearby footpath and cycle path linkages) where these are necessary to make the development acceptable in planning terms;

a description of parking facilities in the area and parking strategy of the development;

ways of encouraging environmental sustainability by reducing the need to travel; and

measures to mitigate the residual impacts of developments (such as improvements to the public transport network, introducing walking and cycling facilities, physical improvements to existing roads.

In general, assessments should be based on normal traffic flow and usage conditions (eg non-school holiday periods, typical weather conditions) but it may be necessary to consider the implications for any regular peak traffic and usage periods (such as rush hours). Projections should use local traffic forecasts such as TEMPRO drawings where necessary on National Road Traffic Forecasts for traffic data.

The timeframe that the assessment covers should be agreed with the local planning authority in consultation with the relevant transport network operators and service providers. However, in circumstances where there will be an impact on a national transport network, this period will be set out in the relevant Government policy.”

Summary

2.18. This policy review has identified the following themes from the transport policies:

- A presumption in favour of sustainable development.
- The provision of genuine opportunities to travel to and from the application Site by non-car modes.
- Delivery of safe and suitable access for all modes.
- Cost effective delivery of transport infrastructure.
- Integration with other committed and planned development such that the cumulative residual impact will not be severe.

2.19. This TA reviews the accessibility of the Site, evaluates the potential for modal shift to more sustainable modes of transport and assesses the Proposed Development's impact on the surrounding highway network. This TA should be read in conjunction with the supporting Framework Travel Plan (TP) submitted as part of the planning application.

3. Existing Situation

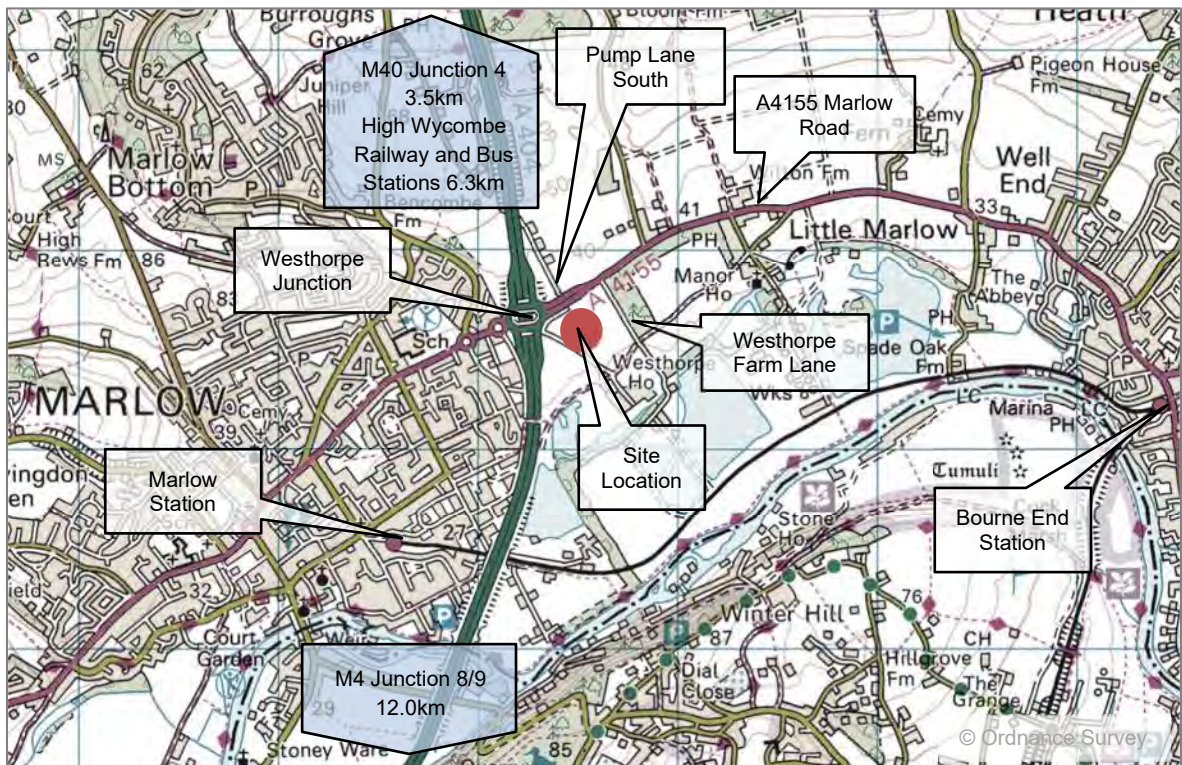
- 3.1. This section provides a description of the Site location in the context of the surrounding transport and highway networks and summarises the accessibility of transport modes within the local area, which will be available to users of the Proposed Development, in determining how people travel to and from the Site.
- 3.2. As previously described in Section 1, the Site is located east of Marlow and the A404, immediately south-east of the Westhorpe Interchange junction between the A404 and A4155 Marlow Road.
- 3.3. The Site, and surrounding land, was quarried in the mid-20th Century for gravel extraction. The excavations were subsequently filled with waste and the land currently comprises a series of poorly restored fields, enclosed by hedging, post and wire fencing and tree belts. Several quarried areas were not filled and remain as lakes. The Site, which extends to circa 36.35 hectares, currently comprises an area of primarily open grassland, part of which is currently occupied by a dog training and socialising centre.
- 3.4. The existing Westhorpe House and Westhorpe Park Homes to the east of Plot 4 will be retained alongside the Proposed Development.

Existing Highway Conditions

Local Highway Network

- 3.5. The Site is located south of the A4155 Marlow Road and east of the A404. The Site is currently accessed via a private drive to Westhorpe House which forms a staggered priority crossroad junction with the A4155 Marlow Road (major arms at the junction) and Pump Lane South to the north. To the west of the Site access junction, the A4155 Marlow Road forms a grade-separated junction with the A404 (the 'Westhorpe Interchange'). To the west of the Westhorpe Interchange the A4155 Little Marlow Road forms a compact at-grade roundabout junction with Parkway.
- 3.6. Jurisdiction for the local highway network falls with Buckinghamshire Council as Local Highway Authority, whilst the A404 falls within the Strategic Road Network (SRN) managed by National Highways.
- 3.7. The extent of the local highway network surrounding the Site and its connection to the Strategic Road Network (comprising the A404 and connections to the M4 and M40) and transport interchanges at Marlow, Bourne End and High Wycombe stations is illustrated by [Figure 3](#) below.

Figure 3: Local Highway Network



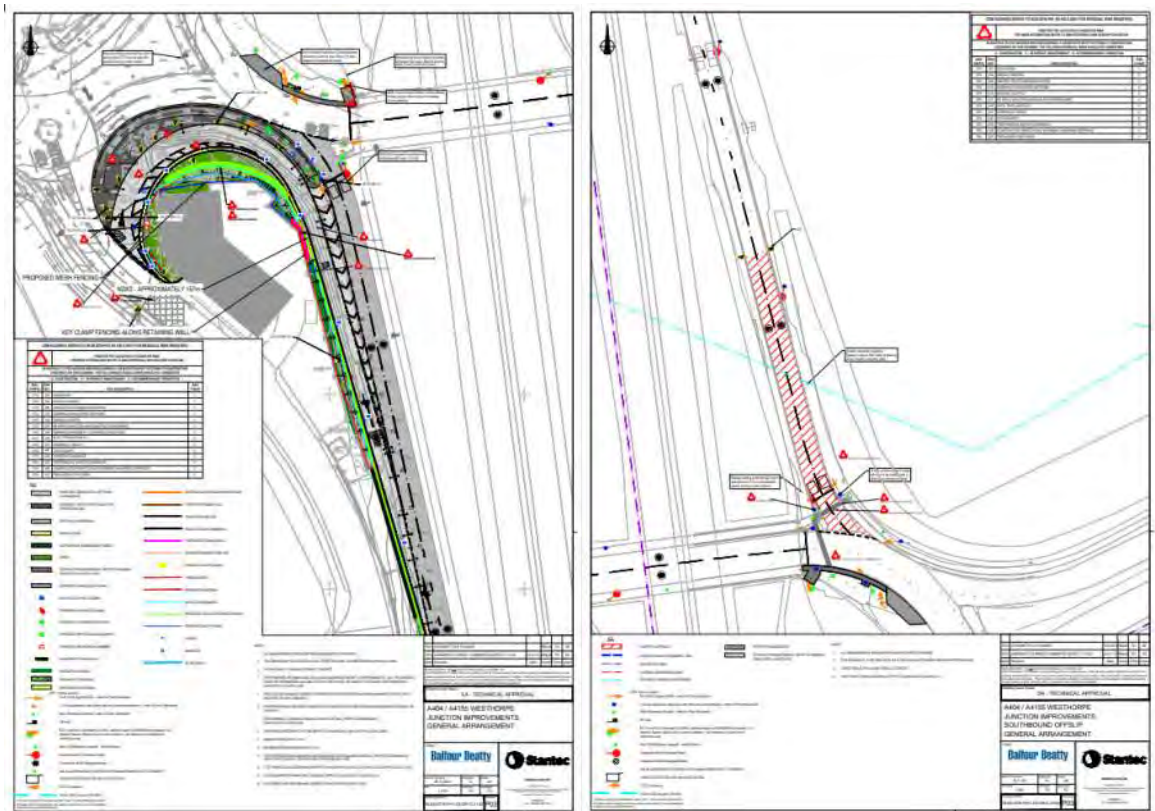
A4155 Marlow Road

- 3.8. The A4155 Marlow Road is a single-carriageway road connecting Bourne End to the east with Marlow to the West. In the immediate vicinity of its junction with Pump Lane South and the Site access, the A4155 benefits from the provision of a central reservation between the east and westbound carriageways. The A4155 Marlow Road is subject to the National Speed Limit of 60mph in the vicinity of the Site access.
- 3.9. There are existing pedestrian footways on both sides of the A4155 extending eastwards from the Westhorpe junction. Adjacent to the northern kerb line, the provision comprises a shared footway / cycleway providing onward connectivity to Little Marlow to the east and towards Marlow to the West, crossing the northern slip roads of the Westhorpe junction at uncontrolled crossing points provided with dropped kerbs and tactile paving. Cyclists crossing the Westhorpe junction on the northern overbridge are advised by signage to dismount due to a low bridge parapet.
- 3.10. The provision adjacent to the southern kerb line comprises a pedestrian footway extending eastwards as far as the Westhorpe Farm Lane junction, which is provided with dropped kerbs and tactile paving. An uncontrolled pedestrian crossing, equipped with a pedestrian refuge island, dropped kerbs and tactile paving, is located immediately east of Westhorpe Farm Lane to facilitate access to the northern footway / cycleway at this location.
- 3.11. Existing walking and cycling facilities to and from the site on the A4155 Marlow Road do not fully accord with the requirements of Local Transport Note 1/20. The Scheme will include improvements to the pedestrian and cycle infrastructure as part of a new signalised access junction on the A4155.

Westhorpe Interchange

- 3.12. The Westhorpe Interchange is a grade-separated roundabout which provides the interchange between the A4155 and the A404 and is part of the Strategic Road Network (SRN) managed by National Highways. The A404 and slip roads at the junction are the responsibility of National Highways, however the roundabout itself falls within the jurisdiction of Buckinghamshire Council.
- 3.13. The roundabout is currently uncontrolled and operates on a priority give-way system between the approach arms and circulatory carriageway. Buckinghamshire Council previously developed a scheme for the implementation of junction modifications including a new northbound off-slip segregated slip lane to Parkway and signalisation of both northbound and southbound off-slip roads from the A404. The Buckinghamshire Council scheme, which has not currently been implemented, is illustrated by Figure 4 below. The segregated slip lane element of the scheme was due to be implemented during 2022.

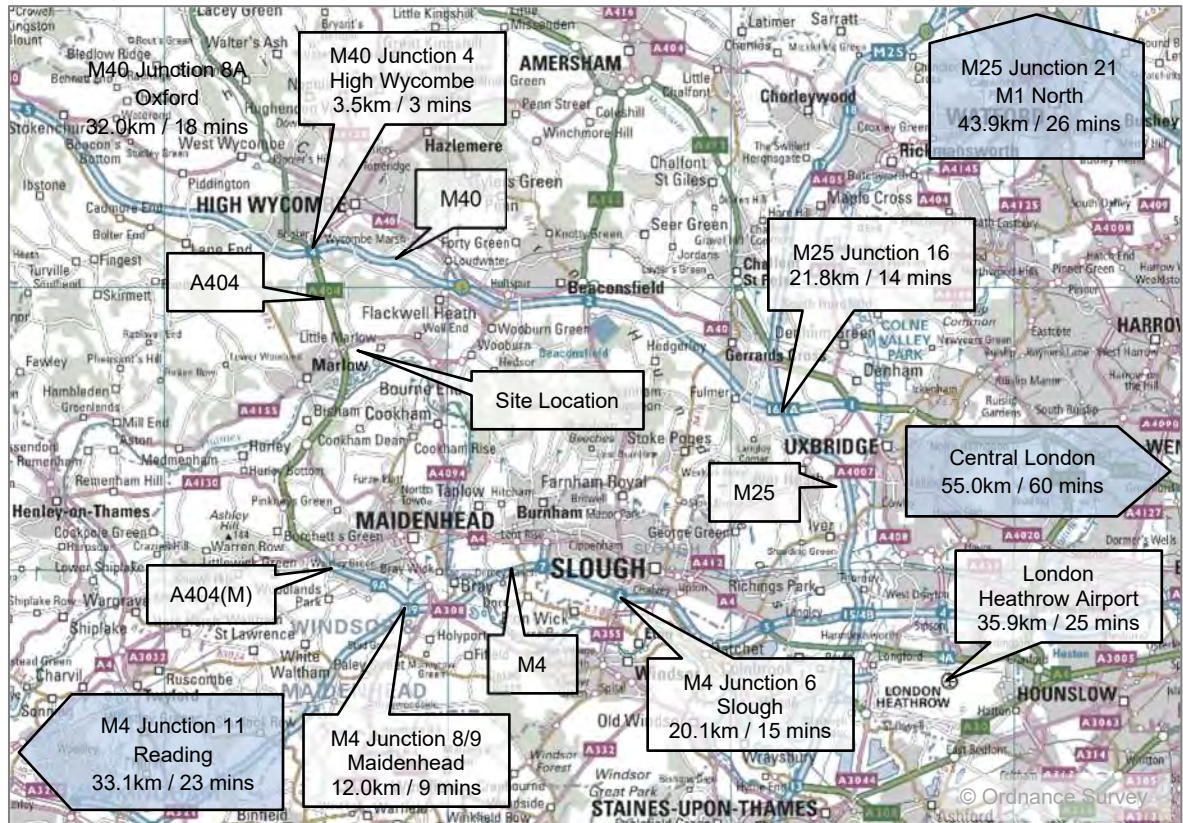
Figure 4: Westhorpe Junction Improvement Scheme



Strategic Highway Network

- 3.14. The extent of the Strategic Road Network (SRN) in the vicinity of the Site is illustrated by Figure 5 below. The SRN falls within the jurisdiction of National Highways as Strategic Highway Authority.

Figure 5: Strategic Highway Network



- 3.15. As illustrated by Figure 3, the Site is well connected to the SRN via the A404 providing convenient connections to the main population centres to the west of London from which the workforce is expected to be generated including Oxford, Reading, Maidenhead, Slough and West London Boroughs.

A404 / A404(M)

- 3.16. The A404 and A404(M) is a key regional north-south link, connecting the M4 at Junction 8/9 (the Holyport Interchange) with the M40 at Junction 4 (the Handy Cross Roundabout). The A404 is a two-lane dual carriageway route, circa 15.5km in length. Junction 4 of the M40 is located approximately 3.5 km north of the Site via the A404 and supplies access to High Wycombe and the M40 corridor. To the south, the A404 supplies access to Maidenhead and the M4 corridor.
- 3.17. A National Highways Road Improvements Strategy (RIS3) scheme is planned but not yet funded at the A404 Bisham Roundabout junction, located approximately 3.5 km south of the Westhorpe junction.

M40 Motorway

- 3.18. The M40 runs southeast-northwest between its junction with the A40 at Denham (Junction 1) and its junction with the M42 (Junction 3A) south of Birmingham. The M40 forms junctions with the M25 (Junction 1A/16) at Iver Heath and the A40 (Junction 8/8A) at Oxford. The M40 is a three-lane dual carriageway route near the junction with the A404.
- 3.19. A National Highways RIS3 scheme is planned but not yet funded at Junction 4 (Handy Cross) of the M40 at its junction with the A404.

M4 Motorway

- 3.20. Junction 8/9 of the M4 is circa 12 km south of the Site via the A404. The M4 runs broadly east-west between its junction with the A406 (the Chiswick Roundabout) in Chiswick and its junction with the A48 (Junction 49) in South Wales. The M4 supplies access to a variety of locations and strategic connections including London Heathrow Airport (Junction 4), the M25 (Junction 4B/15) at Thorney, the A329(M) at Wokingham, the A33 (Junction 11) at Reading, M32 (Junction 19), and M5 (Junction 20) at Bristol. The M4 is a three-lane dual carriageway route in the near its junction with the A404(M).
- 3.21. National Highways are currently upgrading the M4 between Junction 3 at Hayes and Junction 12 at Theale to a smart motorway, effectively supplying an added lane for traffic which will increase capacity and reduce congestion on this route, facilitating access to the M4 Heathrow spur.

M25 Motorway

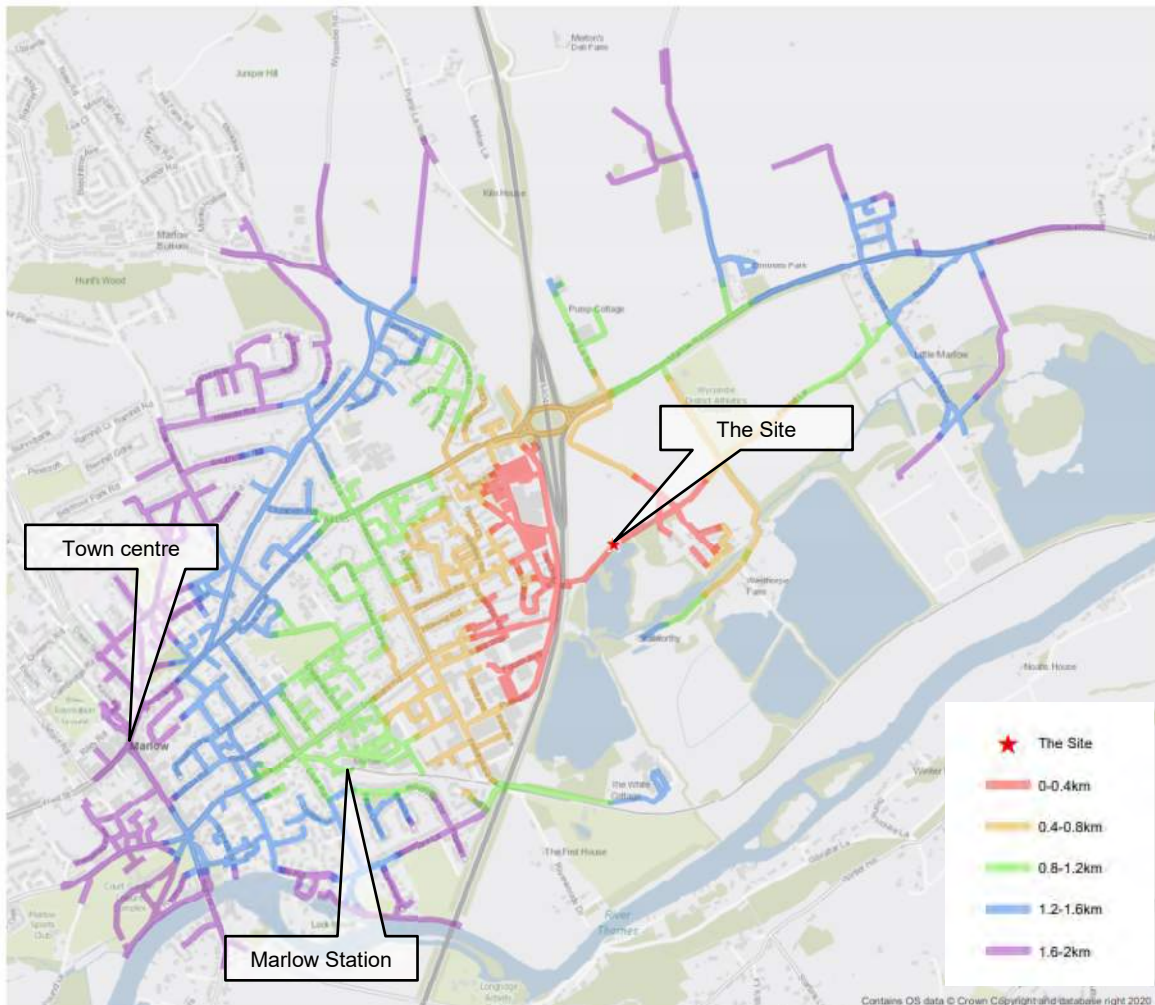
- 3.22. The M25 London Orbital Route supplies access to a variety of locations and strategic connections in the south and east including destinations on the M1, A1(M), M11, A12, A127, A13, A2, M20, A21, M23, A3, and M3 route corridors.
- 3.23. Currently the smart motorway projects on the M25 between Junction 10 and Junction 16 are under review following the outcome of the UK Government's 'Smart motorway stocktake'.

Accessibility on Foot

Existing Footway Network

- 3.24. Walking is the most important mode of travel at a local level and offers the greatest potential to replace short car journeys. The existing pedestrian infrastructure provides access eastward towards Little Marlow and westward towards Marlow, including a shared use footway/cycleway along the northern kerb line of the A4155 Marlow Road, a pedestrian refuge crossing facility on the A4155 to the east of Westhorpe Farm Lane, dropped kerb and tactile paving provision on the northern slip-roads at the Westhorpe Interchange, a footbridge crossing the A404 (known locally as the 'Volvo Bridge') and Public Right of Way crossing the Site between the Volvo Footbridge and Westhorpe Farm Lane.
- 3.25. Sections of the existing pedestrian and cycle network are observed to not fully accord with current design standards (e.g. LTN1/20) and a detailed review of the existing network has been undertaken to identify opportunities for improvements or upgrades associated with the Proposed Development. These form part of the emerging mitigation strategy alongside the provision of new routes and sustainable transport connections.
- 3.26. [Figure 6](#) illustrates the walking catchment within 2 km of the Site, which includes residential areas to the east of Marlow town centre as well as the town centre itself.

Figure 6: Walking catchment



- 3.27. The Site is accessible on foot from residential areas to the west (Marlow) and east (Little Marlow). Employment development near residential areas enables future workers to be within a suitable walking distance of their work. Figure 6 demonstrates that there is a local population of potential employees available for future employment at the Site within a convenient walking distance.
- 3.28. Figure 6 also demonstrates that a range of facilities, including the Hillier Garden Centre in Pump Lane South, the Crowne Plaza Hotel on Fieldhouse Lane, and access to Marlow town centre, is accessible within a reasonable walking distance of the Site.

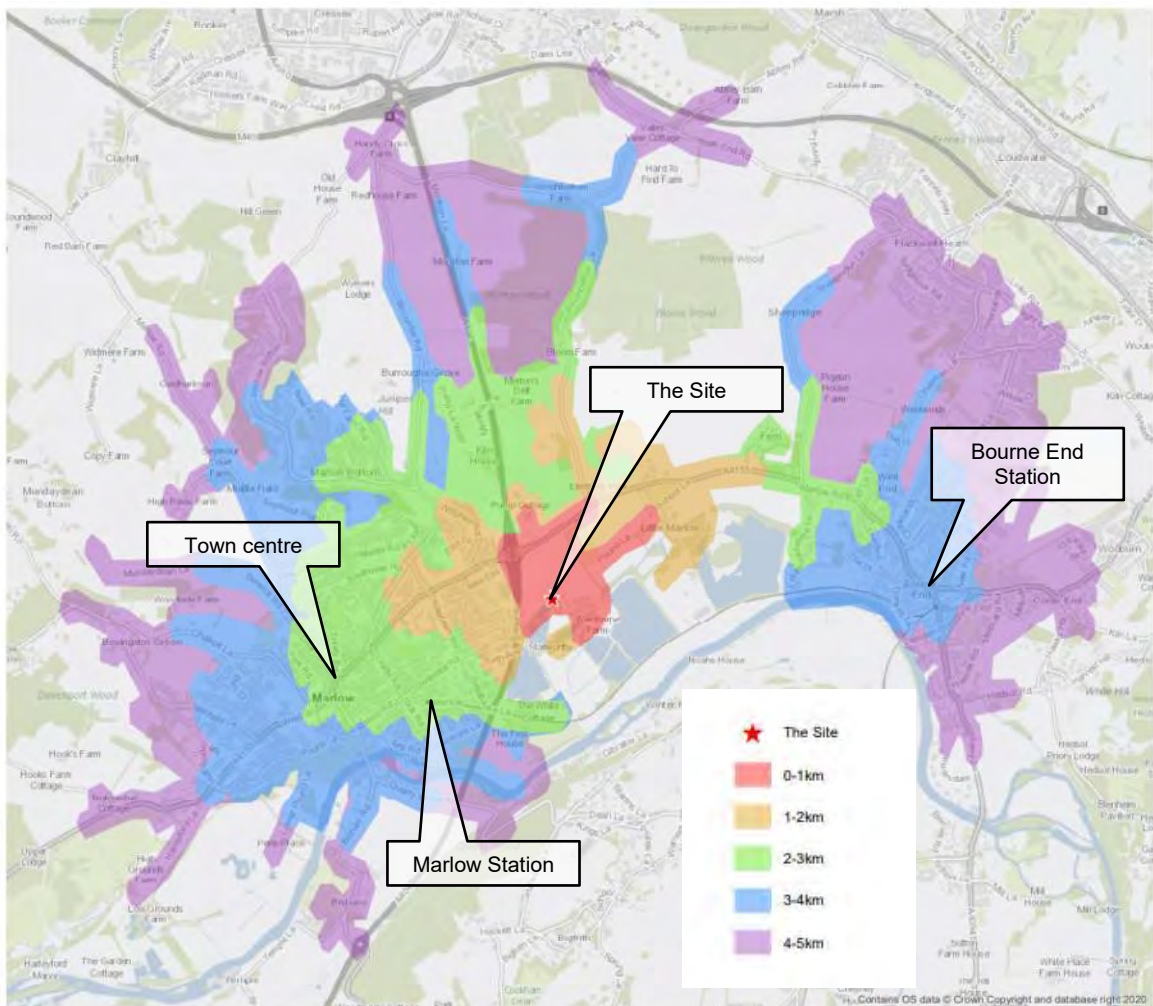
Accessibility by Bicycle

Existing Cycle Network

- 3.29. Cycling is an acceptable mode of travel for journeys up to 5 km. Existing cycling infrastructure connects the Site to the wider area, supplying access eastward towards Little Marlow and westward towards Marlow, through the provision of a shared use footway/cycleway along the northern kerb line of the A4155 Marlow Road.

- 3.30. The existing shared footway / cycleway route on the A4155 falls short of current design standards. A detailed review of the existing network has been undertaken to identify opportunities for improvements and upgrades associated with the Scheme. These form part of the emerging mitigation strategy alongside the provision of new routes and sustainable transport connections.
- 3.31. **Figure 7** shows the cycling catchment area within 5 km of the Site and demonstrates that residential areas within Marlow, Little Marlow and Bourne End, along with much of Flackwell Heath, are within reasonable cycling distance of the Site.

Figure 7: Cycling catchment



Accessibility by Public Transport

Existing Bus Network

- 3.32. The nearest existing bus stops are located around 430 metres east of the Site access on the A4155 Marlow Road at Winchbottom Lane. A flag sign marks the bus stop on the A4155 Marlow Road's southern side, which has a hardstand space next to the kerb.

- 3.33. These bus stops are served by Red Eagle Buses' No. 155 and 160 routes, which are contracted by Buckinghamshire Council. The No. 155 and 160 routes also serve Westhorpe Park Homes directly, via a dedicated bus stop located on the drive to Westhorpe House. These stops provide limited connections to Little Marlow, Marlow Town, Maidenhead, and Marlow Bottom.
- 3.34. Additional bus services are available at Wiltshire Road bus stops, which are approximately 700 metres from the Site access. These stops have flag signs, passenger shelters, and timetable information, and they allow access to Arriva Buses services on the No. 800/850 route between High Wycombe, Marlow, Henley, and Reading. On weekdays, the No. 800/850 route operates at a 20-minute frequency, Saturdays at a 30-minute frequency, and Sundays at an hourly frequency.

Table 1: Bus Services from A4155 Marlow Road and Wiltshire Road

Route No.	Route Description	No. Services	Operating Days
155	Little Marlow – Marlow Bottom – Marlow – Maidenhead	Four services (09:11, 12:03, 12:45, 13:51)	Wednesday only
160	Marlow Town – Little Marlow – Marlow Bottom	Three services (09:11, 11:51*, 14:06*)	Monday, Tuesday, Thursday, Friday
800	High Wycombe Bus Station – Reading	3 per hour	Monday to Friday (every 20mins)
850	High Wycombe Bus Station – Reading	2 per hour	Saturday & Sunday (every 30mins)

- 3.35. The 'Cressex Connect' Park & Ride (P&R) services operated from the Handy Cross / Coachway P&R Site in High Wycombe (located north-east of M40 Junction 4) do not currently serve Marlow. However, it is anticipated that future bus services connecting High Wycombe with the Site will stop at the P&R site as part of the Sustainable Transport Strategy.

Existing Rail Network

- 3.36. The nearest railway station to the Site is Marlow station, which is approximately 1.8km on foot or by bicycle from the centre of the Site. The station provides bicycle storage in the form of Sheffield type stands for 14 bicycles and is the terminus of the single-track Marlow Branch line from Maidenhead via Bourne End.
- 3.37. Bourne End station is approximately 3.8km from the site and is also served by the Marlow Branch Line from Maidenhead. Passengers using the existing service from Marlow are required to change trains at Bourne End to continue the journey to Maidenhead. Bicycle storage is available at the station in the form of Sheffield type stands, which can hold up to 18 bicycles. The station car park has a capacity of 50 vehicles.
- 3.38. Great Western Railway operates a half-hourly peak shuttle service between Marlow and Bourne End, as well as an hourly off-peak service through to Maidenhead. Passengers must change trains in Maidenhead in order to continue their journey to London Paddington Station.
- 3.39. Currently, Maidenhead station is served by four off-peak trains per hour eastbound to London Paddington, two off-peak trains per hour westbound to Reading, and two off-peak trains per hour

westbound to Didcot Parkway. Rail services are operated by Greater Western Railways and TfL Rail. Heathrow Airport connections are available via TfL Rail via a change at Hayes & Harlington station.

- 3.40. It is expected that Maidenhead station will serve Crossrail services on the Elizabeth Line in the future, with most trains terminating at Maidenhead and two trips per hour continuing on to Reading.
- 3.41. High Wycombe station is located approximately 6.9km north of the Site, a circa 12-minute journey by road via the A404. The station is operated by Chiltern Railways and currently provides five off-peak trains per hour to London Marylebone, including one local service which originates at High Wycombe. Outbound services from London Marylebone via High Wycombe include one train per hour to Birmingham Moor Street, one train per hour to Aylesbury, one train per hour to Banbury and one train per hour to Oxford.

Accessibility by Motor Vehicle

- 3.42. The proximity of the Site to the A404 and onward connections via the M40 Junction 4 (Handy Cross Roundabout) and M4 Junction 8/9 (Holyport Interchange) mean that the Site is easily accessible by motor vehicle.
- 3.43. Table 2 shows the indicative peak hour journey times to the Site by car from a variety of local origins.

Table 2: Indicative Peak Hour Journey Times by Car

Destination	Typical Peak Hour Journey time
Marlow	5-10 minutes
Bourne End	5-12 minutes
Flackwell Heath	9-14 minutes
Loudwater	9-16 minutes
High Wycombe	7-22 minutes
Beaconsfield	14-22 minutes
Maidenhead	14-24 minutes
Henley-on-Thames	16-26 minutes
Hazelmere	16-28 minutes
Slough	22-40 minutes
Heathrow Airport	26-40 minutes
Princes Risborough	22-45 minutes
Wokingham	24-45 minutes
Bracknell Forest	26-45 minutes
South Oxfordshire	28-45 minutes
Reading	28-60 minutes

Method of Travel to Work

National Census 2011 Method of Travel to Work

- 3.44. National Census 2011 data has been analysed to ascertain the Method of Travel to Work mode split for those people travelling into the local area for employment for the Middle Super Output Area (MSOA) E02003715: Wycombe (020), within which the Site is located.
- 3.45. It is expected that the core staffing element within the Site will live locally or within commuting distance of the Site. This assumption is supported by comparison of National Census 2011 'Travel to work' data for existing studio locations within the Middle Super Output Area (MSOA) areas South Bucks 008 (Pinewood), Spelthorne 012 (Shepperton) and Hertsmere 011 (Elstree) which show similar patterns to the MSOA outputs for Wycombe 020, illustrated at [Appendix B](#).
- 3.46. The existing mode share for workplace population in Wycombe (020) are provided in [Table 3](#) below.

Table 3: Method of Travel to Work Workplace Population Mode Split: Wycombe (020)

Mode of Travel	Mode Share (%)	
Underground, metro, light rail, or tram	0.2%	Public Transport Mode Share 3.3%
Train	1.1%	
Bus, minibus, or coach	2.0%	
Taxi	0.5%	
Motorcycle, scooter, or moped	1.0%	
Driving a car or van	84.2%	
Passenger in a car or van	3.3%	
Bicycle	1.4%	Active Travel Mode Share 7.6%
On foot	6.2%	
Other method of travel to work	0.1%	
Total	100.0%	

Note: Method of Travel to Work Census Data 2011

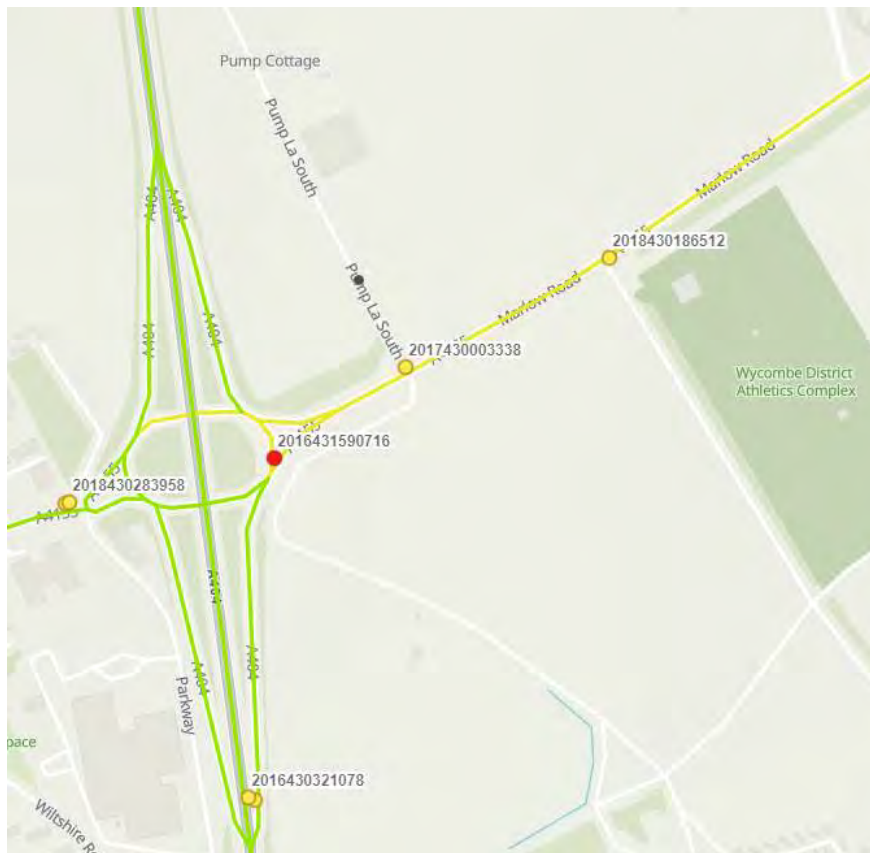
- 3.47. [Table 3](#) demonstrates that among those travelling to the area for employment, the most popular mode of travel is by car at around 84.2%, with 3.3% by public transport modes (bus and rail) and 7.6% using active travel modes (cycling and walking).

Highway Safety

Personal Injury Accidents

- 3.48. Personal Injury Accident (PIA) data has been reviewed for the five-year period January 2016 to December 2020, along with provisional data to June 2021, for the A4155 Marlow Road in the vicinity of the Site with reference to the web-based Crashmap Pro Portal database.
- 3.49. An extract from the Crashmap Pro Portal is illustrated in [Figure 8](#) below.

Figure 8: Personal Injury Accidents 2016-2021



- 3.50. The recorded PIA data identifies a total of five collisions on the A4155 within the study period, four of which were classified as 'slight' in severity and one as 'serious'. No 'fatal' accidents were recorded. A further two PIAs were recorded on the A404 in the vicinity of the southbound on-slip from the Westhorpe Interchange, both classified as 'slight'.
- 3.51. The single 'serious' collision, occurring in July 2016 in dry daylight conditions, comprised a nose-tail collision between two cars on the Westhorpe Roundabout, resulting in serious injury to one casualty.
- 3.52. Of the two collisions occurring at the Parkway roundabout to the west of the A404, the first comprised a nose-tail collision between two cars, occurring in March 2019 in wet daylight conditions and resulting in slight injury to one casualty. The second recorded PIA, occurring in September 2018 comprised an incident between two cyclists in dry daylight conditions resulting in slight injury to one casualty, although no contact occurred.

- 3.53. One collision is recorded at the Site access junction during the most recent five-year period, occurring on the junction of Pump Lane South with A4155 Marlow Road in December 2017. The accident comprised a collision between a car turning right from Pump Lane South and an eastbound vehicle on the A4155 in wet daylight conditions, resulting in four slight casualties including a child.
- 3.54. The final recorded PIA on the A4155 occurred at the junction of Westhorpe Farm Lane with A4155 Marlow Road in April 2018. This accident involved a collision between an eastbound car on the A4155 and a right-turning car from Westhorpe Farm Lane in dry daylight conditions, resulting in one slight casualty.
- 3.55. Of the two recorded PIAs on the A404, the first comprised a nose-tail collision between two cars on the mainline southbound carriageway in dark wet conditions in November 2016, resulting in slight injury to one casualty. The second PIA, occurring in July 2016 in dry daylight conditions, comprised a nose-tail collision between three cars on the slip road, resulting in slight injury to one casualty.
- 3.56. A summary of PIA data across the wider area, within a 5km radius of the Site, identifies a total of 554 accidents in the 5½-year period. The recorded incidents are summarised by year and mode in Tables 4 and 5 below.
- 3.57. These provide connections to existing infrastructure to the south, east, west and north of the Site.

Table 4: Wide Area Vulnerable Road Users Incidents

Mode		2016	2017	2018	2019	2020	2021*
Pedestrian	Fatal	1	1	-	-	1	1
	Serious	3	1	1	1	1	3
	Slight	10	9	17	12	8	2
	Total	14	11	18	13	10	6
Cycle	Fatal	-	-	-	-	-	-
	Serious	4	4	3	2	1	3
	Slight	13	7	9	5	10	8
	Total	17	11	12	7	11	11
Motorcycle	Fatal	-	-	-	-	1	-
	Serious	5	4	4	4	1	1
	Slight	13	11	10	10	4	2
	Total	18	15	14	14	6	3

Note: *Provisional data to June 2021

Table 5: Wide Area Collision Data Overview

All Modes	2016	2017	2018	2019	2020	2021*
Fatal	3	3	2	-	5	1
Serious	26	11	15	14	10	11
Slight	107	84	100	77	61	24
Total	136	98	117	91	76	36

Note: *Provisional data to June 2021

- 3.58. Three Fatal incidents were recorded on the A404 between the Westhorpe Interchange and Handy Cross Roundabout (M40 Junction 4) to the north of the Site over the study period. The first, occurring in September 2016 on the southbound carriageway comprised a collision between three cars resulting in 3 casualties of which one person suffered fatal injuries. The second, occurring in January 2018 on the southbound carriageway comprised a collision between three cars resulting in 4 casualties of which one person suffered fatal injuries. The third PIA, occurring in June 2021 comprised a collision between a car and a pedestrian in the carriageway, resulting in fatal injuries to the pedestrian.
- 3.59. A review has been undertaken as to whether there are any prevalent historic accident clusters or trends within the data received. It is noted that a number of accidents have been recorded within the wider network at significant junctions (such as M40 Junction 4 and the Bisham Roundabout on the A404), however the vast majority are associated with minor collisions, as would be expected for junctions of this scale and importance within the network.
- 3.60. The historic accident data raises no significant patterns or concerns with respect to the impact of the Proposed Development in terms of highway safety. The conceptual Site access junction designs have been submitted for Stage 1 Road Safety Audit and a Designer's Response provided by the Design Organisation. As a result, it is considered there are no significant trends or features within the study area, that would increase the propensity for accidents to occur.

Accessibility Index

- 3.61. The BREEAM sustainability assessment method requires the calculation of a public transport Accessibility Index (AI) for the Site. The AI calculation is similar to the Transport for London (TfL) Public Transport Accessibility Level (PTAL). It considers the proximity of local transport nodes and the number of services accessible via these nodes during the Site's typical operating hours. The calculation accounts for bus stops within 640 m and railway stations within 960 m of the Site.
- 3.62. [Appendix C](#) includes the AI calculations that show the Site currently has an AI of 0.42. An AI of 0.42 represents a low level of accessibility. BREEAM have aligned the AI with the TfL method and shows a level of access comparable to a rural area on the outskirts of London. Significant opportunities for service enhancements, thereby increasing the AI for the Site, form a key tranche of the emerging Sustainable Transport Strategy.

4. Proposed Development

Marlow Film Studios

Overview

- 4.1. The Applicant is submitting a planning application for:

“Full planning permission for production space and supporting buildings for screen-based media and associated services/industries. The development comprises: sound stages; workshops; office accommodation; Studio Hub; associated outdoor space such as backlots and unit bases; entrance structures and reception; security infrastructure; mobility hub; cafes; parking; bridge; incidental supporting buildings; associated infrastructure; public art; upgraded vehicular access onto Marlow Road; new cycle and pedestrian accesses; a new cultural/ educational/ recreational building; a new community building; and, associated landscaping, publicly accessible recreational land and ecological and environmental enhancements/habitat creation.”

- 4.2. The Site comprises six distinct plots as illustrated by [Figure 9](#) below.

Figure 9: Marlow Film Studios – Land Use Plots



- 4.3. [Appendix A](#) holds the Site masterplan for the Scheme.

- 4.4. The Proposed Development provides a floorspace totalling 124,285 m² GEA comprising:

- Total Sound Stages GEA – 43,921 m²
- Total Workshop GEA – 38,043 m²

- Total Office GEA – 25,997 m²
 - Total support (excluding cores) GEA – 8,950 m²
 - Total other (media) GEA – 2,736 m²
 - Total public service GEA – 4,638 m²
- 4.5. The Site will accommodate car parking across two Multi-storey Carparks (MSCP) located within Plot 2a (the Southern MSCP, accommodating a total of 311 car park spaces and 5 motorcycle spaces), and Plot 2B (the Northern MSCP, accommodating a total of 750 car parking spaces and 60 motorcycle spaces) along with a further 54 accessible ground level parking spaces within Plots 1, 2a, 2b, 3 and 4.
- 4.6. Facilities will be dispersed throughout the Site providing a vibrant and inspiring workplace, activating the streetscape through walkability and active mobility, improving public transport connections, whilst supplying employees and visitors with relevant services and flexible outdoor spaces, thereby reducing the need to travel outside of the Site by use of a private vehicle.

Site Access

- 4.7. Access to the Site will be taken via a new signal-controlled junction with the A4155 Marlow Road. The main access for the Studio will diverge from the spine road serving Westthorpe House and Westthorpe Park Homes immediately south of the junction and will take vehicles beneath the Entrance Canopy, straight to the Entrance Square. The Entrance Square provides an outdoor arrival space comprising a cluster of buildings which generate activity around a landscaped square that hosts the main reception, security checkpoint and other amenities including food and beverage, estates offices, bus stops and the mobility hub. This access will also provide vehicular access to the Northern MSCP.
- 4.8. The conceptual junction arrangement 'Option 2' is illustrated by drawing no. 60654980-ACM-XX-XX-DR-HW-000003 P02, presented at [Appendix D](#), which shows the improvements and reconfiguration of the existing junction on the A4155 Marlow Road as an all-movements signal-controlled crossroad junction. The justification and rationale behind the proposed access layout is set out in AECOM's Highway Basis of Report, presented at [Appendix E](#), which includes the Stage 1 Road Safety Audit (RSA) and Designer's Response for the proposed signalised crossroad junction.
- 4.9. [Appendix D](#) also includes drawing no. 60654980-ACM-XX-XX-DR-HW-000004 P02 which provides the swept path analysis at the proposed junction for a maximum legal articulated vehicle and standard rigid bus and drawing no. 60654980-ACM-XX-XX-DR-HW-000006 P01 which illustrates the junction visibility analysis.
- 4.10. The alternative conceptual junction arrangement 'Option 1', illustrated by drawing no. 60654980-ACM-XX-XX-DR-HW-000001 P02 appended to the Highway Basis of Report presented at [Appendix E](#), has also been assessed within this TA for completeness. This option removes the right-turn from A4155 Marlow Road to Pump Lane South which would, in principle, improve the efficiency of the junction by introducing a short diversion for right-turning traffic around the Westthorpe Interchange to turn left into Pump Lane South. For the purposes of this assessment Option 2, the all-movements junction, is considered the preferred option subject to capacity assessment.
- 4.11. The existing speed limit for the A4155 Marlow Road is 60mph from the western side of the Westthorpe Interchange to approximately 110m west of the A4155 Marlow Road junction with Church Road. It is proposed that this speed limit will be reduced to allow for any additional queuing and visibility resulting from provision of a new signal-controlled junction for the Proposed Development. The

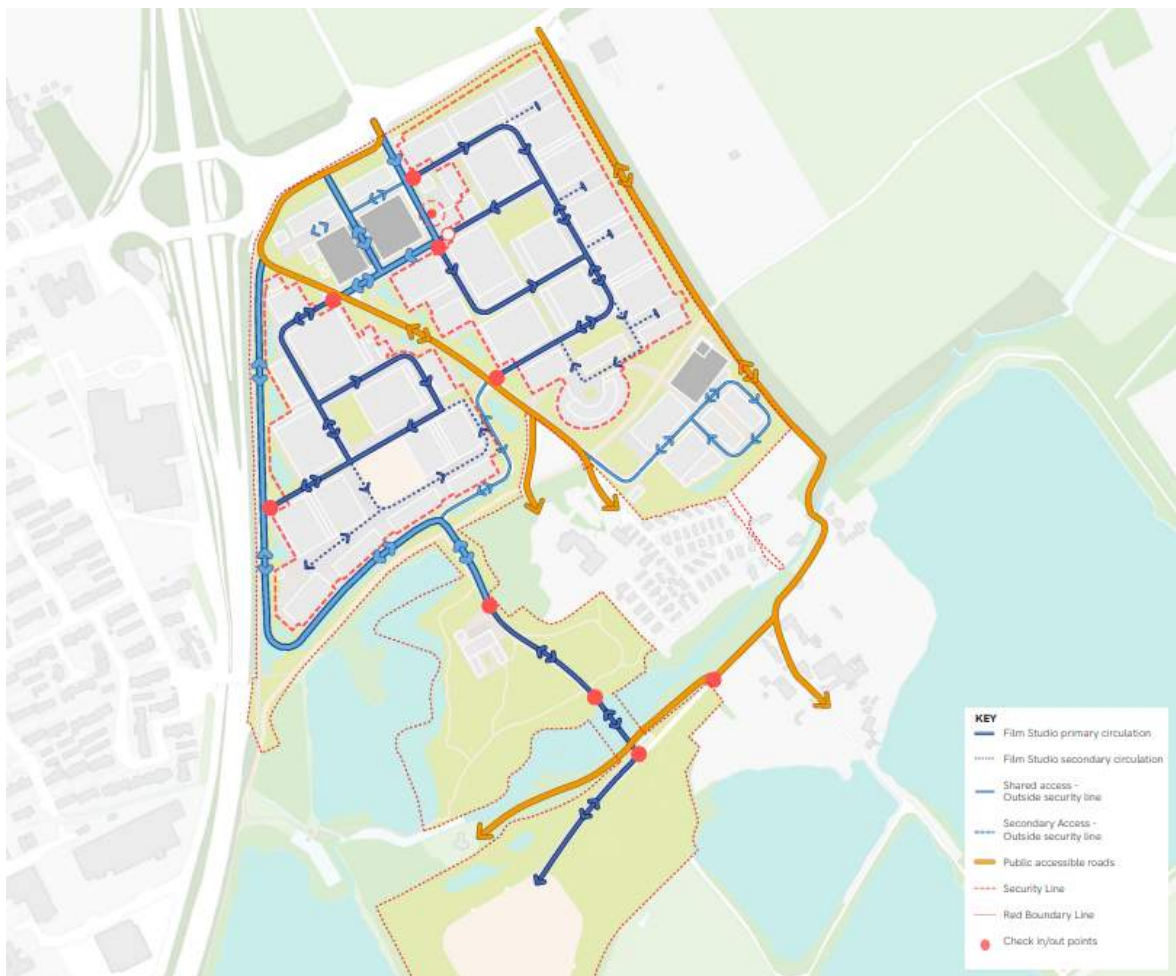
design speed for the conceptual junction layouts has been considered as 64kph (40mph). An application to Buckinghamshire Council will be made to reduce the existing speed limit to 40mph, supported by the introduction of repeater signs in appropriate locations. A Traffic Regulation Order will need to be enacted to coincide with the completion of the highway works.

- 4.12. The Proposed Development will also be a catalyst for the enhancement of the existing pedestrian and cycling network around the junction as detailed in drawing no. 60654980-ACM-XX-XX-DR-HW-000003 P02, presented at [Appendix D](#).

Internal Mobility Network

- 4.13. The majority of staff and visitors will access the Site via the main entrance, either parking in the Northern MSCP (where pre-booked), alighting from public transport or arriving by active travel modes. Staff and visitors to the Site will typically arrive in the Entrance Square at the main reception, passing through the security line to enter the Studio. The internal street network within the Site will enable the safe movement of people, goods, and equipment around the studios and is illustrated by [Figure 10](#) below.

Figure 10: Site Mobility



- 4.14. The central spine road, which remains outside the secure area, will provide access from the A4155 to Westhorpe House and Westhorpe Park Homes as well as Plots 2a and permitted access to the space for recreation in Plot 4. A new bridge connecting Plot 4 and Plot 5 will provide access and egress for the backlot. Only authorised vehicles and personnel will be able to access the secure areas of the Site.
- 4.15. Pedestrian streets within this network will offer a safe environment to transit, stay, socialise, and work. Shared and pedestrian streets will have a width between 10m to 15m. Servicing streets, with a width between 15m to 20m will supply vehicular access to all buildings, which will enable large vehicles to circulate the Site for access to workshops and sound stages. These service streets will have wide footways between 3m to 5m to ensure the safe movement of pedestrians. These areas will supply aprons for the sound stages, to enable delivery or production vans to temporarily park adjacent to these buildings.

Active Travel Accessibility

- 4.16. The Proposed Development will seek to maximise the opportunities for modal shift from the private car to active modes (i.e. walking and cycling), particularly for local journeys. [Figure 11](#) shows how the Proposed Development will provide active travel connections within the Site and with the surrounding highway and Public Right of Way networks.

Figure 11: Active Mobility



- 4.17. The Site entrance will provide footways and crossing facilities to facilitate pedestrian access from A4155 Marlow Road, connecting with the internal footways to deliver a high level of internal pedestrian network within and between each plot and the surrounding area.
- 4.18. The Proposed Development will enhance the existing pedestrian and cycle infrastructure in the vicinity of the Site, connecting Little Marlow, A4155 Marlow Road and existing Public Right of Way networks to the east with Marlow town, rail station and the Globe Business Park to the west, via sustainable travel links through the Site and localised improvements to existing facilities (e.g. widening of sections of the shared footway / cycleway and improved crossings on the A4155 in the vicinity of the Site access, and through a contribution towards improvements to active travel initiatives and infrastructure).
- 4.19. The existing east-west Public Right of Way network (Footpath 20) will be enhanced by increasing the width of the path to enable cyclists and pedestrians to share the space safely, resurfacing the existing path to ensure pedestrians and cyclists can comfortably make use of the route and providing low-level lighting to deliver a secure and safe connection at all times.

Public Transport Accessibility

- 4.20. A key principle of the Proposed Development will be to maximise the opportunities for modal shift from the private car to sustainable modes of travel, particularly public transport. Figure 12 illustrates the potential public transport network that could be delivered by the Proposed Development.

Figure 12: Wider connections to Public Transport



- 4.21. The Proposed Development provides for the introduction of a new north-south bus route connecting High Wycombe and Maidenhead along the A404 corridor via the Site and Handy Cross P&R site. The proposed route addresses an identified gap in the current bus-based public transport provision, serving the needs of the Site (by connecting residential areas and rail services in High Wycombe and Maidenhead with the Site) whilst also providing the wider community with a high-quality direct public transport link between the two market towns.
- 4.22. The Proposed Development also provides for the introduction of an east-west 'Hopper' bus service connecting the Site with Marlow to the west and Bourne End to the east. Indicatively it is anticipated that the Hopper service could operate on a loop, serving residential areas in Marlow, Little Marlow and Bourne End and connecting key destinations including Marlow and Bourne End stations, the Globe Business Park and Marlow town centre.
- 4.23. A new bus stop at the Entrance Square within the Site will accommodate the new bus connections and facilitate interchange between the Site, public transport routes and active travel modes.

Servicing

4.24. The operational needs of the Site include:

- Deliveries - a wide range of vehicles will regularly access the site to deliver materials and other packages and will either drop-off / pick-up from the main reception and/or require access to stop conveniently near building entrances;
- Productions typically use production vans during filming to provide additional services such as catering trailers, makeup wardrobes, crew base and actors trailers which tend to occupy the streetscape and unit bases throughout the filming stage;
- Heavy Goods Vehicles are occasionally used to move sets, props and other materials. The streets and building design facilitate these vehicles to access the buildings;
- Waste Management - productions will define their waste management plan to promote the use and recycling of waste. Typically, skips will be appropriately located to facilitate productions to share multiple containers to ensure waste could be segregated and recycled.

4.25. The internal streetscape will incorporate accessible parking bays and aprons of hard standing around buildings to meet servicing requirements.

4.26. The only vehicles that will have access to the production clusters are:

- Deliveries or collections that the reception/gatehouse cannot manage. Once the vehicle has completed the delivery, it must return to the multi-storey car park or leave Site.
- Medical services.
- Production vehicles.
- Set lighting and rigging vehicles.
- Catering vehicles.
- People with reduced mobility.
- VIP visitors.

Parking

Cycle Parking

4.27. Secure cycle parking provision is essential for supporting the development of cycling as a transport choice. A total of 272 cycle parking spaces will be provided across the Site as detailed in [Table 6](#) below.

Table 6: Summary of proposed cycle parking provision

Mobility hub	Covered cycling docks	Total
112	160	272

4.28. The main cycle storage facility will be the Mobility Hub, located in the Entrance Square in Plot 1 and visible to all visitors accessing the Site. The Mobility Hub will provide 112 cycle spaces in a well-lit and secure storage space. The mobility hub will also host other cycling facilities, such as showers, changing rooms and lockers.

Figure 13: Cycle Parking Locations



- 4.29. Cycle parking will be located across the Site, as illustrated by [Figure 13](#) above, to encourage the use of cycling to access the Site as well as for short trips within the Site. Covered cycle docks will be provided in clusters, as close as possible to the main entrance of sound stages, offices and workshops, and incorporated into the landscape design, making them both accessible and visible.
- 4.30. The proposed cycle parking provision is more than sufficient to accommodate the expected demand of the Site and will accommodate all types of cycles. Cycle parking will be monitored to ensure that provision remains fit-for-purpose and that current and future demand is identified. Cycle parking use and provision will be monitored through the Travel Plan for the Site and appropriate measures identified to maximise demand and/or facilitate supply of further cycle spaces if the Site requires it.

Car and Motorcycle Parking

- 4.31. Vehicular parking will be accommodated on Site within two Multi-storey Carparks (MSCP) and a limited number of ground level spaces within the streetscape. Pre-booked visitors, film trade cluster employees and production staff will be able to park in the multi-storey car parks. Only a limited number of drivers/vehicles will be able to access the production clusters and parking spaces within the streetscape which are reserved for people with reduced mobility and/or Very Important People (VIP).

- 4.32. A total of 1,108 car parking spaces (of which 6% i.e. 68 are accessible spaces) and 65 motorcycle spaces will be provided on-Site. A further 7 additional designated accessible parking bays are provided in Plot 4 to service the Culture and Skills Academy. [Table 7](#) provides a summary of the proposed spaces for the Site.

Table 7: Summary of Proposed Vehicle Parking Provision

	Total floorspace (m ²)	Parking	Accessible	Motorcycle
North Multi-Storey Car Park (MSCP 1)	33,884	736	14	60
South Multi-Storey Car Park (MSCP 2)	10,549	304	7	5
On-Street Parking For people with reduced mobility or VIP			47	
Plot 4 to service the Culture and Skills Academy			7	
Total	44,433	1,040	75	65

- 4.33. This provision encompasses all aspects of parking on-Site. The accessible bays form 6% of total parking provision on-Site, consistent with the BC parking standards.
- 4.34. The unit bases and internal backlot areas will provide temporary parking for production vans, trailers and HGVs during production. Car parking locations within the Site are illustrated by [Figure 12](#) below.

Figure 14: Car Parking Locations



- 4.35. On-Site car parking demand will be managed through the 'Monitor and Manage' approach established through the Travel Plan and Sustainable Transport Strategy (STS). Parking demand will be controlled through the application of 'Conditions of Employment' (whereby staff will be required to register vehicles used for travel to work and commit to parking responsibly i.e. not within surrounding streets). Only authorised drivers/vehicles and pre-booked parking (including visitors) will be able to access the MSCPs. This regime will be enforced by Automatic Number Plate Recognition (ANPR) systems such that unauthorised drivers will not be able to access car parks and will be turned away. Should a problem be reported with parking off-site on adjacent residential roads, the Monitor and Manage approach will identify, by reference to recorded number plates, whether any of those vehicles relate to the Site, and appropriate action taken.
- 4.36. A parking accumulation assessment has been undertaken to demonstrate the peak demand for car parking in the managed STS scenario. Based upon the initial occupancies recorded in the TRICS data for Shepperton Studios (pro rata – initial occupancy / m² GFA) an initial occupancy of 356 spaces has been calculated for the Proposed Development at the beginning of the accumulation (i.e. before 07:00). Table 8 shows the parking accumulation model assuming this frontload occupancy.

Table 8: Parking Accumulation (Managed STS scenario)

Time	In	Out	Total	Accumulation
Initial Occupancy	-	-	-	356
07:00-08:00	356	45	401	668
08:00-09:00	260	78	338	850
09:00-10:00	209	93	302	966
10:00-11:00	194	88	282	1071
11:00-12:00	91	89	181	1073
12:00-13:00	109	146	255	1036
13:00-14:00	127	151	278	1013
14:00-15:00	104	115	219	1002
15:00-16:00	82	142	225	942
16:00-17:00	109	218	327	832
17:00-18:00	94	351	445	576
18:00-19:00	102	263	365	415
Total	1838	1780	3618	

- 4.37. The parking accumulation model demonstrates that the peak accumulation of 1073 spaces (11:00-12:00) in the managed STS scenario can be accommodated within the proposed parking provision on-Site.

Electric Vehicle – Charging Provision

- 4.38. In line with current trends toward alternative and cleaner fuel use the Site will provide 20% active provision (i.e. 222 spaces) with Electric Vehicle (EV) charging points to promote the use of electric vehicles. All remaining parking spaces will be provided with passive EV provision such that they can be converted with EV charging points in the future if required.

Summary

- 4.39. This section demonstrates how the Proposed Development will make provision for safe and suitable access for all modes of travel. It identifies how the Proposed Development will enhance and integrate with the existing highway, public transport and active travel networks adjacent to the Site. This section also demonstrates how the Site will accommodate vehicle parking and servicing in line with the relevant standards and guidance, where applicable.

5. Sustainable Transport Strategy

Overview

- 5.1. The Site will implement and manage a Travel Plan (TP) to encourage sustainable travel by staff and visitors to the Site and promote the use of alternative methods of travel to the Site other than private motor vehicles. A Travel Plan Co-ordinator (TPC) will be appointed to oversee the implementation and monitoring of the TP which will include personalised travel planning advice to staff.
- 5.2. The Proposed Development will include a variety of public transport and active travel measures which will be implemented throughout the Site. This will be encompassed within a Sustainable Transport Strategy (STS) which will be implemented through the TP. The STS sets out a strategy to deliver a maximum 60% car driver mode share for the Site.
- 5.3. The proposal within the Site boundary will improve the overall streetscape and active travel opportunities in the area. Some of the key elements that will be introduced as part of the development are outlined in the strategies below.

Travel Plan

- 5.4. A Framework TP has been prepared in support of the planning application and submitted as a separate planning document which outlines in greater detail the dedicated public transport and active travel measures proposed as part of the application.
- 5.5. The Framework TP is the mechanism by which the STS will be delivered. The Framework TP will be upgraded to a Full TP upon occupation of the Site. The TP will be implemented by the Applicant and the appointed TPC for the Site and its effectiveness monitored, and appropriate actions identified through the proposed 'Monitor and Manage' approach.
- 5.6. A Travel Plan Survey will be conducted upon occupation of the Site to provide an updated baseline situation for reviewing and setting appropriate modal shift targets to be met over the proposed 5-year timeframe of the TP. The TPC will arrange for the baseline Travel Survey to be undertaken within 6 months of full occupation.
- 5.7. The effectiveness of the TP will be monitored through travel surveys and ANPR data. The mode share targets are recognised as being ambitious but also considered to be achievable through the TP measures and 'Monitor and Manage' strategy proposed. A 'Mode Share Incentive Scheme' will incentivise delivery of target mode share, secured through a Section 106 Agreement.
- 5.8. The TPC will form a contact point for communication with the Local Authority. Should target mode share not be achieved, the TPC will liaise with the Local Authority to identify additional TP measures. Findings from authority discussions and reviews will be communicated via newsletters.
- 5.9. Key elements of the Framework TP include:
 - Appointment of a Travel Plan Co-ordinator for the Site;
 - Travel Plan targets to deliver maximum 60% car driver mode share through a circa 24% mode shift to Public Transport (bus and rail) and Active Travel (walking & cycling);
 - Monitoring through Travel Plan Surveys and the 'Monitor and Manage' approach;
 - Provision for a 'Mode Share Incentive Scheme' (MSIS) to incentivise delivery of target mode share and secured through a Section 106 Agreement.

Public Transport Strategy

- 5.10. The proposed public transport strategy for the Site incorporates the provision of two new bus services and improved public transport infrastructure within and in the vicinity of the Site.
- 5.11. The proposals include a new north-south bus service between High Wycombe and Maidenhead, connecting with the Handy Cross P&R site and the Site. The new bus service will provide a direct, frequent, and high-quality service, targeted to capitalise on the currently poor public transport connectivity between High Wycombe and Maidenhead.
- 5.12. An indicative 30-minute interval service with three vehicles will provide quick access between the urban areas and railway stations in High Wycombe and Maidenhead, including the Elizabeth Line (Crossrail). It is proposed that operational times will be centred on employee start/finish times whilst also providing a public service. It is anticipated that the proposed bus service will operate a variable route between the Site and Maidenhead via the A404 to maximise journey efficiency.
- 5.13. An east-west 'hopper' style local bus between Marlow and Bourne End is also proposed. This service would cover both employee requirements and local movements within the immediate vicinity of the Site as a public service. Provisionally it is considered that this option will be based upon a pool of vehicles, and therefore scalable depending upon demand, which will allow buses to be used flexibly to provide local 'staff only' commuter bus services in the 06:00-08:45 and 16:15-19:05 periods as well as public 'hopper' services. A more detailed breakdown of this proposal is set out in the Framework TP.
- 5.14. Key elements of the Public Transport strategy include:
 - New public bus service between Wycombe and Maidenhead, connecting Marlow Film Studios with High Wycombe Station, High Wycombe Coachway (Park & Ride) and Maidenhead including the Elizabeth Line (Crossrail), addressing identified gaps in existing north-south bus service provision;
 - Onward connections for rail and bus services for West/Central London and Heathrow Airport;
 - Minimum half-hourly frequency between 06:00 and 19:00 Monday to Friday, frequencies and operating hours scalable according to demand;
 - Variable routing between Marlow Film Studios and Maidenhead to optimise journey reliability
 - Bespoke, smaller and high-quality electric vehicle / hydrogen buses with facilities including on-board WiFi
 - East-West 'Hopper' Service on A4155 Corridor between Marlow and Bourne End.

Active Travel Strategy

- 5.15. A range of active travel measures will be provided throughout the Site as part of the Proposed Development. Marlow Film Studios will be a driving force behind the extension of the current pedestrian and bicycle networks by strengthening existing links and creating additional recreational paths within and across the Site boundaries.
- 5.16. Showers, lockers and secure cycle storage provision, designed in accordance with BREEAM standards and accommodated within the Mobility Hub in Plot 1, will be provided as part of the Proposed Development. Both staff and visitors will be able to utilise these facilities.

- 5.17. The Proposed Development will provide further secure cycle parking in clusters, undercover and located within accessible locations to facilitate internal movement by active travel modes within and across plots on the Site.
- 5.18. The Proposed Development will improve the accessibility of existing pedestrian and bicycle connections between the Site and the existing network. New footways and signal-controlled crossings will be provided on the A4155 Marlow Road as part of the proposed new Site access. Localised improvements to existing Public Right of Way, shared footway/cycleway routes, and crossing provisions will be implemented, including upgrading the current Public Right of Way (Footpath 20) crossing the Site, which will be widened and resurfaced to make it more appealing to pedestrians and cyclists.
- 5.19. Key elements of the Active Travel strategy include:
- Provision for 272 on-site cycle parking spaces;
 - On-site bicycle / e-cycle hire scheme, potential extension to include key origins / destinations in Marlow;
 - Bicycle user / walking groups facilitated through Travel Plan;
 - Localised improvements on external pedestrian and cycle networks along routes to key origins/destinations in Marlow

Car Parking Strategy

- 5.20. In order to manage the vehicles accessing the Site, Automatic Number Plate Recognition (ANPR) cameras will be used to manage access to secured plots. All Vehicle registrations will be logged using ANPR and known vehicles will be directed to specific fast-tracked vehicle lanes at the main entry. This will ensure safety and will deter unauthorised parking within the Site.
- 5.21. Visitors must register prior to visiting the studios; once there, they must park in the northern multi-story car park and walk to the Security Pass Office to obtain their pass. It is expected that production employees will park in one of the two car parks. They can either opt to walk around the Site or use bicycle/e-scooters.
- 5.22. To reduce queuing wait times, it is expected that most of the vehicles arriving at the Site will be pre-registered, and parking spaces will have been pre-booked. Unregistered vehicles will be sent to the designated waiting areas adjacent to the parking lot pending registration and subject to authorisation. Unauthorised vehicles will be turned away.
- 5.23. Key elements of the Car Parking strategy include:
- Total 1,108 pre-booked, managed parking spaces on-site in Multi-Storey Car Parks and internal on-street provision;
 - 20% Active Electric Vehicle (EV) charging and 5% Blue Badge parking (of total capacity);
 - Temporary production parking accommodated within Unit Base and Backlot areas;
 - Park & Ride connections via new High Wycombe to Maidenhead bus route;
 - Driver behaviours controlled by 'Conditions of Employment'.

Monitor and Manage

- 5.24. The 'Monitor and Manage' strategy is a core element of the STS, setting the framework and protocol for the management of vehicle use to access the Site and associated parking demand. The Monitor and Manage approach will be enforced through a range of measures including conditions of employment, registration of all vehicles used by staff and/or organisations using the Site, pre-booking of parking spaces within the MSCP and streetscape provision and monitoring of car park use through ANPR.
- 5.25. The Monitor and Manage approach will set out a framework for delivery of the mode share targets for the Site. It will also provide a mechanism for monitoring vehicular access to the Site and car park demand and for reviewing the mode share targets in the future.
- 5.26. The Monitor and Manage strategy includes the provision of a 'Mode Share Incentive Scheme' (MSIS), comprising a financial penalty to incentivise achievement of mode share targets within identified timeframes. The value of the MSIS and specific timeframes for delivery of mode share targets will be agreed with the Local Authority as part of the planning process and secured through a Section 106 Agreement.
- 5.27. Should mode share targets not be met with specified timeframes, the Applicant and/or appointed TPC will discuss and agree a plan of action with the Local Authority, to determine how any deficiencies in the operation of the Travel Plan will be met.
- 5.28. Key elements of the Monitor and Manage strategy include:
- 'Monitor and Manage' approach, enforced by Automatic Number Plate Recognition (ANPR) to regulate parking demand;
 - A 'Mode Share Incentive Scheme' (MSIS) to incentivise achievement of mode share targets within the timeframes identified.

Mode Shift Targets

- 5.29. The STS will deliver added infrastructure and incentives for public transport and active travel between the Site and surrounding areas, supported by a robust parking strategy within the Site in accordance with Government policy to reduce reliance on the private car and the push to reduce carbon emissions associated with transport.
- 5.30. The principal drivers for modal shift are:
- A reduction in motor vehicle use, through the management of parking demand, introduction of new public transport services and provision of improved connectivity to public transport and active travel modes;
 - An increase in the uptake of public transport users through the provision of:
 - New north-south bus services between High Wycombe and Maidenhead, connections between the Site and public transport interchanges at High Wycombe Station, Handy Cross P&R, and Maidenhead Station;
 - New east-west services between Marlow and Bourne End, connections between the Site and Marlow town centre, Marlow Station, Globe Business Park and Bourne End Station.
 - An increase the uptake of active travel (Cycling and Walking) through the provision of improved permeability through the Site and connections with the existing footway, cycleway and Public Right of Way networks adjacent to the Site serving Marlow town and Little Marlow.

5.31. These measures will together provide significant opportunity for modal shift away from private motor vehicles towards public transport and active travel modes. Additionally, these measures will be publicly accessible and provide significant opportunity for residents and employees in the surrounding area, not directly connected to the Proposed Development, to shift to more sustainable modes of travel.

5.32. Table 9 shows the STS modal share targets.

Table 9: Method of Travel to Work – STS Targets

Mode	Mode Share (%)		Change in Mode Share
Underground, metro, light rail, or tram	0.2%	Public Transport Mode Share 20.0%	+16.7%
Train	4.8%		
Bus, minibus, or coach	15.0%		
Taxi	0.5%		-
Motorcycle, scooter, or van	1.0%		-
Driving a car or van	60.0%		-24.2%
Passenger in a car or van	3.3%		-
Bicycle	7.1%	Active Travel Mode Share 15.1%	+7.5%
On foot	8.0%		
Other method of travel to work	0.1%		-
Total	100.0%		

5.33. The TP mode share targets are summarised as follows:

- To reduce motor vehicle use from 84.2% to a maximum of 60% mode share;
- To increase the uptake of public transport users from 3.3% to 20% mode share; and
- To increase the uptake of active travel (Cycling and Walking) from 7.6% to 15.1% mode share.

6. Trip Generation

Introduction

- 6.1. This section sets out the methodology used to forecast the number of vehicle movements associated with the Proposed Development and to distribute and assign those vehicle movements across the highway network.
- 6.2. For the purposes of this assessment, based upon an analysis of TRICS trip data and observed baseline traffic flows, trip generation has been forecast for the following peak hours:
- 07:00-08:00 (representing the Site AM Peak hour)
 - 08:00-09:00 (representing the Network AM peak hour)
 - 17:00-18:00 (representing both the Site and Network PM peak hour).

Existing Trip Generation

- 6.3. The Site itself comprises open grassland and is mostly vacant except for a dog training and socialising centre which currently operates within part of the Site. The Site forms part of a larger area including Westhorpe House and Westhorpe Park Homes, all accessed from the A4155 Marlow Road via the Site access junction and existing service road. The existing residential and commercial uses within the wider site are a material consideration within any transport study of the area.
- 6.4. Observed Manual Classified Count (MCC) turning movement data at the Site access has been reviewed to determine the existing number of vehicle movements associated with the current land uses, as presented in [Table 10](#) below.

Table 10: Site Access Turning Counts

Date	AM peak (07:00-08:00)			AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	In	Out	Total	In	Out	Total	In	Out	Total
July 2021	6	6	12	15	21	36	8	11	19

- 6.5. [Table 10](#) shows that the existing trip generation of the Site is low, with peak two-way movements of 36 trips observed within the AM Peak (08:00-09:00) hour.
- 6.6. Residents of Westhorpe House and Westhorpe Park Homes will continue to access the A4155 via the Site alongside the Proposed Development. Whilst it is assumed that the dog training and socialising centre use will cease, given the low volume of existing trip generation, the TA has not sought to remove those trips from the background traffic flows in the interest of a robust assessment.

Proposed Trip Generation

- 6.7. Trip generation for a studio land use is typically bespoke and highly variable depending upon the type and number of productions on Site at any time. The Proposed Development seeks full planning permission for a film studio with production space and supporting buildings for screen-based media (inc. Film, television, video games) and associated services. It is anticipated that productions using the Site will be primarily film and pre-recorded television productions (i.e. not comprising live studio audience events).

- 6.8. The trip generation methodology is based upon the evidence led use of observed data for similar studio land uses and assumptions upon the type and frequency of production. The 'Trip Rate Information Computer System' (TRICS, v7.8.1) database has been interrogated to inform the trip generation for the Proposed Development.
- 6.9. Observed trip data has been obtained from the TRICS database for the category 'MIXED/A – MISCELLANEOUS', within which film studio land use is included for surveys at Shepperton Studio. Three separate TRICS compliant multi-modal surveys have been conducted at Shepperton, the outputs for which are provided at [Appendix F](#), as follows:
- TRICS Site Reference: SC-16-A-03, Survey date: July 2011
 - TRICS Site Reference: SC-16-A-04, Survey date: August 2013
 - TRICS Site Reference: SC-16-A-05, Survey date: September 2015
- 6.10. Reflecting the variability and bespoke nature of production and the limited information available regarding the precise nature of studio activity on-site during any given survey, the trip generation forecast for the Proposed Development is based upon the blended trip rates for the three surveys at Shepperton.
- 6.11. For the purposes of the trip generation forecast, the operational studio floorspace (i.e. the trip generating elements) of the Proposed Development is considered to comprise:
- Total Sound Stages GEA – 43,921 m²
 - Total Workshop GEA – 38,043 m²
 - Total Office GEA – 25,997 m²
- 6.12. The 'Total Vehicle' and 'Total People' trip rates generated from the blended TRICS survey data for Shepperton are set out in [Table 11](#) below.

Table 11: TRICS Trip Rates – Shepperton

	AM peak (07:00-08:00)			AM peak (08:00-09:00)			PM peak (17:00-18:00)			Daily (07:00-19:00)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Total Vehicle	0.405	0.060	0.466	0.331	0.094	0.425	0.123	0.410	0.532	2.206	2.001	4.207
Total People	0.522	0.070	0.593	0.414	0.110	0.524	0.208	0.491	0.699	2.937	2.525	5.462

- 6.13. The TRICS trip data has been compared to vehicle trips used by other studios in TAs supporting planning applications. Table 12 sets out the vehicle trip rate comparison between the TRICS based Shepperton trip rates, and trip rates used in TAs supporting planning applications at Elstree Studio and Pinewood studios.

Table 12: Vehicle Trip Rate Comparison

Trip rate per 100 m ²	AM peak (07:00-08:00)			PM peak (17:00-18:00)		
	In	Out	Total	In	Out	Total
Shepperton	0.405	0.060	0.466	0.123	0.410	0.532
Elstree*	0.244	0.090	0.335	0.129	0.502	0.630
Pinewood**	0.789	0.050	0.839	0.038	0.612	0.650
Average	0.480	0.067	0.546	0.096	0.508	0.604

* Planning Ref: 16/0438/FUL (March 2016) ** Planning Ref: PL-20-3280-OA (September 2020)

- 6.14. Table 12 demonstrates that vehicular trip generation associated with studio sites can be highly variable. Whilst it is not possible to determine the precise level or type of production activity taking place on-site at the time of surveys at Elstree and Pinewood, to ensure a robust assessment of trip generation for the Proposed Development, the trip rate data obtained from the TRICS (v7.8.1) database for Shepperton has been supplemented by the vehicle trip rates from Table 12 above to reflect the higher average trip rates identified across the three studio sites (TRICS+).
- 6.15. Table 13 sets out the baseline total vehicle and total people trips calculated from the blended TRICS data for Shepperton as applied to the Proposed Development schedule of accommodation.

Table 13: TRICS Trip Generation – Shepperton

	AM peak (07:00-08:00)			AM peak (08:00-09:00)			PM peak (17:00-18:00)			Daily (07:00-19:00)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Total Vehicle	437	65	503	357	102	459	133	442	575	2381	2160	4542
Total People	564	76	640	447	119	566	225	530	755	3171	2726	5896

- 6.16. The average vehicle trip rates identified in Table 12 have been applied to the Proposed Development schedule of accommodation to develop factored TRICS+ 'Total People' trip generation forecasts which form the basis for the assessment of the Proposed Development, as presented in Table 14 below.

Table 14: TRICS+ Trip Generation – Average Across Shepperton, Elstree and Pinewood

	AM peak (07:00-08:00)			AM peak (08:00-09:00)			PM peak (17:00-18:00)			Daily (07:00-19:00)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Total Vehicle	518	72	590	390	124	514	104	548	652	2,598	2,641	5,239
Total People	667	84	752	488	146	633	177	658	834	3443	3,333	6,775

6.17. These forecasts form the basis for the assessment of the Proposed Development and are set out in full in [Appendix G](#).

Unmanaged Trip Generation

6.18. The Total People trip rates identified in [Table 14](#) have been disaggregated by the baseline mode share in [Table 3](#) to calculate the unmanaged trip generation (i.e. prior to STS mitigation). [Table 15](#) shows the unmanaged trip generation for the vehicular, public transport and active travel modes.

Table 15: Unmanaged Trip Generation

Proposed Development	AM peak (07:00-08:00)			AM peak (08:00-09:00)			PM peak (17:00-18:00)			Daily (07:00-19:00)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Vehicle	562	71	633	411	123	533	149	554	702	2,899	2,806	5,705
Public transport	22	3	25	16	5	21	6	22	28	114	110	224
Active travel	51	6	57	37	11	48	13	50	63	262	253	515

6.19. [Table 15](#) shows that during the Site AM peak (07:00-08:00) the unmanaged development will be expected to generate 633 two-way vehicle trips, 25 two-way public transport trips, and 57 two-way active travel trips. During the network AM peak (08:00-09:00) the proposals will be expected to generate 533 two-way vehicle, 21 two-way public transport, and 48 two-way active travel trips. During the PM peak (17:00-18:00) the proposals will be expected to generate 702 two-way vehicle, 28 public transport, and 63 active travel trips.

6.20. Over the course of a typical weekday (07:00-19:00) a total of 2,899 vehicle, 114 public transport and 262 active travel trips are expected to arrive on Site, and a total of 2,806 vehicles, 110 public transport and 253 active travel trips expected to depart in the unmanaged trip generation scenario.

Managed (Sustainable Transport Strategy) Trip Generation

6.21. [Section 5](#) of this TA sets out the Sustainable Transport Strategy (STS) targets for the Proposed Development. The STS targets a 60/40 modal share whereby motor vehicles constitute a maximum of 60% of peak hour two-way trips. The STS seeks to deliver a modal shift to public transport with a mode share target of 20% and active travel (walking and cycling) with a mode share target of 15%.

6.22. The Total People trip rates identified in Table 14 have been disaggregated by the target mode share in Table 9 to calculate the managed (STS) trip generation (i.e. maximum 60% trips by motor vehicle). Table 16 shows the managed (STS) trip generation for the vehicular, public transport and active travel modes.

Table 16: Managed (STS) Trip Generation

Proposed Development	AM peak (07:00-08:00)			AM peak (08:00-09:00)			PM peak (17:00-18:00)			Daily (07:00-19:00)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Vehicle	400	51	451	293	87	380	106	395	500	2,066	2,000	4,065
Public transport	133	17	150	98	29	127	35	132	167	689	667	1,355
Active travel	101	13	113	74	22	96	27	99	126	520	503	1,023

6.23. Table 16 shows that during the Site AM Peak (7:00-08:00) the managed (STS) development will be expected to generate 451 two-way vehicle movements, 150 two-way public transport movements, and 113 two-way active travel movements. During the network AM peak the proposals will be expected to generate 380 two-way vehicle, 127 two-way public transport, and 96 two-way active travel movements. During the PM peak the proposals will be expected to generate 500 two-way vehicle, 167 public transport, and 126 two-way active travel movements.

6.24. Over the course of a typical weekday (07:00-19:00) a total of 2,066 vehicles, 689 public transport and 520 active travel trips are expected to arrive on Site, and a total of 2,000 vehicles, 667 public transport, and 503 active travel trips expected to depart in the managed (STS) trip generation scenario.

Net Change in Trip Generation (Managed vs Unmanaged)

6.25. Table 17 shows the net change in the forecast number of trips the Site is expected to generate through implementation of the STS through the TP. It is envisaged that the STS will deliver a modal shift of circa 24% mode share from motor vehicle trips to public transport and active travel, delivered through the implementation of the 'Monitor and Manage' approach.

Table 17: Net Change in Trip Generation (Managed vs Unmanaged)

	AM peak (07:00-08:00)			AM peak (08:00-09:00)			PM peak (17:00-18:00)			Daily (07:00-19:00)		
	In	Out	Total	In	Out	Total	In	Out	Total	In	Out	Total
Vehicle	-162	-20	-182	-118	-35	-153	-43	-159	-202	-833	-806	-1,640
Public transport	111	14	126	81	24	106	29	110	139	575	557	1,131
Active travel	50	6	56	37	11	47	13	49	63	258	250	508

- 6.26. [Table 17](#) demonstrates that application of the STS target modal shift to the Proposed Development results in significantly fewer motor vehicle trips generated by the Site and correspondingly in a lesser impact on the highway network. [Section 8](#) of this TA sets out the junction impact assessment for the highway network in the vicinity of the Site.

Trip Distribution

- 6.27. The distribution of traffic to and from the Site has been determined from National Census 2011 travel to work data for the MSOA Wycombe 020. Trips have been assigned to the study network based upon their distribution and a route assignment based upon professional judgement, guided by online journey planning services.
- 6.28. [Table 18](#) summarises the National Census 2011 trip distribution for Wycombe 020 (daytime workplace population), classified by place of usual residence into twelve distinct routes, by percentage.

Table 18: Strategic trip distribution

Route	Trip percentage
Route 1 – A4155 east to Bourne End	12.0%
<i>Route 1a</i> – Cores End Road	4.3%
<i>Route 1b</i> – Blind Lane	2.5%
<i>Route 1c</i> – Sheepridge Lane	2.5%
<i>Route 1d</i> – A4155 Station Road	2.9%
Route 2 – A4155 west to Marlow	20.0%
Route 3 – A4155 west then A404 north (junction 4) then M40 east	11.5%
Route 4 – A4155 west then A404 north (junction 4) then A4010 north	8.3%
Route 5 – A4155 west then A404 north (junction 4) then A404 north to Wycombe	13.1%
Route 6 – A4155 west then A404 north (junction 4) then M40 west	9.9%
Route 7 – A4155 west then B482 north	1.4%
Route 8 – A4155 west then A404 south (destinations north of M4)	5.4%
Route 9 – A4155 west then A404 south then A308 east	0.3%
Route 10 – A4155 west then A404 south then M4 east	5.7%
Route 11 – A4155 west then A404 south then M4 west	7.7%
Route 12 – A4155 west then A404 south (destinations south of M4)	4.6%

- 6.29. The full trip distribution and assignment for the Proposed Development is set out in the network flow diagrams (drawing reference NFD_005) at [Appendix H](#).

7. Baseline and Future Network Traffic Flows

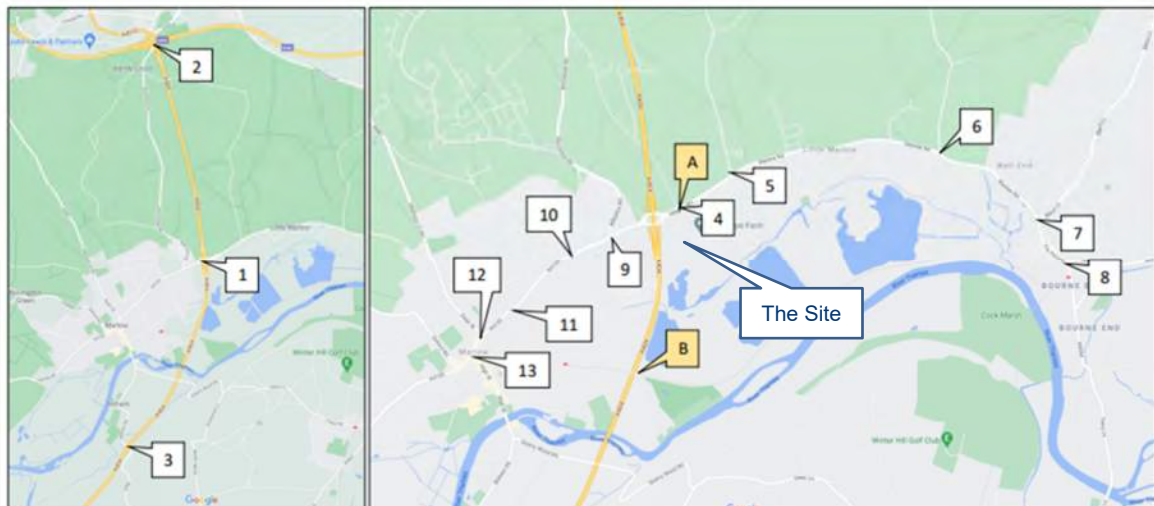
- 7.1. This section sets out the methodology and baseline traffic data informing the future network traffic flows (i.e. the 2021 and 2027 baseline). It also considers the wide area impact of the Proposed Development upon the surrounding highway networks in the future assessment year 2027.
- 7.2. A full set of Network Traffic Flow Diagrams is provided at [Appendix H](#).

Baseline Traffic Data

Overview

- 7.3. Traffic surveys were conducted in late June / early July 2021 with the agreement of BC Highways officers at thirteen Manual Classified Count (MCC) junctions and two Automatic Traffic Count (ATC) locations as illustrated in [Figure 8](#) below.

Figure 15: 2021 Traffic Survey Locations



- 7.4. The traffic survey locations are:
- MCC Surveys (07:00-10:00 and 16:00-19:00) including Queues
 1. A404 j/w A4155 Marlow Road and Little Marlow Road (the 'Westhorpe Interchange') including Little Marlow Road j/w Parkway
 2. M40 j/w A404 (the 'Handy Cross Roundabout')
 3. A404 j/w A308 Marlow Road (the 'Bisham Roundabout')
 4. A4155 Marlow Road j/w Pump Lane South and the drive to Westhorpe House
 5. A4155 Marlow Road j/w Winchbottom Lane
 6. A4155 Marlow Road j/w Sheepridge Lane
 7. A4155 Marlow Road j/w Blind Lane
 8. A4155 The Parade j/w Cores End Road and Station Road
 9. A4155 Little Marlow Road j/w Wiltshire Road

- 10. A4155 Little Marlow Road j/w Newtown Road
 - 11. A4155 Little Marlow Road j/w Glade Road
 - 12. A4155 Chapel Street j/w B482 Dean Street and A4155 Spittal Street
 - 13. A4155 Spittal Street j/w High Street and A4155 West Street
 - ATC Surveys (7 day, 24 hour flow plus speed)
 - A. A4155 Marlow Road in vicinity of Pump Lane South / the drive to Westhorpe House
 - B. Fieldhouse Lane in vicinity of A404 overbridge
- 7.5. Additionally, historic (pre-Covid) data was obtained for location 1 for the purposes of comparison with and determining the effects of the Covid pandemic upon 2021 flows at the junction. The observed traffic data at location 1 (i.e. the Westhorpe Interchange including Parkway roundabout) and location 4 (the Site access junction with A4155 Marlow Road) is considered below for the peak hour periods:
- Site AM Peak (7:00-08:00);
 - Network AM Peak (08:00-09:00); and
 - Site and Network PM Peak (17:00-18:00).

Observed Site Access Junction – 1 July 2021

- 7.6. Figure 16 and Figure 17 represent the observed MCC turning counts at the Site access, recorded on Thursday 1 July 2022, in Passenger Car Units (PCUs).

Figure 16: Site access – Observed counts July 2021 (07:00-08:00 and 17:00-18:00)

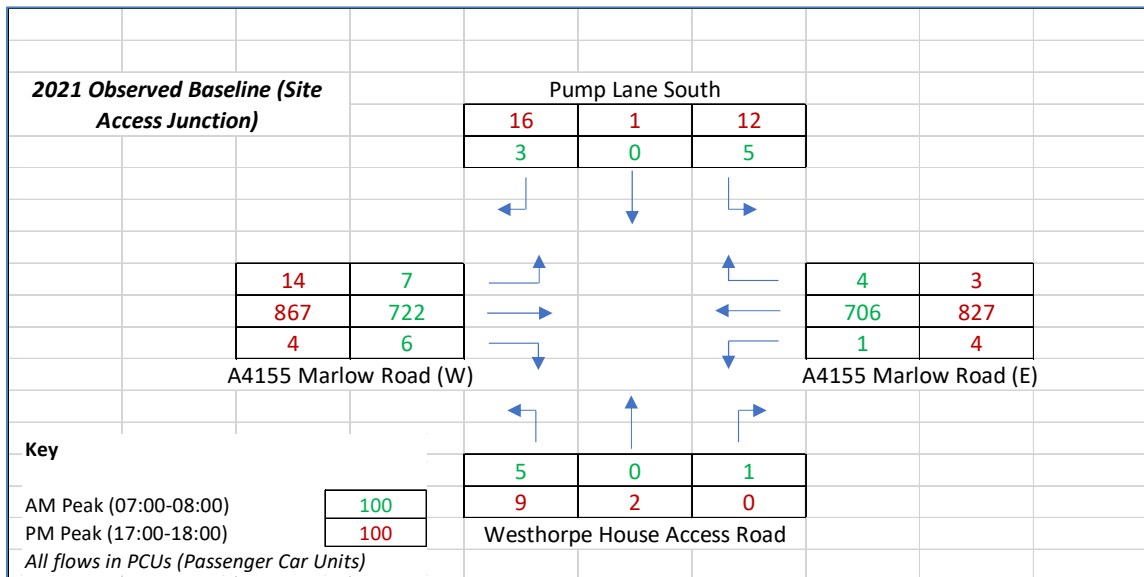
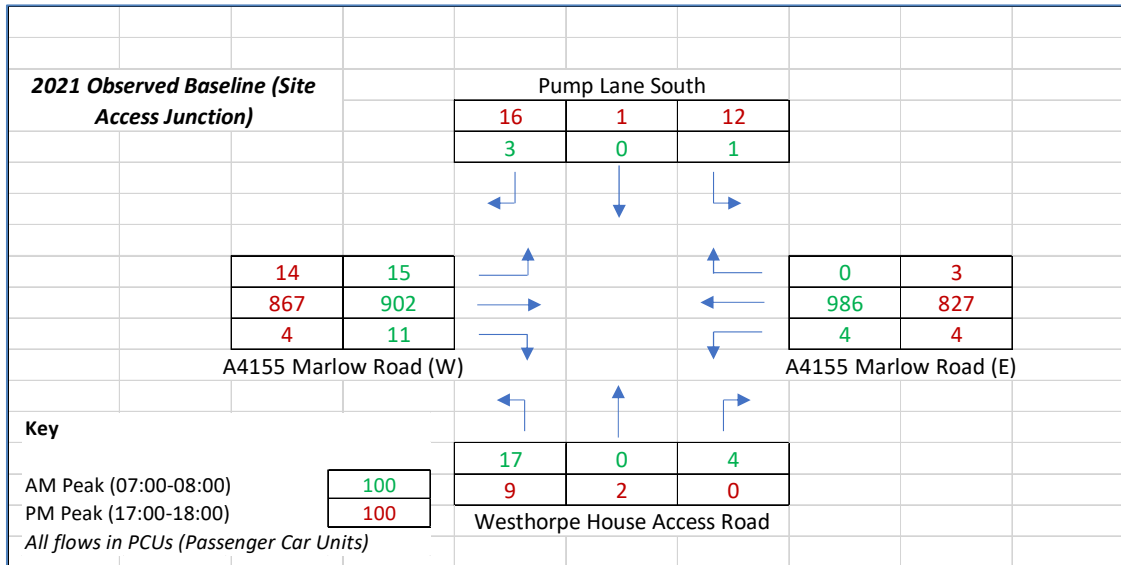


Figure 17: Site access – Observed counts July 2021 (08:00-09:00 and 17:00-18:00)



Observed Westthorpe Interchange Junction – 1 July 2021

7.7. Figure 18 and Figure 19 summarise the observed counts at Westthorpe Interchange and Parkway Roundabout, recorded on 1 July 2021, in PCUs.

Figure 18: Westthorpe Interchange – Observed counts July 2021 (07:00-08:00 and 17:00-18:00)

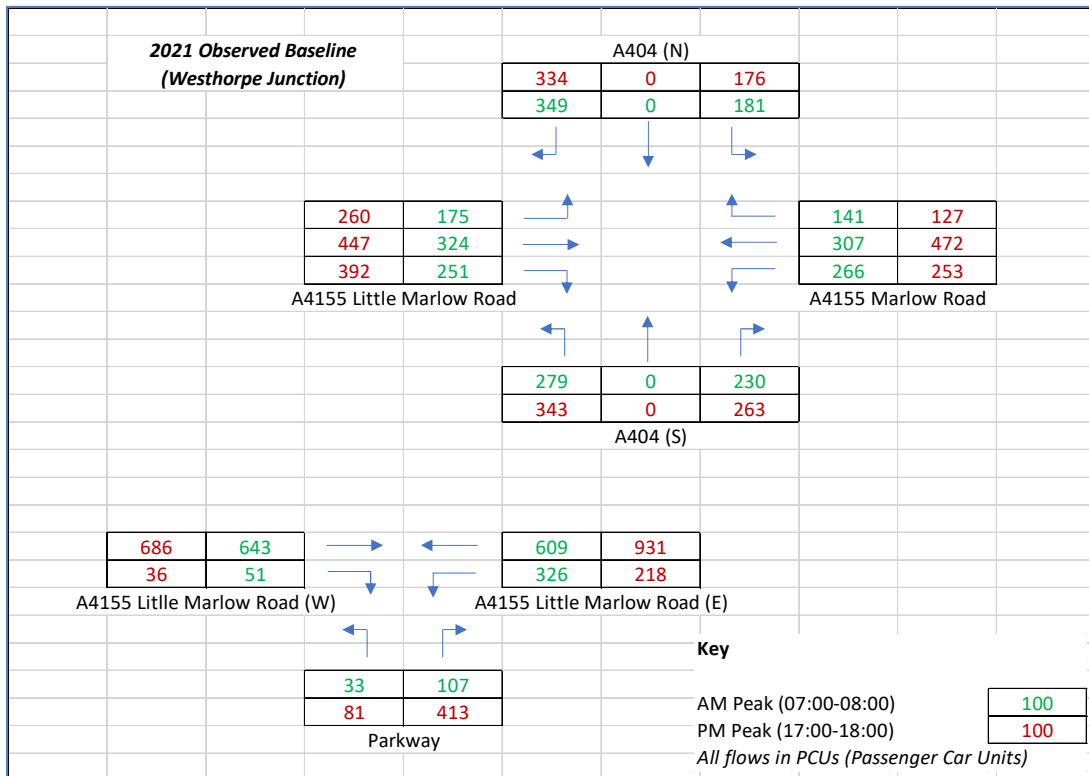
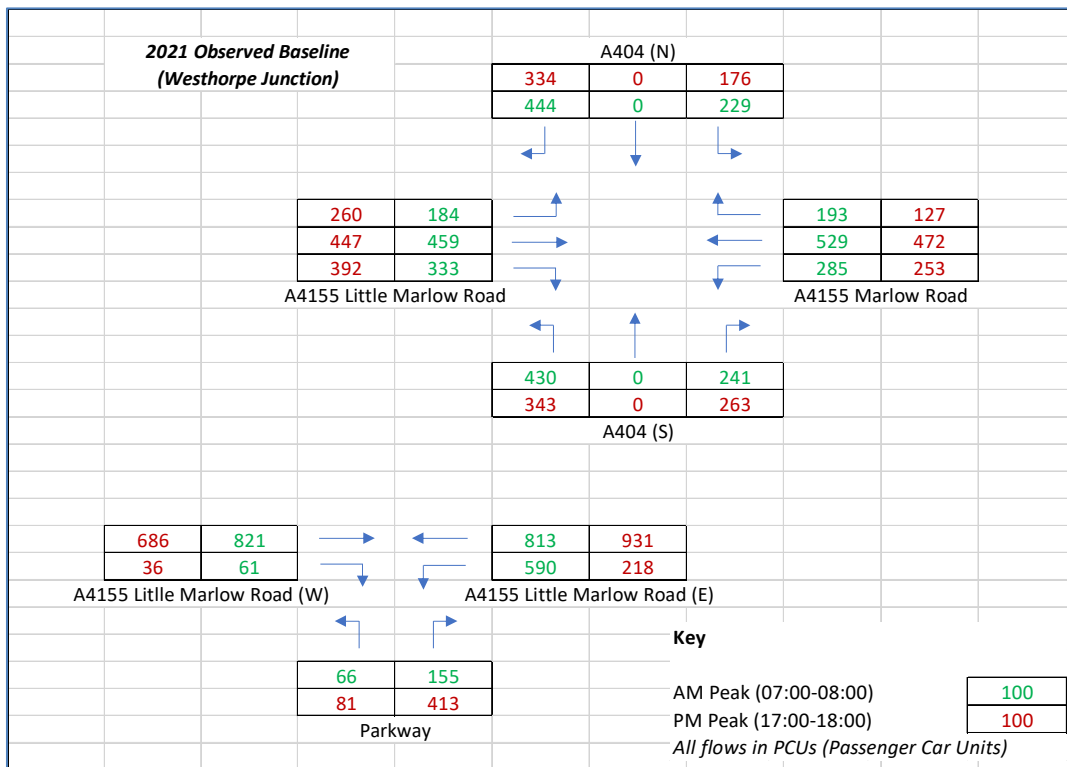


Figure 19: Westthorpe Interchange – Observed counts July 2021 (08:00-09:00 and 17:00-18:00)



Observed Westthorpe Interchange Junction – 20 June 2017

7.8. Historic MCC data recorded at the Westthorpe Interchange junction on Tuesday 20 June 2017 has been obtained and is summarised in Figure 20 and Figure 21.

Figure 20: Westthorpe Interchange – Observed counts June 2017 (07:00-08:00 and 17:00-18:00)

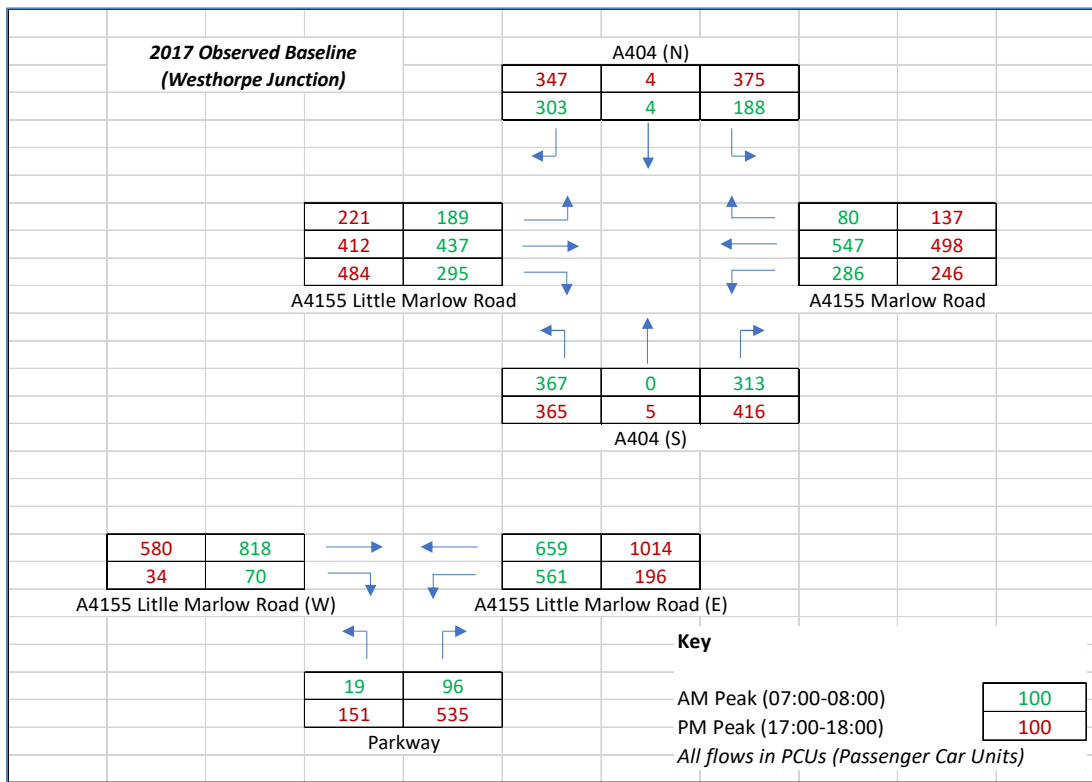
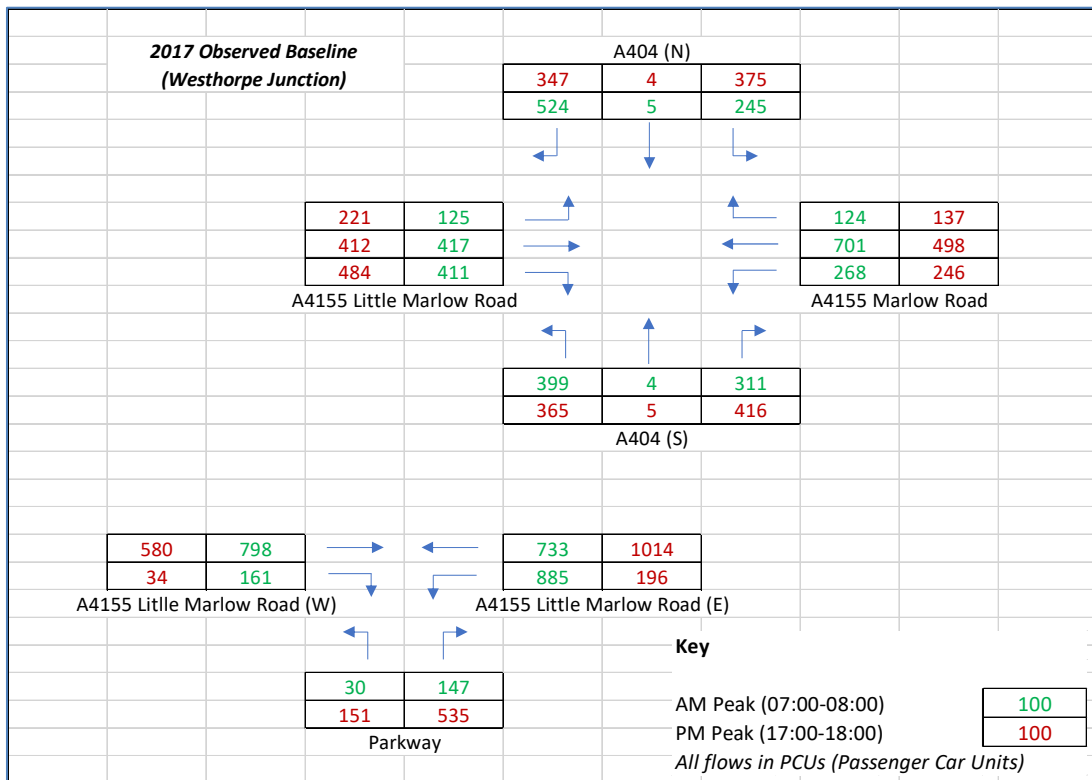


Figure 21: Westthorpe Interchange – Observed counts June 2017 (08:00-09:00 and 17:00-18:00)



Comparison of 2017 and 2021 flows

- 7.9. Table 19 provides a comparison of the observed 2017 and 2021 traffic flows through the Westhorpe Interchange and Parkway Roundabout junctions (sum of all movements during the observed network peak hours) to consider the likely effect of the Covid-19 pandemic upon observed travel patterns.

Table 19: Westhorpe Interchange & Parkway 2017-2021 Traffic Data Comparison

Junction	AM peak (08:00-09:00)			PM peak (17:00-18:00)		
	2017 Flow	2021 Flow	Difference	2017 Flow	2021 Flow	Difference
A4155 Little Marlow/ Parkway	2,754	2,505	-9%	2,509	2,364	-6%
Westhorpe Interchange	3,524	3,325	-6%	3,511	3,065	-13%

- 7.10. Table 19 shows that the total observed junction flow through the A4155 Little Marlow Road/Parkway junction is circa 9% lower in the network AM peak hour and 6% lower in the PM peak hour compared to the historic 2017 data. Observed traffic flows at the Westhorpe Interchange are shown to be circa 6% lower in the network AM peak hour, and 13% lower in the PM peak hour compared to the historic 2017 data.
- 7.11. The most significant reductions in vehicular flows on individual movements are observed as follows:
- A4155 Marlow Road approach in the AM Peak, with a reduction of 188 vehicles (27.2%) observed on the through movement to Little Marlow Road (towards Marlow town and Parkway);
 - A404 northbound off-slip approach in the PM Peak, with a reduction of 153 vehicles (37.0%) observed on the right-turn movement to A4155 Marlow Road;
 - A404 southbound off-slip approach in the PM Peak, with a reduction of 199 vehicles (53.6%) observed on the left-turn movement to A4155 Marlow Road.
- 7.12. The most significant reductions in vehicular flows on individual movements are observed as follows:
- Little Marlow Road (East) approach in the AM Peak, with a reduction of 300 vehicles (34.2%) observed on the left-turn movement to Parkway;
 - Little Marlow Road (West) approach in the AM Peak, with a reduction of 104 vehicles (64.6%) observed on the right-turn movement to Parkway;
 - Parkway approach in the PM Peak, with a reduction of 193 vehicles (28.2%) observed on the left-turn (70 vehicles fewer towards Marlow) and right-turn (123 vehicles fewer towards Westhorpe Junction).
- 7.13. The reduction in observed flows on the specific movements identified above indicates the impact of Covid-19 upon commuting trips, particularly those trips between the A4155, A404 and Parkway (serving the Globe Business Park) resulting from the recent emphasis on working from home.
- 7.14. Therefore, in response to BC officer comments, the baseline assessment has used the historic 2017 data, factored to 2021, as a baseline to ensure a robust assessment of the Proposed Development given the effect of the Covid-19 pandemic on the 2021 flows and turning proportions.
- 7.15. Observed 2021 baseline flows at the Site access junction on the A4155 Marlow Road have also been aligned with the factored 2017 traffic data for consistency.

TEMPro Growth

- 7.16. Baseline 2021 and 2027 flows have been derived from the 2017 data using the ‘Trip End Model Presentation Program’ (TEMPro) to identify National Transport Model (NTM) adjusted growth factors for Wycombe 020 (MSOA) to factor the historic 2017 data to 2021. Table 20 shows the growth rates used.

Table 20: TEMPro Growth Factors

From	To	Time Period	Wycombe 020 (MSOA)
2017	2021	Weekday AM peak	1.0329
		Weekday PM peak	1.0306
2021	2027	Weekday AM peak	1.0410
		Weekday PM peak	1.0420

Baseline Year 2021

- 7.17. Figure 22 and Figure 23 show the resultant Westthorpe Interchange and Parkway Roundabout baseline 2021 traffic flows derived from the factored 2017 flows using the TEMPro growth rates set out in Table 20.

Figure 22: Westthorpe Interchange – Historic 2017 factored to 2021 (07:00-08:00 and 17:00-18:00)

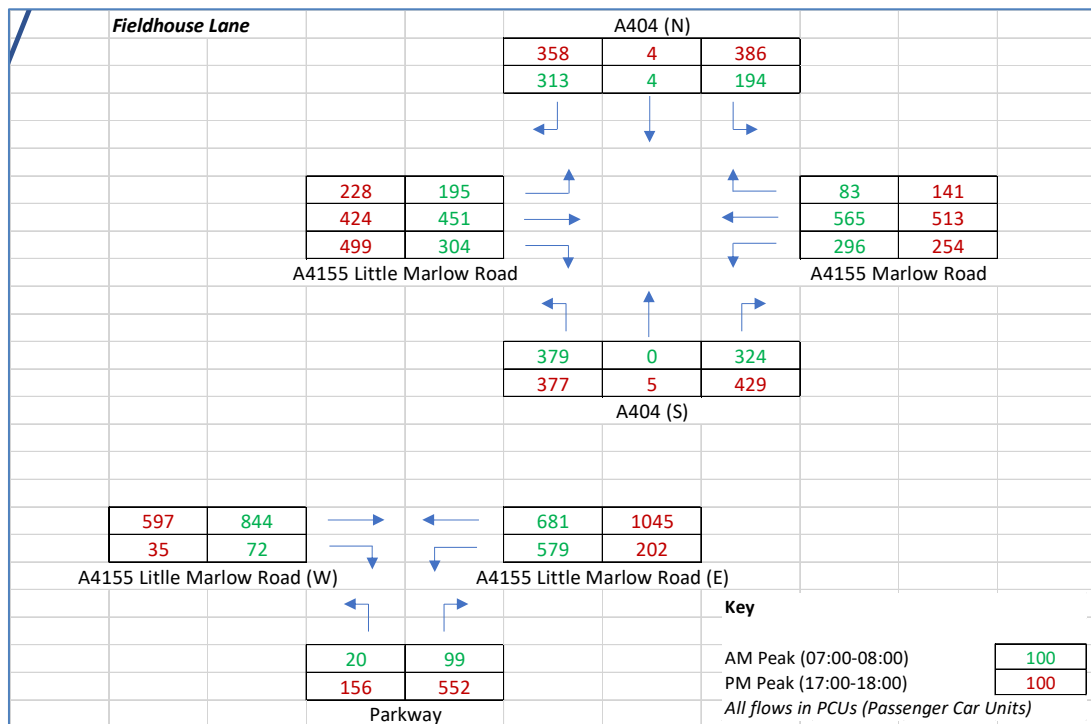


Figure 24: Westthorpe Interchange – Baseline 2021 factored to 2027 (07:00-08:00 and 17:00-18:00)

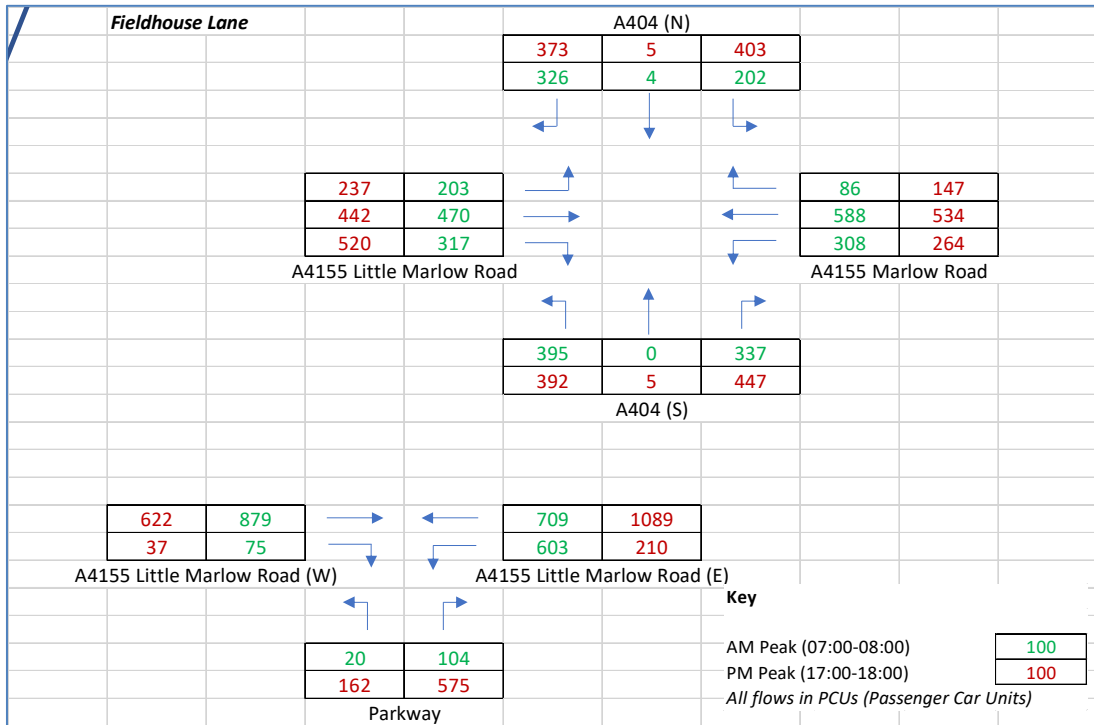


Figure 25: Westthorpe Interchange – Baseline 2021 factored to 2027 (08:00-09:00 and 17:00-18:00)

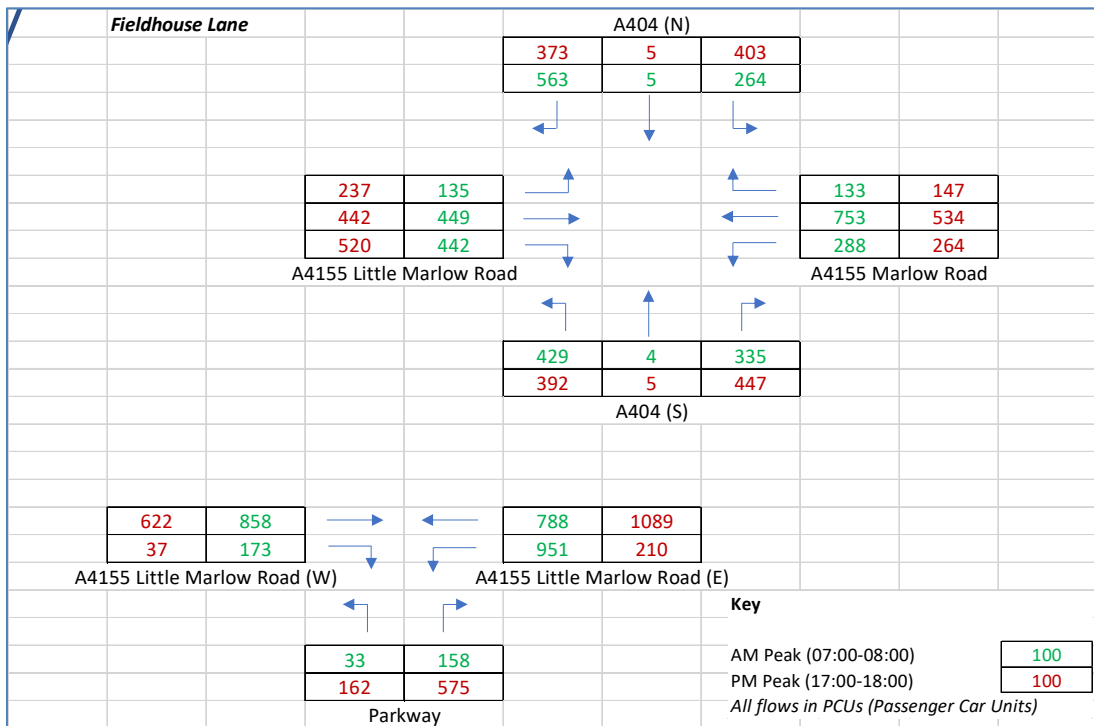
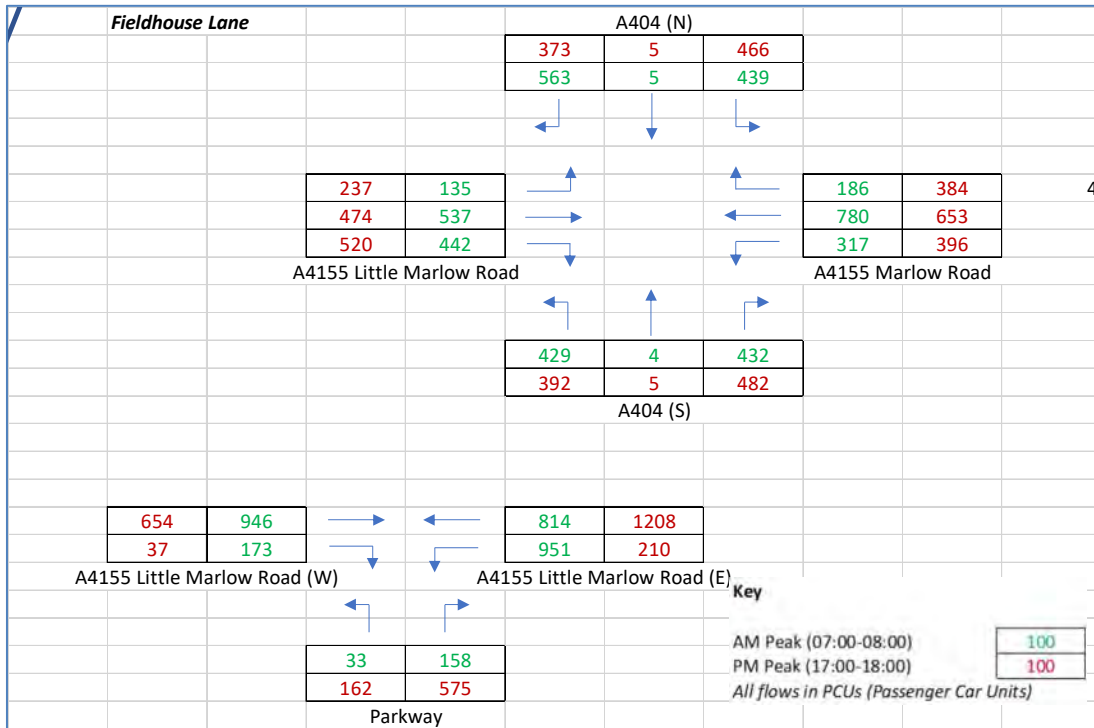


Figure 27: Westthorpe Interchange – Baseline + Unmanaged Development 2027 (08:00-09:00 and 17:00-18:00)



Assessment Year 2027 plus Managed (STS) Development

7.20. Figure 21 and Figure 22 show the resultant Westthorpe Interchange and Parkway Roundabout traffic flows derived from the 2027 baseline plus the managed (STS) trip generation.

Figure 28: Westthorpe Interchange – Baseline + Managed (STS) Development 2027 (07:00-08:00 and 17:00-18:00)

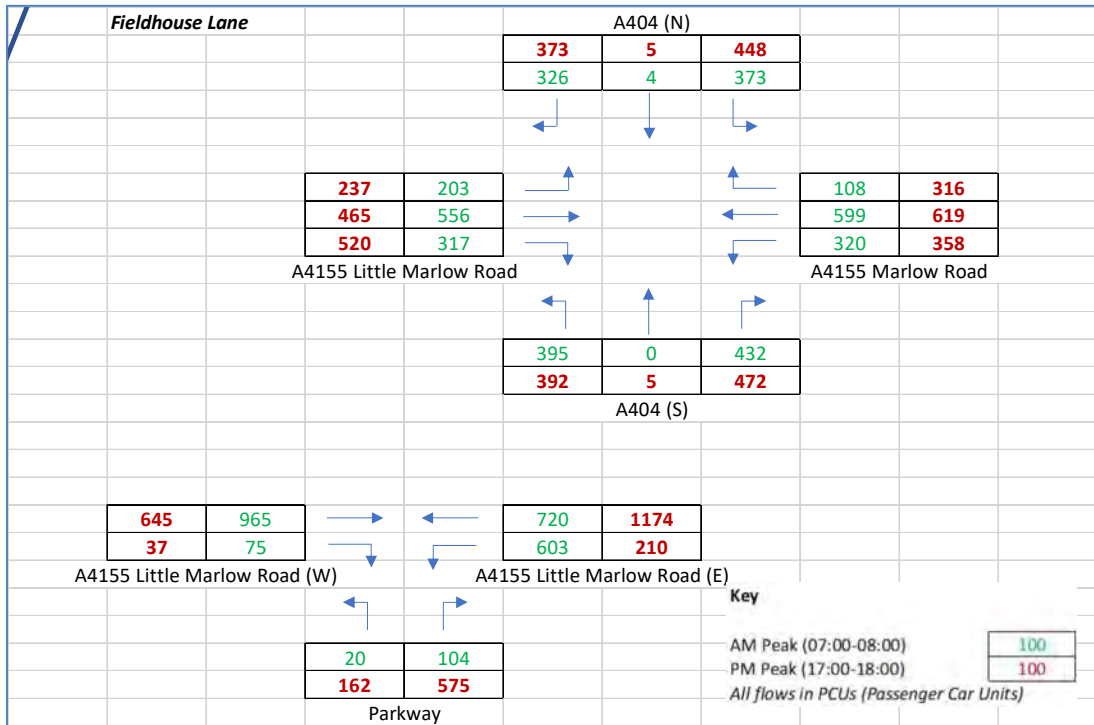
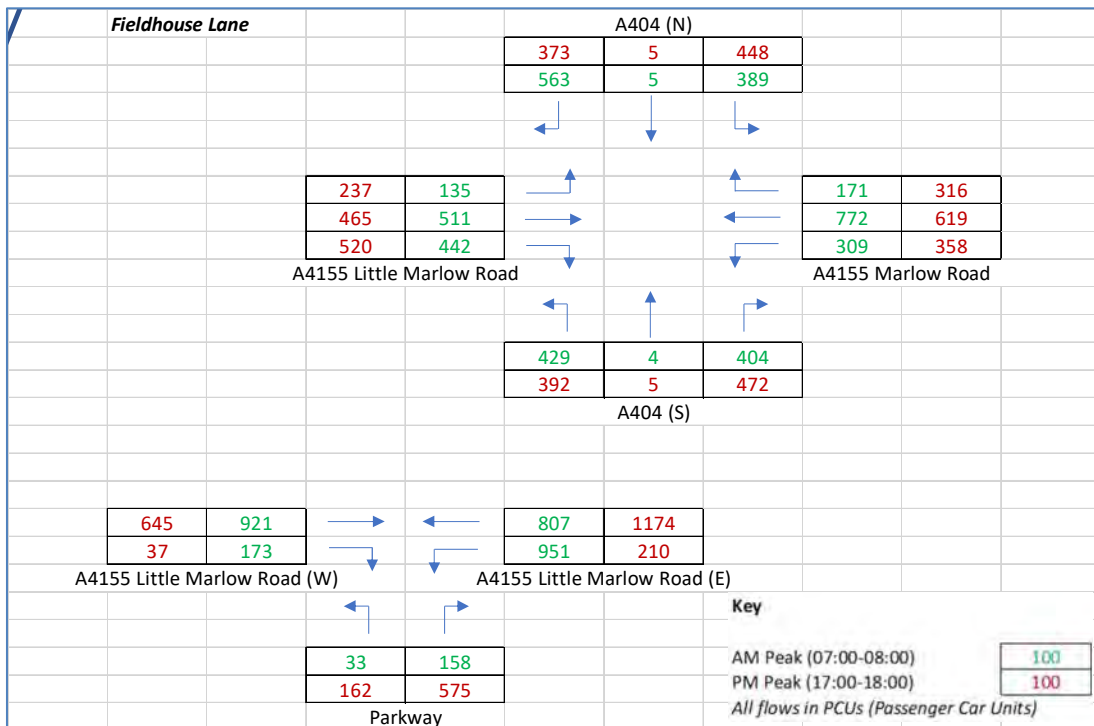


Figure 29: Westthorpe Interchange – Baseline + Managed (STS) Development 2027 (08:00-09:00 and 17:00-18:00)



Wide Area Network Impact

- 7.21. An assessment of the wide area network impact across the surveyed junctions beyond the immediate Site access and Westthorpe Interchange junction has been undertaken and is presented within Tables 21 to 23 below.
- 7.22. A full set of Network Traffic Flow Diagrams is provided at Appendix H.
- 7.23. For the purposes of this appraisal an increase in all movement flows through the junction of less than 5% is generally considered to be negligible, an increase of less than 10% to be within the expected daily variation of traffic and an increase of greater than 10% to require closer review.

Table 21 External Network Impact AM Peak (07:00-08:00)

External Junction	Future Baseline Flow (PCU)	Unmanaged Development Flow (PCU)	% Impact	Managed (STS) Development Flow (PCU)	% Impact
M40 Junction 4 - Handy Cross Roundabout	6961	271	3.89%	193	2.78%
Wiltshire Road	1573	136	8.63%	97	6.15%
Newtown Road	1252	136	10.84%	97	7.73%
Glade Road	951	136	14.26%	97	10.17%
Dean Street	1289	137	10.67%	98	7.61%
High Street	1142	127	11.09%	90	7.91%
Bisham Roundabout	4755	150	3.15%	107	2.25%
Winchbottom Lane	1355	76	5.63%	54	4.01%
Sheepridge Lane	1477	76	5.16%	54	3.68%
Blind Lane	1155	61	5.26%	43	3.75%
Cores End Road	1235	45	3.66%	32	2.61%
Less than 5% impact			3		6
Less than 10% impact			4		4
Greater than 10% impact			4		1

- 7.24. Table 21 illustrates the likely impact of the Scheme upon the wider external network in the AM 'early' peak in terms of percentage increase in all movement traffic flows through each junction. Notwithstanding the relative impact of development traffic on the network in the 07:00-08:00 early peak hour it should be noted that, with the exception of the Handy Cross and Bisham Roundabout junctions on the A404, cumulative early peak flows are significantly lower than forecast 08:00-09:00 flows on the external network.

Table 22 External Network Impact AM Peak (08:00-09:00)

External Junction	Future Baseline Flow (PCU)	Unmanaged Development Flow (PCU)	% Impact	Managed (STS) Development Flow (PCU)	% Impact
M40 Junction 4 - Handy Cross Roundabout	7128	228	3.20%	163	2.28%
Wiltshire Road	2183	114	5.24%	81	3.73%
Newtown Road	1755	114	6.52%	81	4.64%
Glade Road	1472	114	7.77%	81	5.53%
Dean Street	1946	116	5.94%	82	4.24%
High Street	1701	107	6.27%	76	4.47%
Bisham Roundabout	4810	126	2.63%	90	1.87%
Winchbottom Lane	1851	64	3.47%	46	2.47%
Sheepridge Lane	1913	64	3.36%	46	2.39%
Blind Lane	1534	51	3.34%	36	2.38%
Cores End Road	1468	38	2.60%	27	1.85%
Less than 5% impact			6	10	
Less than 10% impact			5	1	
Greater than 10% impact			0	0	

7.25. Table 22 illustrates that none of the external junctions experience an increase in traffic flows greater than 10% in the network AM 08:00-09:00 peak hour.

Table 23 External Network Impact PM Peak (17:00-18:00)

External Junction	Future Baseline Flow (PCU)	Unmanaged Development Flow (PCU)	% Impact	Managed (STS) Development Flow (PCU)	% Impact
M40 Junction 4 - Handy Cross Roundabout	7488	301	4.02%	214	2.86%
Wiltshire Road	2051	151	7.34%	107	5.23%
Newtown Road	1733	58	3.36%	41	2.39%
Glade Road	1424	151	10.57%	107	7.54%
Dean Street	1963	151	7.67%	107	5.47%
High Street	1754	141	8.02%	100	5.71%
Bisham Roundabout	5304	166	3.14%	119	2.24%
Winchbottom Lane	1653	85	5.12%	60	3.65%
Sheepridge Lane	1798	85	4.71%	60	3.35%
Blind Lane	1659	67	4.06%	48	2.90%
Cores End Road	1432	50	3.51%	36	2.50%
Less than 5% impact			6	7	
Less than 10% impact			4	4	
Greater than 10% impact			1	0	

- 7.26. Table 23 illustrates that only the Glade Road junction on the A4155 in Marlow experiences an increase in traffic flows greater than 10% in the PM 17:00-18:00 peak hour in the unconstrained development scenario. In the STS mitigated scenario, all junctions experience an increase of less than 10% in all movement traffic flows in the PM peak.
- 7.27. The preceding assessment demonstrates that the impact of the Proposed Development upon junctions within the wide area network will generally fall within the expected daily variations in traffic flow. Where junctions are observed to experience a higher percentage impact from development flows in the unmanaged trip generation scenario, it is noted that background flows are relatively low.
- 7.28. In the managed STS scenario, the percentage impacts of development upon the wide area network will generally fall within the expected daily variations in traffic flow. The Proposed Development is not therefore considered to have a material impact upon the wide area network beyond the Site access, Westhorpe Interchange and Parkway junctions on the A4155 which are subject to detailed junction assessment in Section 8 of this TA.

8. Junction Impact Assessment

- 8.1. This section discusses the potential traffic impact from the forecast Proposed Development traffic on the highway network junctions within the detailed study area.
- 8.2. As previously noted in Section 1 of this TA, the Applicant is currently in discussion with BC Highway officers regarding the use of the Council's existing VISSIM microsimulation model to assess the impact of the Proposed Development on the adjacent highway network. The VISSIM model will enable a dynamic assessment of each junction in combination and the interaction between junctions within the study network. It is anticipated that this dynamic modelling approach, once adapted for the Proposed Development, will run alongside the determination period for the planning application.
- 8.3. For the purposes of the planning submission, this TA considers a static modelling approach to the assessment of three junctions within the study network, using the industry standard Junctions 10 and LinSig software packages. This static modelling approach, which represents a valid assessment methodology, assesses and demonstrates the capacity of each junction individually and will inform the VISSIM modelling approach.
- 8.4. The three junctions assessed within the detailed study area are as follows:
 - Junction 1: A4155 Little Marlow Road / Parkway Roundabout;
 - Junction 2: A404 / A4155 'Westhorpe Interchange' Roundabout; and,
 - Junction 3: A4155 Marlow Road / Pump Lane South / Site Access Crossroads.
- 8.5. The method of assessment for modelling these junctions is discussed below.

Method of Assessment

- 8.6. Traffic analysis has been undertaken using the industry-standard Transport Research Laboratory (TRL) Junctions 10 traffic modelling software for priority junctions and roundabouts and JCT LinSig v3.2 modelling software for signal-controlled junctions.
- 8.7. The TRL Junctions 10 software contains the ARCADY module which models priority-controlled roundabouts and the PICADY module which models priority T-junctions and crossroads. ARCADY has been used to model the A404 / A4155 Westhorpe and A4155 / Parkway roundabouts and PICADY used to model the existing A4155 Marlow Road / Pump Lane South / Site Access priority crossroads.
- 8.8. The performance of these junctions is typically estimated using two standard outputs from Junctions 10: Ratio of Flow to Capacity (RFC) and Mean Maximum Queue (MMQ) on each junction approach. Average delay per PCU in seconds on each junction approach has also been shown for information. Roundabouts and priority junctions are considered to operate satisfactorily when the modelled maximum RFC of all junction approaches are less than or equal to the practical capacity threshold of 0.85 (85%) or especially within operational capacity limit of 1.0 (100%). The MMQ value indicates the forecast average maximum queue on a junction approach within each modelled period, while the Delay value shows the forecast average delay for each vehicle (in seconds) on a junction approach over the modelled period.
- 8.9. For use in Junctions 10, the geometric parameters (approach half-width values, entry widths etc.) at the three junctions have been measured from OS mapping within AutoCAD software.
- 8.10. With regard to the LinSig software, this primarily presents Degree of Saturation (DoS) as a measure of performance for each junction approach lane, with a DoS figure of 100% indicating that the

modelled lane is operating at capacity with all of the available green signal time utilised by modelled traffic demand. A DoS of 90% is considered to be the limit of practical capacity for each approach lane, beyond which the lanes have less flexibility to cope with fluctuations in traffic flow. Results with figures in excess of 90% DoS indicate that lanes will perform with less stability and experience and exponential increase in queuing.

- 8.11. LinSig also calculates forecast Mean Maximum Queue (MMQ) lengths in PCUs for each signalised approach lane within each peak hour, while deriving an overall Practical Reserve Capacity (PRC) value for each scenario to indicate the amount of reserve capacity remaining within the overall junction / intersection. If the PRC is shown to be negative, it is indicated that the junction is operating over practical capacity.
- 8.12. The results of the modelling assessments for all traffic flow scenarios (as described below) are presented in this section, with commentary on the key differences between the scenarios.
- 8.13. The modelled scenarios are:
- **2021 Base** – i.e. the factored 2017 baseline traffic flows;
 - **2027 Base** – i.e. the factored 2021 baseline traffic flows (including strategic background growth but without the Proposed Development);
 - **2027 Base + Proposed Development** – i.e. the 2027 baseline plus unmanaged development traffic;
 - **2027 Base + Proposed Development STS** – i.e. the 2027 baseline plus managed (STS) development traffic.

Junction 1: A4155 Little Marlow Road / Parkway Roundabout

- 8.14. The A4155 Little Marlow Road / Parkway Roundabout is a three-arm junction located to the west of the A404 / A4155 Westthorpe Roundabout. For the purposes of a robust assessment, the model reflects the existing junction layout and observed turning movements. No assessment of the Buckinghamshire Council segregated left-turn lane scenario has been undertaken as the impact of this layout, and removal of left-turning traffic between the A4155 and Parkway from the roundabout, is expected to be negligible, the benefits of the scheme accruing at Junction 2: A404 / A4155 Westthorpe Roundabout.
- 8.15. [Table 24](#) shows the results for A4155 Little Marlow Road / Parkway Roundabout for the 2021 and 2027 assessments. The full outputs from Junctions 10 are provided at [Appendix I](#) of this report.

Table 24: Junctions 10 Results for A4155 Little Marlow Road / Parkway Roundabout

Junction Approach	AM (07:00 – 08:00)			AM (08:00 – 09:00)			PM (17:00 – 18:00)		
	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)
2021 Base									
A4155 (East)	0.61	1.6	4.13	0.84	5.1	10.21	0.59	1.5	3.88
Parkway	0.13	0.2	4.17	0.21	0.3	5.06	1.03	25.5	113.94
A4155 (West)	0.61	1.6	5.66	0.67	2.1	6.93	0.52	1.1	5.6
2027 Base									

A4155 (East)	0.64	1.8	4.42	0.87	6.7	13.09	0.62	1.6	4.14
Parkway	0.14	0.2	4.29	0.23	0.3	5.27	1.11	49.8	200.99
A4155 (West)	0.64	1.8	6.08	0.7	2.4	7.65	0.54	1.2	5.78
2027 Base + Proposed Development									
A4155 (East)	0.64	1.8	4.51	0.89	7.5	14.51	0.68	2.1	4.87
Parkway	0.14	0.2	4.34	0.23	0.3	5.4	1.25	87.4	363.15
A4155 (West)	0.72	2.5	7.81	0.76	3.2	9.58	0.55	1.2	5.74
2027 Base + Proposed Development STS									
A4155 (East)	0.64	1.8	4.49	0.88	7.3	14.1	0.66	1.9	4.64
Parkway	0.14	0.2	4.32	0.23	0.3	5.37	1.21	76.3	312.07
A4155 (West)	0.69	2.3	7.22	0.75	2.9	8.94	0.54	1.2	5.75

- 8.16. The modelling results indicate that based on the 2021 traffic flows, factored from 2017 observed flows, the junction operates within capacity in the 0700 to 0800 and 0800 to 0900 peak hours, with a maximum RFC of 0.84 and associated MMQ of 5.1 PCUs on the A4155 (East) approach in the 0800 to 0900 AM peak. However, it is indicated that in the PM peak, the Parkway approach is over capacity with an RFC of 1.03 and MMQ of 25.5 PCUs.
- 8.17. It is indicated that in the forecast 2027 Base, the A4155 (East) approach will exceed practical capacity with an RFC of 0.87 in the 0800 to 0900 AM peak. The RFC on the Parkway approach in the PM peak is forecast to increase to 1.11 with an associated MMQ of 49.8 PCUs.
- 8.18. With the addition of the unmanaged Proposed Development traffic in 2027, it is indicated that there is likely to be a marginal increase in RFC to 0.89 on the A4155 (east) approach in the 0800 to 0900 AM peak. The RFC on the Parkway approach in the PM peak is forecast to increase to 1.25 with an associated MMQ of 87.4 PCUs.
- 8.19. With the Sustainable Transport Strategy in place the results indicate that this will be expected to minimise the impact of the Proposed Development traffic at the junction with a negligible increase in RFC on the A4155 (East) approach to 0.88 in the AM peak and a minimal increase in RFC on the Parkway approach in the PM peak to 1.21 with a MMQ of 76.3 PCUs.
- 8.20. The results demonstrate that the Proposed Development traffic is likely to have a negligible impact on this junction in the AM peak periods. The Parkway approach is observed to already be at capacity in the PM peak in the 2021 baseline, primarily as a result of outbound traffic giving way to westbound flows on the A4155 Little Marlow Road, and this impact will have increased by the 2027 baseline. Whilst this arm would likely experience a minor impact with the addition of Proposed Development traffic, relative to the 2027 baseline in the PM peak in terms of queuing and delay, the A4155 approaches are observed to operate within capacity and the overall impact upon the junction is therefore not considered to be significant. Accordingly, with reference to NPPF paragraph 111, it is considered that the Proposed Development will not have an unacceptable impact on highway safety, nor will the residual impact on the road network at Parkway Roundabout be severe.

Junction 2: A404 / A4155 Westhorpe Roundabout

Existing Layout

- 8.21. The A404 / A4155 Westhorpe is a four-arm grade separated junction comprising a large roundabout.
- 8.22. The results from the 2021 and 2027 assessments for this roundabout are shown below in [Table 25](#). The full outputs from Junctions 10 are provided at [Appendix I](#) of this report.

Table 25: Junctions 10 Results for A404 / A4155 Westhorpe Grade Separated Roundabout

Junction Approach	AM (07:00 – 08:00)			AM (08:00 – 09:00)			PM (17:00 – 18:00)		
	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)
2021 Base									
A404 Southbound off-slip	0.43	0.8	4.87	0.72	2.5	10.56	0.77	3.2	14.37
A4155 Marlow Road	0.38	0.6	2.15	0.55	1.2	3.52	0.41	0.7	2.55
A404 Northbound off-slip	0.54	1.2	5.62	0.79	3.6	16.35	0.65	1.9	7.58
A4155 Little Marlow Road	0.38	0.6	2.14	0.4	0.7	2.29	0.50	1.0	2.83
2027 Base									
A404 Southbound off-slip	0.46	0.9	5.34	0.77	3.4	13.63	0.84	4.8	21.2
A4155 Marlow Road	0.40	0.7	2.25	0.58	1.4	3.9	0.44	0.8	2.72
A404 Northbound off-slip	0.58	1.4	6.30	0.86	5.5	24.8	0.70	2.3	8.98
A4155 Little Marlow Road	0.40	0.7	2.22	0.42	0.7	2.39	0.53	1.1	3.03
2027 Base + Proposed Development									
A404 Southbound off-slip	0.81	4.1	18.18	1.07	45.4	133.61	0.95	12.2	50.16
A4155 Marlow Road	0.43	0.7	2.35	0.62	1.6	4.21	0.67	2	4.54

A404 Northbound off-slip	0.71	2.4	9.33	1.00	20.2	76.44	0.95	11.7	46.3
A4155 Little Marlow Road	0.49	1	2.82	0.49	1	2.92	0.62	1.7	4.43
2027 Base + Proposed Development STS									
A404 Southbound off-slip	0.70	2.3	10.94	0.98	17.3	60.66	0.92	8.9	37.65
A4155 Marlow Road	0.42	0.7	2.32	0.62	1.6	4.22	0.6	1.5	3.81
A404 Northbound off-slip	0.67	2.1	8.22	0.97	14.4	58.53	0.87	5.9	23.59
A4155 Little Marlow Road	0.46	0.9	2.61	0.47	0.9	2.74	0.59	1.5	3.92

- 8.23. The modelling results indicate that based on the 2021 traffic flows, factored from 2017 observed flows, the junction operates within capacity in the 0700 to 0800 and 0800 to 0900 peak hours, with a maximum RFC of 0.79 and MMQ of 3.4 PCUs on the A404 NB approach in the 0800 to 0900 AM peak. The junction is also indicated to operate within capacity in the PM peak with a maximum RFC of 0.77 and MMQ of 3.2 PCUs.
- 8.24. It is indicated that in the forecast 2027 Base, the A404 NB off-slip approach will exceed practical capacity with an RFC of 0.86 in the 0800 to 0900 AM peak, while the A404 SB off-slip will be close to practical capacity with a RFC of 0.84 in the PM peak.
- 8.25. With the addition of the unmanaged Proposed Development traffic in 2027, it is indicated that there is likely to be an increase in maximum RFC to 1.07 and associated MMQ of 45.4 PCUs on the A404 Southbound off-slip in the 0800 to 0900 AM peak hour. It is also forecast that the A404 Northbound off-slip will reach operational capacity with an RFC of 1.0 and MMQ of 20.2 PCUs in the 2027 AM peak hour. Nevertheless, it is indicated that the addition of the forecast Proposed Development traffic will not lead to the junction being at or above capacity in the PM peak hour with a maximum RFC of 0.95 on both the A404 northbound and southbound off-slip and associated moderate queues of 12.2 and 11.7 PCUs respectively.
- 8.26. With the Sustainable Transport Strategy in place the results indicate that this is expected to reduce the maximum forecast RFC values to below 1.00 with the maximum of 0.98 and associated MMQ of 17.3 PCUs on the A404 southbound off-slip in the 0800 to 0900 AM peak. The PM peak records a maximum RFC of 0.92 and MMQ of 8.9 PCUs on the A404 Southbound off-slip. Based on these results, it is expected that the junction will therefore operate within its operational capacity and with manageable levels of queueing in all AM and PM peak hours in this 2027 traffic flow scenario.

8.27. The results therefore suggest that the junction will start to exceed practical capacity in 2027 without the Proposed Development in place, and while the forecast traffic from the Proposed Development may result in the junction operating around its operational capacity on the A404 Off-slip approaches, the observed queueing can be accommodated within the length of the existing slip roads. It is demonstrated that the implementation of the Sustainable Transport Strategy will minimise this impact and the junction expected to operate within its operational capacity, with mean maximum queues that will be comfortably accommodated by the existing off-slip approaches. Accordingly, with reference to NPPF paragraph 111, it is considered that the Proposed Development will not have an unacceptable impact on highway safety, nor will the residual impact on the road network at Westhorpe Interchange be severe.

Buckinghamshire Council Improvement Scheme

8.28. The modelling results for the existing roundabout layout align with the development of previous proposals designed by Stantec in 2020 for Balfour Beatty, a contractor for National Highways, to improve the operation of the junction via:

- A segregated left-turn slip road from the A404 northbound off-slip to Parkway to remove the traffic undertaking this movement from the roundabout and A4155 / Parkway roundabout entirely; and
- Partial signal control at the intersections of the A404 southbound and northbound off-slip roads with the roundabout.

8.29. These proposals, previously identified in Section 3 of this report as the Buckinghamshire Council scheme, have not currently been implemented on-site although funding is understood to be in place.

8.30. While the forecast traffic from the Proposed Development is likely to exacerbate the worsening of the junction operation in 2027, it is clear that there will already be an issue on the A404 southbound and northbound off-slips. Therefore, the likely impact of the Buckinghamshire Council scheme upon the junction has been assessed for completeness.

Left-Turn Slip Lane from A404 Northbound Off-Slip to Parkway Layout

8.31. The drawing of the segregated left-turn lane (Drawing No. WJIS-STN-PH1-XX-DR-C-0100 P03), as included at [Appendix J](#), has been extracted and shown below in [Figure 30](#):

Figure 30: Stantec Design of Potential Left-turn Slip Lane from A404 NB Off-slip to Parkway



8.32. The impact of this potential scheme has been modelled within the Junctions 10 model to identify its potential benefits at the junction and the results are shown below in Table 26.

Table 26: Junctions 10 Results for A404 / A4155 Westhorpe Roundabout – with Left-Turn Slip from A404 NB Off-Slip to Parkway

Junction Approach	AM (07:00 – 08:00)			AM (08:00 – 09:00)			PM (17:00 – 18:00)		
	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)
2027 Base									
A404 Southbound off-slip	0.46	0.9	5.34	0.77	3.4	13.68	0.84	4.8	21.23
A4155 Marlow Road	0.40	0.7	2.25	0.58	1.4	3.90	0.44	0.8	2.72
A404 Northbound off-slip	0.50	1.0	5.31	0.71	2.4	12.76	0.67	2.0	8.34
A4155 Little Marlow Road	0.40	0.7	2.22	0.42	0.7	2.39	0.53	1.1	3.03

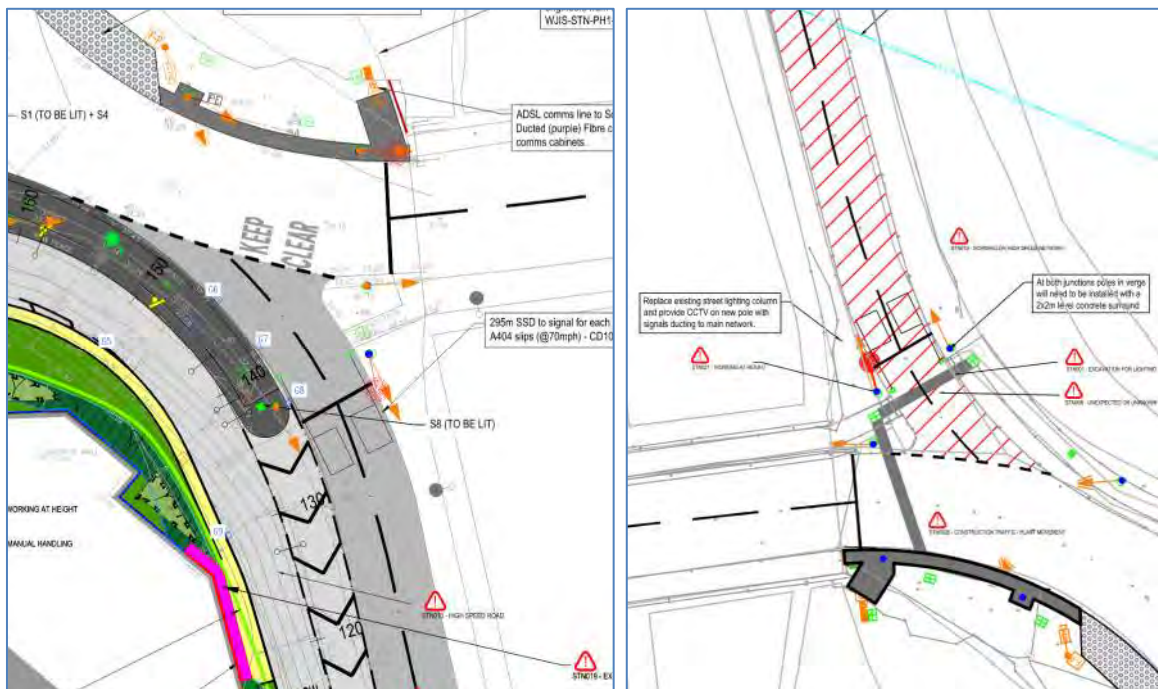
2027 Base + Proposed Development									
A404 Southbound off-slip	0.81	4.1	18.21	1.08	49.6	145.07	0.95	12.5	51.23
A4155 Marlow Road	0.43	0.7	2.35	0.62	1.6	4.19	0.67	2.0	4.54
A404 Northbound off-slip	0.63	1.7	7.32	0.84	5	23.41	0.91	8.7	35.7
A4155 Little Marlow Road	0.49	1.0	2.82	0.50	1.0	2.95	0.63	1.7	4.44
2027 Base + Proposed Development STS									
A404 Southbound off-slip	0.70	2.3	10.94	0.98	18.5	64.48	0.92	8.9	37.88
A4155 Marlow Road	0.42	0.7	2.32	0.62	1.6	4.22	0.60	1.5	3.81
A404 Northbound off-slip	0.59	1.5	6.61	0.82	4.2	20.36	0.84	4.9	19.82
A4155 Little Marlow Road	0.46	0.9	2.61	0.47	0.9	2.76	0.59	1.5	3.92

- 8.33. The results indicate that in the 2027 Base, the introduction of a segregated left-turn slip lane from the A404 northbound off-slip to Parkway is expected to reduce the forecast maximum RFC on the A404 northbound off-slip from 0.86 to 0.77 in the 08:00 to 09:00 AM peak, thereby to a level within practical capacity. It is also forecast that the measure would reduce the MMQ on the A404 northbound off-slip during this time period from 5.5 PCUs to 3.4 PCUs. The A404 southbound off-slip will however still operate with an RFC of 0.84 which is close to practical capacity of 0.85.
- 8.34. With the addition of the unmanaged Proposed Development traffic, it is expected that in the PM peak the A404 northbound off-slip will operate with an RFC of 0.91 and associated MMQ of 8.7 PCUs, which is a reduction from the RFC of 0.95 and MMQ of 11.7 PCUs without the segregated left-turn slip in place. It is however indicated that the A404 southbound off-slip is likely to experience a marginal worsening in operation in the 08:00 to 09:00 AM peak due to the northbound off-slip segregated left-turn lane, as shown by the increase in maximum RFC from 1.07 to 1.08 and associated MMQ of 49.6 PCUs.
- 8.35. With the Sustainable Transport Strategy in place the results indicate that this will once again reduce the maximum forecast RFC values to below 1.00 with the maximum RFC of 0.98 on the A404 southbound off-slip in the 0800 to 0900 peak.
- 8.36. The results therefore suggest that the introduction of a left-turn slip from the A404 northbound off-slip to Parkway has the potential to lead to a notable improvement in operation on the A404 northbound off-slip in the AM peak hours, where traffic volumes turning left into Parkway are relatively high. However it would only result in a marginal impact in the PM peak when the number of vehicles turning into Parkway from the A404 northbound off-slip are low. This scheme would not be expected to result in any material benefits to other approaches at the junction and, in isolation, would be expected to have a minor adverse effect in operation of the A404 southbound off-slip.

Partial Signal Control at Roundabout

8.37. As mentioned previously, there are previously developed General Arrangement Plans of partial signal control of the A404 southbound and northbound off-slip approaches at the roundabout. These drawings (Drawing Nos. WJIS-STN-PH1-XX-DR-C-0100 P03 and WJIS-STN-PH1-XX-DR-C-0150 P03) have been used to model the effects of the potential scheme within LinSig. Extracts of these drawings are shown below in Figure 31.

Figure 31: Extracts from Stantec Drawings of Signalisation Scheme at A404 Northbound & Southbound Off-Slips



8.38. The LinSig model includes both the partial signalisation of the A404 southbound and northbound off-slip road approaches, and the left-turn slip road from the A404 northbound off-slip to Parkway in line with the drawings shown. A 50 second cycle time was adopted for each modelled scenario based on the Cycle-time Optimisation assessment undertaken within LinSig.

8.39. The results of this LinSig assessment for the 2027 future year scenarios are shown below in Table 27 and the full LinSig outputs provided at Appendix K.

Table 27: LinSig Results for A404 / A4155 Roundabout with Signalisation Scheme at A404 Northbound & Southbound Off-Slips & Left-turn Slip Lane from A404 Northbound Off-Slip to Parkway

Link Description	AM (07:00 – 08:00)			AM (08:00 – 09:00)			PM (17:00 – 18:00)		
	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)

2027 Base									
A404 SB Off-Slip Left	42.1%	2.7	21.9	39.7%	3.0	16.4	72.8%	6.2	27.4
A404 SB Off-Slip Ahead	64.1%	4.9	26.1	79.6%	8.8	26.4	63.6%	5.4	23.4
Circulatory N Ahead	41.8%	2.5	6.7	60.7%	4.3	11.8	57.4%	4.2	8.9
Circulatory N Right Ahead	57.4%	4.7	8.8	72.7%	8.0	14.9	77.4%	10.2	14.4
A4155 Marlow Road WB Ahead Left	42.9%	0.3	1.9	66.5%	2.8	4.9	48.5%	0.4	2.2
A4155 Marlow Road WB Ahead	42.9%	0.4	4.0	66.5%	2.8	8.4	48.3%	0.5	4.9
A404 NB Off-Slip Left	47.3%	3.7	18.4	62.1%	4.5	26.1	54.6%	4.5	18.7
A404 NB Off-Slip Ahead	50.0%	4.2	18.5	65.8%	5.1	26.6	63.4%	6.0	20.1
Circulatory S Ahead	56.0%	3.9	10.5	69.0%	5.6	9.7	61.7%	4.2	11.7
Circulatory S Right Ahead	52.3%	3.5	9.8	64.6%	5.0	8.6	57.7%	3.8	10.7
A4155 Little Marlow Road EB Ahead Ahead2	57.5%	1.8	5.0	60.8%	2.1	5.6	74.7%	4.4	9.4
A4155 Little Marlow Road EB Ahead	57.5%	1.8	5.0	60.8%	2.1	5.6	74.8%	4.5	9.5
				Stream: 1 PRC (%): 40.5 Cycle Time (s): 50 Stream: 2 PRC (%): 60.8 Cycle Time (s): 50			Stream: 1 PRC (%): 13.0 Cycle Time (s): 50 Stream: 2 PRC (%): 30.4 Cycle Time (s): 50		Stream: 1 PRC (%): 16.3 Cycle Time (s): 50 Stream: 2 PRC (%): 42.0 Cycle Time (s): 50
2027 Base + Proposed Development									
A404 SB Off-Slip Left	74.8%	6.9	27.1	66.1%	6.0	21.3	84.1%	8.5	35.8
A404 SB Off-Slip Ahead	52.1%	4.2	19.8	79.6%	8.8	26.4	63.6%	5.4	23.4
Circulatory N Ahead	59.9%	4.9	9.6	71.1%	7.1	13.9	60.7%	5.9	9.4
Circulatory N Right Ahead	76.6%	10.1	14.5	82.3%	11.3	19.1	80.4%	11.2	15.8
A4155 Marlow Road WB Ahead Left	45.8%	0.8	2.0	72.5%	3.5	5.7	73.6%	2.7	3.9
A4155 Marlow Road WB Ahead	45.8%	0.8	4.2	72.5%	3.6	10.3	73.8%	3.1	10.0

A404 NB Off-Slip Left	44.7%	3.5	17.1	57.7%	4.2	23.6	61.5%	5.0	22.2
A404 NB Off-Slip Ahead	65.9%	6.3	20.8	78.6%	7.4	31.3	76.8%	7.7	27.3
Circulatory S Ahead	61.2%	4.7	12.1	75.7%	7.0	12.3	75.5%	6.6	14.6
Circulatory S Right Ahead	57.2%	4.2	11.2	70.8%	5.9	10.6	70.8%	6.2	12.8
A4155 Little Marlow Road EB Ahead Ahead2	68.9%	3.6	7.7	70.1%	3.6	8.1	86.3%	6.4	18.6
A4155 Little Marlow Road EB Ahead	68.9%	3.6	7.7	70.1%	3.6	8.1	86.5%	6.4	18.8
	Stream: 1 PRC (%): 17.5 Cycle Time (s): 50 Stream: 2 PRC (%): 36.6 Cycle Time (s): 50			Stream: 1 PRC (%): 9.3 Cycle Time (s): 50 Stream: 2 PRC (%): 14.5 Cycle Time (s): 50			Stream: 1 PRC (%): 7.0 Cycle Time (s): 50 Stream: 2 PRC (%): 17.2 Cycle Time (s): 50		
2027 Base + Proposed Development STS									
A404 SB Off-Slip Left	72.2%	5.9	28.5	58.5%	5.0	19.5	80.9%	7.8	32.6
A404 SB Off-Slip Ahead	59.5%	4.7	23.5	79.6%	8.8	26.4	63.6%	5.4	23.4
Circulatory N Ahead	51.9%	3.4	7.7	68.1%	6.4	13.0	59.8%	5.5	9.4
Circulatory N Right Ahead	67.6%	7.8	10.8	79.5%	10.4	17.5	79.5%	11.0	15.4
A4155 Marlow Road WB Ahead Left	44.9%	0.8	2.0	70.7%	3.2	5.3	66.4%	1.9	3.2
A4155 Marlow Road WB Ahead	45.0%	0.8	4.2	70.8%	3.3	9.7	66.5%	2.2	7.8
A404 NB Off-Slip Left	44.7%	3.5	17.1	57.7%	4.2	23.6	57.8%	4.8	20.3
A404 NB Off-Slip Ahead	60.6%	5.6	19.5	73.6%	6.5	28.4	70.8%	6.9	23.4
Circulatory S Ahead	60.4%	4.1	11.9	74.5%	6.4	11.8	73.1%	6.2	14.4
Circulatory S Right Ahead	56.6%	3.9	11.0	69.8%	5.4	10.2	68.6%	5.5	12.8
A4155 Little Marlow Road EB Ahead Ahead2	65.5%	3.0	6.7	67.3%	3.1	7.2	82.8%	5.7	14.6
A4155 Little Marlow Road EB Ahead	65.5%	3.0	6.7	67.3%	3.1	7.2	82.8%	5.7	14.6

Stream: 1 PRC (%): 24.7	Stream: 1 PRC (%): 13.0	Stream: 1 PRC (%): 11.3
Cycle Time (s): 50	Cycle Time: 50	Cycle Time: 50
Stream: 2 PRC (%): 48.6	Stream: 2 PRC (%): 20.9	Stream: 2 PRC (%): 23.1
Cycle Time (s): 50	Cycle Time (s): 50	Cycle Time (s): 50

- 8.40. The modelling results indicate that in the forecast 2027 Base, the conceptual junction is expected to operate within practical and operational capacity with positive PRC (Practical Reserve Capacity) values at both the A404 southbound and southbound intersections in all AM and PM peak scenarios. A minimum PRC of 13.0% at the A404 southbound off-slip intersection is shown in the 08:00 to 09:00 AM peak. A maximum DoS value of 79.6% is shown on the A404 southbound off-slip approach in the 08:00 to 09:00 AM peak with associated MMQ of 8.8 PCUs. The MMQs shown on the roundabout circulatory carriageway links will all be contained within the available road space without impacting on upstream intersections.
- 8.41. With the addition of the unmanaged Proposed Development traffic, it is indicated that the conceptual junction will still operate within practical and operational capacity with positive PRC values at both the A404 southbound and southbound intersections in all AM and PM peak scenarios. A minimum PRC of 7.0% at the A404 southbound off-slip intersection is shown in the 1700 to 1800 PM peak. A maximum DoS value of 86.3% in the PM peak is shown on the A4155 Little Marlow Road eastbound approach, which remains as a give-way intersection in this layout.
- 8.42. The implementation of the Sustainable Transport Strategy will provide increased PRC with a minimum PRC of 11.3% at the A404 southbound off-slip intersection is shown in the 17:00 to 18:00 PM peak. A maximum DoS value of 82.8% is shown on the A4155 Little Marlow Road eastbound approach in the PM peak.
- 8.43. This assessment has demonstrated that the potential segregated left-turn slip lane and partial signal control measures at the junction therefore provide a significant amount of additional capacity at the roundabout. It is indicated that the potential layout will be able to accommodate the 2027 forecast traffic both with (STS managed and Unmanaged flows) and without the traffic from the Proposed Development.

Junction 3: A4155 Marlow Road / Pump Lane South / Site Access Junction

Existing Layout

- 8.44. The A4155 Marlow Road / Pump Lane South / Site Access junction is currently a four-arm priority-controlled crossroad junction.
- 8.45. The results from the 2021 and 2027 assessments of this junction are shown below in Table 28. The full outputs from Junctions 10 are provided at Appendix I of this report.

Table 28: Junctions 10 Results for A4155 Marlow Road / Pump Lane South / Site Access Crossroads (excessive delay results are marked as *)

Junction Approach	AM (07:00 – 08:00)			AM (08:00 – 09:00)			PM (07:00 – 08:00)		
	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)	RFC	MMQ (PCUs)	Delay (s)
2021 Base									
Site Access	0.04	0	13.62	0.09	0.1	14.37	0.04	0	11.74
A4155 (East) to Pump Lane South	0	0	0	0	0	0	0.02	0	3.94
Pump Lane South	0.02	0	15.95	0	0	0	0.17	0.2	22.42
A4155 (West) to Site Access	0.02	0	11.23	0.04	0	10.7	0.02	0	9.02
2027 Base									
Site Access	0.05	0	14.52	0.1	0.1	15.48	0.04	0	12.47
A4155 (East) to Pump Lane South	0	0	0	0	0	0	0.03	0	3.88
Pump Lane South	0.02	0	17.4	0.03	0	21.57	0.21	0.3	26.81
A4155 (West) to Site Access	0.03	0	11.55	0.04	0	11.08	0.02	0	9.24
2027 Base + Proposed Development									
Site Access	2.0+*	81.8	*	2.0+*	114.9	*	2.0+*	259.4	*
A4155 (East) to Pump Lane South	0	0	0	0	0	0	0.03	0	3.92
Pump Lane South	2.0+*	4.8	*	2.0+*	4.3	*	2.0+*	31.2	*
A4155 (West) to Site Access	1.51	346.6	1876.3	1.27	164.6	984.96	0.39	0.6	14.92

	2027 Base + Proposed Development STS								
Site Access	0.92	3.2	161.45	1.22	12.3	315.02	1.57	88.6	814.85
A4155 (East) to Pump Lane South	0	0	0	0	0	0	0.03	0	3.91
Pump Lane South	0.11	0.1	79.69	0.12	0.1	89.73	2.0+*	17.8	1836.1
A4155 (West) to Site Access	1.07	64.7	362.15	0.91	10.5	42.29	0.28	0.4	12.68

Note: * Output values exceed model thresholds

- 8.46. The modelling results indicate that based on the 2021 traffic flows, factored from 2017 observed flows, the junction operates within capacity in the 0700 to 0800 and 0800 to 0900 peak hours, with a maximum RFC of 0.17 and associated MMQ of 0.2 PCUs on Pump Lane South in the PM peak.
- 8.47. In the forecast 2027 Base, a maximum RFC of 0.21 is forecast, along with an associated MMQ of 0.3 PCUs which is a marginal increase from the 2021 Base.
- 8.48. With the addition of the Proposed Development traffic (whether managed or unmanaged), it is indicated that the existing junction is likely to operate significantly over capacity in all peak hours due to the volume of turning traffic in and out of the Site. Given this, a change of control from priority to signal control has been investigated through a design and traffic modelling exercise and this is discussed in the section below.

Proposed Site Access Signal Controlled Crossroads (Option 1 Layout)

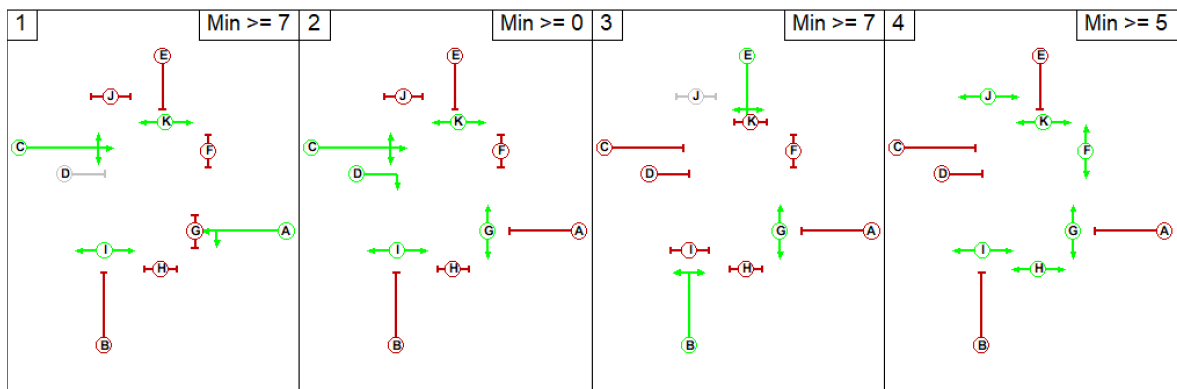
- 8.49. Further to the above, two versions of a conceptual signal-controlled crossroads layout have been designed by AECOM to provide increased capacity and control at the junction and accommodate the forecast volume of traffic from the Proposed Development.
- 8.50. There are a number of similarities between the two options designed by AECOM, labelled Option 1 and Option 2, however the main differences between the options include the following:
- Option 1 includes two approach lanes on the A4155 Marlow Road westbound approach to the junction with no right-turn lane into Pump Lane South, whereas Option 2 includes a short right-turn lane into Pump Lane and narrower lanes for traffic heading straight ahead and left into the Site.
 - Option 1 includes two lanes heading westbound on the A4155 from the junction whereas Option 2 includes three westbound lanes.
 - Option 1 removes the straight alignment for vehicles heading from the Site to Pump Lane South and effectively bans this movement.
- 8.51. The Option 1 design is shown on AECOM Drawing No. 60654980-ACM-XX-XX-DR-HW-000001 P02 at [Appendix E](#) and an extract of this is shown below in [Figure 32](#).

Figure 32: AECOM Option 1 Conceptual Design for Proposed A4155 Marlow Road / Site Access / Pump Lane South Signal-Controlled Junction



- 8.52. This layout has been modelled using LinSig and a 120 second signal cycle time adopted due to the high volume of existing and forecast future baseline and with development traffic flows.
- 8.53. The signal staging arrangement considered suitable for the proposed junction arrangement is shown below in Figure 33.

Figure 33: Modelled Signal Staging Arrangement at Proposed Junction (Option 1 Layout)



- 8.54. This includes a right-turn indicative arrow for eastbound traffic entering the Site that can run in Stage 2 and an all-red stage in Stage 4 to accommodate all pedestrian movements at once. However, given the forecast low use of the pedestrian crossings proposed, for the purpose of this assessment the all-red signal stage has been sequenced to run every other cycle and is considered realistic.
- 8.55. Table 29 shows the results from the modelling of the Option 1 Layout in the 2027 traffic flow scenarios.

Table 29: LinSig Results of Proposed Signalised A4155 / Site Access / Pump Lane South Junction – Option 1 Layout

Link Description	AM (07:00 – 08:00)			AM (08:00 – 09:00)			PM (17:00 – 18:00)		
	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)
2027 Base									
A4155 Marlow Road (Westbound) Left Ahead	35.8%	8.3	10.1	42.4%	10.5	10.9	34.0%	7.7	10.0
A4155 Marlow Road (Westbound) Ahead Right	33.4%	8.1	9.8	39.6%	10.1	10.4	31.7%	7.5	9.6
Site Access Right Left Ahead	8.8%	0.4	68.5	19.4%	0.9	71.1	8.2%	0.4	68.8
A4155 Marlow Road (Eastbound) Ahead Left	34.6%	7.6	7.6	35.8%	8.0	7.7	44.8%	11.2	8.6
A4155 Marlow Road (Eastbound) Ahead Right	32.9%	7.5	7.4	34.2%	7.9	7.5	42.1%	10.8	8.2
Pump Lane South Left Ahead Right	4.0%	0.2	67.9	4.0%	0.2	68.7	26.0%	1.2	73.2
	PRC (%): 151.4 Cycle Time (s): 240			PRC (%): 112.3 Cycle Time (s): 240			PRC (%): 100.9 Cycle Time (s): 240		
2027 Base + Proposed Development									
A4155 Marlow Road (Westbound) Left Ahead	54.6%	14.5	26.1	61.8%	15.4	26.8	58.5%	13.0	33.0
A4155 Marlow Road (Westbound) Ahead Right	50.4%	14.1	24.9	57.3%	14.9	25.3	54.4%	12.6	31.6
Site Access Right Left Ahead	66.4%	3.9	96.8	76.3%	6.9	90.5	88.3%	21.9	59.1
A4155 Marlow Road (Eastbound) Ahead Left	34.6%	7.6	7.6	37.7%	8.1	9.2	71.6%	18.7	32.6
A4155 Marlow Road (Eastbound) Ahead Right	81.4%	16.0	28.4	78.9%	14.1	29.5	76.6%	21.0	36.1
Pump Lane South Left Ahead Right	4.8%	0.2	75.6	5.1%	0.2	74.9	16.3%	0.8	49.6

	PRC (%): 10.6 Cycle Time (s): 240			PRC (%): 14.1 Cycle Time (s): 240			PRC (%): 1.9 Cycle Time (s): 240		
2027 Base + Proposed Development STS									
A4155 Marlow Road (Westbound) Left Ahead	44.3%	10.8	16.7	52.1%	12.6	18.5	48.2%	10.8	23.9
A4155 Marlow Road (Westbound) Ahead Right	41.0%	10.4	16.0	48.5%	12.0	17.6	45.0%	10.6	23.1
Site Access Right Left Ahead	50.2%	3.0	86.0	72.7%	5.0	94.1	83.5%	15.9	63.3
A4155 Marlow Road (Eastbound) Ahead Left	34.6%	7.6	7.6	36.6%	8.0	8.3	60.8%	15.8	22.6
A4155 Marlow Road (Eastbound) Ahead Right	75.7%	11.1	23.5	72.2%	8.9	24.5	63.3%	16.6	23.4
Pump Lane South Left Ahead Right	4.8%	0.2	77.0	5.1%	0.2	75.7	17.2%	0.9	52.9
	PRC (%): 19.0 Cycle Time (s): 240			PRC (%): 23.8 Cycle Time (s): 240			PRC (%): 7.7 Cycle Time (s): 240		

- 8.56. The results for the 2027 Base indicate that the Option 1 layout is expected to operate with a high level of spare capacity, as represented by the minimum PRC across the scenarios of 100.9% in the PM peak. The highest DoS value of 44.8% is shown on the A4155 Marlow Road Eastbound Approach Lane 1 with an associated MMQ of 11.2 PCUs.
- 8.57. With the addition of the unmanaged Proposed Development traffic, the junction is expected to remain within capacity with a minimum PRC across the scenarios of 1.9% in the PM peak. The highest DoS value of 88.3% is shown in the PM peak on the Site Access approach with an associated MMQ of 21.9 PCUs, while on the A4155, the highest DoS of 81.4% is shown in the 0700 to 0800 AM peak on the A4155 Eastbound Approach Lane 1 with an associated MMQ of 16.0 PCUs
- 8.58. It is expected that the implementation of the Sustainable Transport Strategy will result in a greater amount of spare capacity being available at the junction, most notably in the PM peak, where a PRC of 7.7% is shown. The highest DoS of 83.5% and associated MMQ of 15.9 PCUs is shown on the Site Access approach is once again shown in the PM peak, while on the A4155, the highest DoS of 75.7% is indicated on the A4155 Eastbound Approach Lane 1 with an associated MMQ of 11.1 PCUs in the 0700 to 0800 AM peak.
- 8.59. The results therefore suggest that the AECOM Option 1 proposed layout at the junction will be able to accommodate the forecast 2027 traffic both with and without the Proposed Development in all peak hours.

Proposed Site Access Signal Controlled Crossroads (Option 2 Layout)

8.60. The Option 2 design is shown on AECOM Drawing No. 60654980-ACM-XX-XX-DR-HW-000003 P02 at Appendix D and an extract of this is shown below in Figure 34.

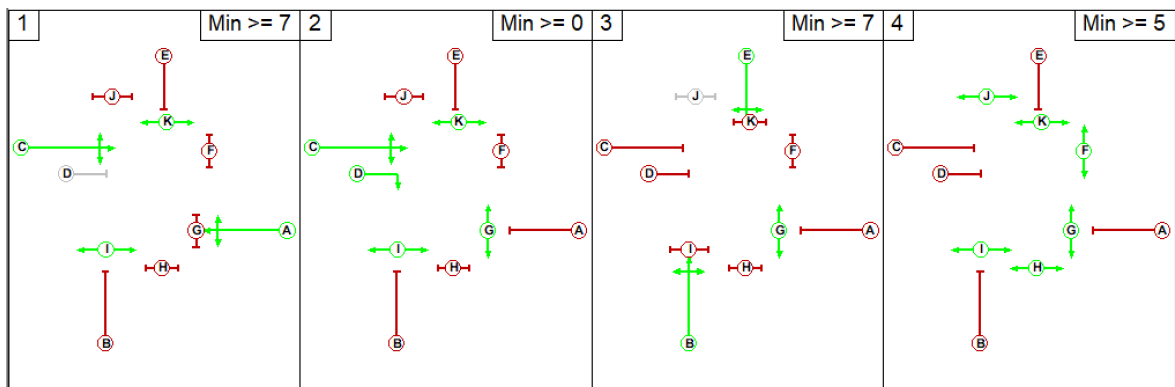
Figure 34: AECOM Option 2 Conceptual Design for Proposed A4155 Marlow Road / Site Access / Pump Lane South Signal-Controlled Junction



8.61. This layout has been modelled using LinSig and a 120 second signal cycle time adopted due to the high volume of existing and forecast future baseline and 'with development' traffic flows.

8.62. The signal staging arrangement considered suitable for the proposed junction arrangement is shown below in Figure 35.

Figure 35: Modelled Signal Staging Arrangement at Proposed Junction (Option 2 Layout)



8.63. As with the Option 1 layout, this model includes a right-turn indicative arrow for eastbound traffic entering the Site that can run in Stage 2 and an all-red stage in Stage 4 to accommodate all pedestrian movements at once. However, once again, given the forecast low use of the pedestrian crossings proposed, for the purpose of this assessment the all-red signal stage has been sequenced to run every other cycle and is considered realistic.

8.64. Table 30 shows the LinSig results from the modelling of the Option 2 Layout in the 2027 traffic flow

scenarios.

Table 30: LinSig Results of Proposed Signalised A4155 / Site Access / Pump Lane South Junction – Option 2 Layout

Link Description	AM (07:00 – 08:00)			AM (08:00 – 09:00)			PM (17:00 – 18:00)		
	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)	DoS	MMQ (PCUs)	Av. Delay Per PCU (s/pcu)
2027 Base									
A4155 Marlow Road (Westbound) Left Ahead	37.0%	8.4	10.3	43.8%	10.6	11.2	35.0%	7.8	10.1
A4155 Marlow Road (Westbound) Ahead Right	34.5%	8.3	9.9	40.9%	10.3	10.6	32.7%	7.7	9.8
Site Access Right Left Ahead	8.8%	0.4	68.4	19.4%	0.9	71.0	9.8%	0.4	69.0
A4155 Marlow Road (Eastbound) Ahead Left	35.1%	7.8	7.7	36.3%	8.0	7.8	45.2%	11.1	8.7
A4155 Marlow Road (Eastbound) Ahead Right	33.0%	7.5	7.4	34.3%	7.9	7.6	42.1%	10.7	8.2
Pump Lane South Left Ahead Right	4.0%	0.2	67.9	4.0%	0.2	68.7	26.0%	1.2	73.2
	PRC (%): 143.1 Cycle Time (s): 240			PRC (%): 105.2 Cycle Time (s): 240			PRC (%): 99.3 Cycle Time (s):		
2027 Base + Proposed Dev									
A4155 Marlow Road (Westbound) Left Ahead	57.6%	15.1	27.8	64.6%	16.0	28.2	60.4%	13.3	33.7
A4155 Marlow Road (Westbound) Ahead Right	0.0%	14.6	26.3	0.0%	15.3	26.3	56.0%	13.0	32.2
Site Access Right Left Ahead	66.2%	3.8	96.2	76.1%	6.9	89.9	88.3%	21.5	59.0

A4155 Marlow Road (Eastbound) Ahead Left	35.1%	7.8	7.7	38.2%	8.1	9.3	72.2%	19.5	33.0
A4155 Marlow Road (Eastbound) Ahead Right	82.9%	16.8	29.4	80.9%	14.4	30.5	77.5%	22.4	36.7
Pump Lane South Left Ahead Right	4.8%	0.2	75.2	4.7%	0.2	73.1	17.0%	0.8	46.6
	PRC (%): 8.5 Cycle Time (s): 240			PRC (%): 11.3 Cycle Time (s): 240			PRC (%): 2.0 Cycle Time (s): 240		
2027 Base + Development STS									
A4155 Marlow Road (Westbound) Left Ahead	45.9%	10.2	17.0	53.9%	13.3	19.0	49.8%	10.9	24.3
A4155 Marlow Road (Westbound) Ahead Right	42.4%	9.9	16.2	50.1%	12.8	18.0	46.3%	10.6	23.4
Site Access Right Left Ahead	50.0%	2.9	84.8	72.5%	4.9	93.6	83.6%	16.0	63.3
A4155 Marlow Road (Eastbound) Ahead Left	35.1%	7.8	7.7	37.1%	8.1	8.4	61.2%	15.8	22.8
A4155 Marlow Road (Eastbound) Ahead Right	78.1%	11.1	24.8	74.8%	9.1	25.4	63.8%	16.7	23.7
Pump Lane South Left Ahead Right	4.8%	0.2	75.9	5.0%	0.2	74.2	17.2%	0.9	52.5
	PRC (%): 15.2 Cycle Time (s): 240			PRC (%): 20.4 Cycle Time (s): 240			PRC (%): 7.7 Cycle Time (s): 240		

- 8.70. The results for the 2027 Base indicate that the Option 2 layout is expected to operate with a high level of spare capacity, as represented by the minimum PRC across the scenarios of 99.3% in the PM peak. The highest DoS value of 45.2% is shown on the A4155 Marlow Road Eastbound Approach Lane 1 with an associated MMQ of 11.1 PCUs.
- 8.71. With the addition of the unmanaged Proposed Development traffic, it is expected that the junction will remain within capacity with a minimum PRC across the scenarios of 2.0% in the PM peak. The highest DoS value of 88.3% is shown in the PM peak on the Site Access approach with an associated MMQ of 21.5 PCUs, while on the A4155, the highest DoS of 82.9% is shown in the 0700 to 0800 AM peak on the A4155 Eastbound Approach Lane 1 with an associated MMQ of 16.8 PCUs.
- 8.72. It is expected that the implementation of the Sustainable Transport Strategy will result in a greater amount of spare capacity being available at the junction, most notably in the PM peak, where a PRC

of 7.7% is shown. The highest DoS of 83.6% and associated MMQ of 16.0 PCUs is shown on the Site Access approach is once again shown in the PM peak, while on the A4155, the highest DoS of 78.1% is indicated on the A4155 Eastbound Approach Lane 1 with an associated MMQ of 11.1 PCUs in the 0700 to 0800 AM peak.

- 8.73. The results therefore suggest that the AECOM Option 2 proposed layout at the junction will, as in the case of the Option 1 layout, be able to accommodate the forecast 2027 traffic both with and without the Proposed Development in all peak hours.

Proposed Site Access Signal Controlled Crossroads (Summary)

- 8.74. In terms of a comparison between the Option 1 and Option 2 concept layouts, negligible differences are observed between the modelled outputs, with those for Option 1 operating marginally better overall. This is likely to be due to the inclusion of the right-turn lane from the A4155 westbound approach to Pump Lane South in Option 2 which reduces the width of the other A4155 westbound lanes, lowering their capacity to accommodate the high volumes of traffic using these lanes.
- 8.75. Nevertheless, Option 2 is demonstrated to operate within capacity and, for the purposes of the planning application, represents the preferred option enabling all movements at the junction. Accordingly, with reference to NPPF paragraph 111, it is considered that the Proposed Development will not have an unacceptable impact on highway safety, nor will the residual impact on the road network at the Site access junction with A4155 Marlow Road be severe.

Results Summary

- 8.76. The following key points can be deduced from the assessments of Junction 1, the A4155 Little Marlow Road / Parkway Roundabout:
- The Parkway approach is operating at around its operational capacity in both the 2021 and 2027 Base PM peak scenarios with forecast MMQs of 25.5 PCUs and 49.8 PCUs respectively. The results therefore suggest that the junction is already over capacity in the PM Peak.
 - The addition of the forecast unmanaged Proposed Development traffic at the junction would subsequently lead to a higher queue on Parkway in the PM Peak, although this impact will be reduced through the implementation of the Sustainable Transport Strategy.
 - The Proposed Development traffic will have a negligible impact on this junction in the AM peak hours. The Parkway approach is expected to experience a minor impact in the PM peak, however the A4155 approaches are observed to operate within capacity and the overall impact of the Proposed Development upon the junction is therefore not considered to be significant.
 - The impact of a segregated left-turn slip from the A404 northbound off-slip to Parkway upon the Parkway roundabout junction has not been assessed but is expected to be negligible with the benefits accrued at Junction 2: A404 / A4155 'Westhorpe Interchange' Roundabout.
- 8.77. The following key points can be deduced from the assessments of Junction 2, the A404 / A4155 'Westhorpe Interchange' Roundabout:
- The results indicate that the junction will start to exceed practical capacity (i.e. RFC greater than 0.85) in the 2027 08:00 to 09:00 AM peak without the Proposed Development in place. While the forecast traffic from the Proposed Development may result in the junction operating at above its operational capacity (i.e. RFC greater than 1.0), it is indicated that the implementation of the Sustainable Transport Strategy will minimise this impact and the junction will be expected to operate within operational capacity (i.e. RFC less than 1.0), whilst mean maximum queues can

be accommodated within the existing off-slip approaches.

- The results suggest that the introduction of a segregated left-turn slip from the A404 northbound off-slip to Parkway is likely to deliver a notable improvement in operation on the A404 northbound off-slip in the AM peak hours, where traffic volumes turning left into Parkway are relatively high. However it would only be expected to result in a marginal impact in the PM peak when the number of vehicles turning into Parkway from the A404 northbound off-slip are low. This scheme is unlikely to result in any material benefits to other approaches at the junction and, in isolation, would likely have a minor adverse effect in operation of the A404 southbound off-slip.
- It is noted that the potential segregated left-turn slip lane, in conjunction with partial signal control measures at the junction (i.e. the Buckinghamshire Council improvement scheme) would provide a significant amount of additional capacity at the roundabout. It is indicated that the layout would be able to accommodate the 2027 forecast traffic both with (STS managed and unmanaged flows) and without the traffic from the Proposed Development.

8.78. The following key points can be deduced from the assessments of Junction 3, the A4155 Marlow Road / Pump Lane South / Site Access junction:

- It is indicated that the existing priority-controlled crossroads junction operates with a high level of spare capacity in all peak hours in the 2027 baseline scenario. However, with the addition of either the forecast unmanaged or STS managed Proposed Development traffic, it is expected that the junction will operate significantly over capacity in all peak hours due to the volume of turning traffic in and out of the Site.
- Given this, two concept layout options have been designed by AECOM which provide signal-control at the junction and increased lane capacity.
- The modelled outputs indicate that both the AECOM Option 1 (barred right-turn to Pump Lane South) and Option 2 (all movements) layouts at the junction will be able to accommodate the forecast 2027 traffic, both with and without the Proposed Development, in all peak hours.
- In terms of a comparison between the Option 1 and Option 2 layouts, negligible differences are observed between the modelled outputs, with those for Option 1 operating marginally better overall. This is likely to be due to the inclusion of the right-turn lane from the A4155 westbound approach to Pump Lane South in Option 2, which reduces the width of the other westbound lanes, reducing their capacity to accommodate the high volumes of traffic using these lanes.
- Nevertheless, Option 2 is demonstrated to operate within capacity and, for the purposes of the planning application, represents the preferred option enabling all movements at the junction.

8.79. The junction impact assessments presented in this Section have demonstrated that the forecast trip generation associated with the Proposed Development can be accommodated within the existing and proposed highway network, and the Applicant continues to engage with Buckinghamshire Council to establish the optimum configuration for the A4155 corridor.

8.80. Accordingly, with reference to NPPF paragraph 111, it is considered that the Proposed Development will not have an unacceptable impact on highway safety, nor will the residual impact on the road network at the three junctions assessed within the vicinity of the Site be severe.

9. Summary and Conclusions

Summary

- 9.1. Dido Property Limited (the 'Applicant') have appointed Waterman Infrastructure and Environment ('Waterman') to prepare a Transport Assessment (TA) to support a full planning application for production space and supporting buildings for screen-based media and associated services/industries (the 'Proposed Development') on land to the east of Marlow, Buckinghamshire (the 'Site').
- 9.2. The Site is located east of Marlow, circa 1.8 km north-east of Marlow town centre and immediately south-east of the Westhorpe Interchange junction, a grade-separated roundabout forming the interchange between the A404 and A4155 routes.
- 9.3. Formal pre-application consultation has been undertaken with Buckinghamshire Council (BC) through the Planning Performance Agreement (PPA) process.
- 9.4. This TA has regard to current policy including the National Planning Policy Framework (NPPF, 2021) which sets out in Paragraph 110 the following tests:

"In assessing Sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the Site can be achieved for all users;

c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and

d) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

- 9.5. Paragraph 111 of the Framework sets out the test that a planning authority should apply when determining the suitability of a planning application in terms of transport and highways:

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."

- 9.6. These criteria have been applied to the assessments set out within this TA to determine that the Proposed Development will be acceptable in transport terms, that it will not have an unacceptable impact on highway safety, nor will the residual impacts of the development on the road network be severe.

Appropriate Opportunities to Promote Sustainable Transport Modes

- 9.7. The Proposed Development will support opportunities for access to sustainable travel modes as part of the Sustainable Transport Strategy (STS) encompassed within the Framework Travel Plan (TP), which will support a modal shift away from the private motor vehicle toward public transport (bus and rail) and active travel (walking and cycling).

- 9.8. The STS seeks to deliver a maximum 60% motor vehicle mode share target, achieved through implementation a 'Monitor and Manage' approach, and increases in public transport (circa 20% mode share) and active travel (circa 15% mode share) through a range of TP measures.
- 9.9. The Proposed Development will provide managed car parking for 1,108 vehicles on-site, enforced by ANPR through the 'Monitor and Manage' strategy and accommodating operational requirements. This will ensure that authorised vehicles are parked efficiently and appropriately on-site, whilst unauthorised vehicles will be turned away.
- 9.10. The Proposed Development will deliver two new bus services, a north-south service between High Wycombe and Maidenhead, and an east-west 'Hopper' service between Marlow and Bourne End. Both routes will serve the Site and provide onward connections with residential areas, and transport interchanges at rail stations, including the Elizabeth Line (Crossrail) at Maidenhead, and other locations such as the High Wycombe Park & Ride (P&R) site.
- 9.11. Pedestrian and cycle permeability within the Site and connections with the existing footway and cycle networks will be enhanced through a variety of measures to improve pedestrian and cycle access between the Site and Marlow. These measures will include localised improvements to existing facilities (e.g. widening of sections of the shared footway / cycleway and improved crossings on the A4155 in the vicinity of the Site access, and through a contribution towards improvements to active travel initiatives and infrastructure). The existing east-west Public Right of Way network (Footpath 20) will be enhanced by increasing the width and resurfacing the path to enable cyclists and pedestrians to share the space safely.
- 9.12. The Proposed Development will provide secure and covered cycle parking within the Site for 272 bicycles, located within the Mobility Hub and conveniently located clusters.
- 9.13. The Applicant will implement, monitor and manage the STS through the TP to help staff maximise the spatial advantages of the Site in relation to sustainable transport modes and opportunities for access by non-car means of travel to the Site.

All Users Can Achieve Safe and Suitable Access to the Site

- 9.14. Historic accident data on the highway network surrounding the Site has been reviewed and raises no significant patterns or concerns with respect to the impact of the Proposed Development in terms of highway safety.
- 9.15. The conceptual Site access junction designs have been submitted for Stage 1 Road Safety Audit and a Designer's Response provided by the Design Organisation. As a result, it is considered there are no significant trends or features within the study area, that would increase the propensity for accidents to occur.

Any Significant Impacts from the Development Can be Cost Effectively Mitigated

- 9.16. This TA includes a forecast of the additional trips from the Proposed Development and assesses their potential impact on the existing highway network.
- 9.17. The Proposed Development traffic is expected to have a negligible impact on the A4155 Little Marlow Road / Parkway junction in the AM peak hours. The modelling assessment results indicate that the Parkway approach is already at its operational capacity in the PM Peak and is likely to experience a minor impact due to the Proposed Development in the PM peak, however the A4155 approaches are observed to operate within capacity and the overall impact of the Proposed Development upon the junction is therefore not considered to be significant.

- 9.18. The results indicate that the A404 / A4155 Westthorpe Roundabout junction will start to exceed practical capacity (i.e. RFC greater than 0.85) in the 2027 (08:00 to 09:00) AM peak without the Proposed Development in place. While the forecast traffic from the unmanaged Proposed Development may result in the junction operating at above its operational capacity (i.e. RFC greater than 1.0), it is indicated that the implementation of the Sustainable Transport Strategy will minimise this impact and the junction is expected to operate within operational capacity (i.e. RFC less than 1.0), with mean maximum queues accommodated within the existing off-slip approaches.
- 9.19. The Buckinghamshire Council scheme, comprising a segregated left-turn slip lane and partial signal control measures at the junction (albeit not currently implemented), has the potential to provide a significant amount of additional capacity at the roundabout, sufficient to accommodate the 2027 forecast traffic flows both with (STS managed and Unmanaged flows) and without the traffic from the Proposed Development.
- 9.20. The results indicate that both the proposed AECOM designed Option 1 and Option 2 layouts at the A4155 Marlow Road / Pump Lane South / Site Access junction will be able to accommodate the forecast 2027 traffic with the unmanaged Proposed Development in all peak hours.
- 9.21. Further to this, the assessments show that the Proposed Development can reduce the level of vehicular traffic generated through implementation of a Sustainable Travel Strategy (STS), delivered through the Travel Plan and application of the 'Monitor and Manage' approach.

Conclusion

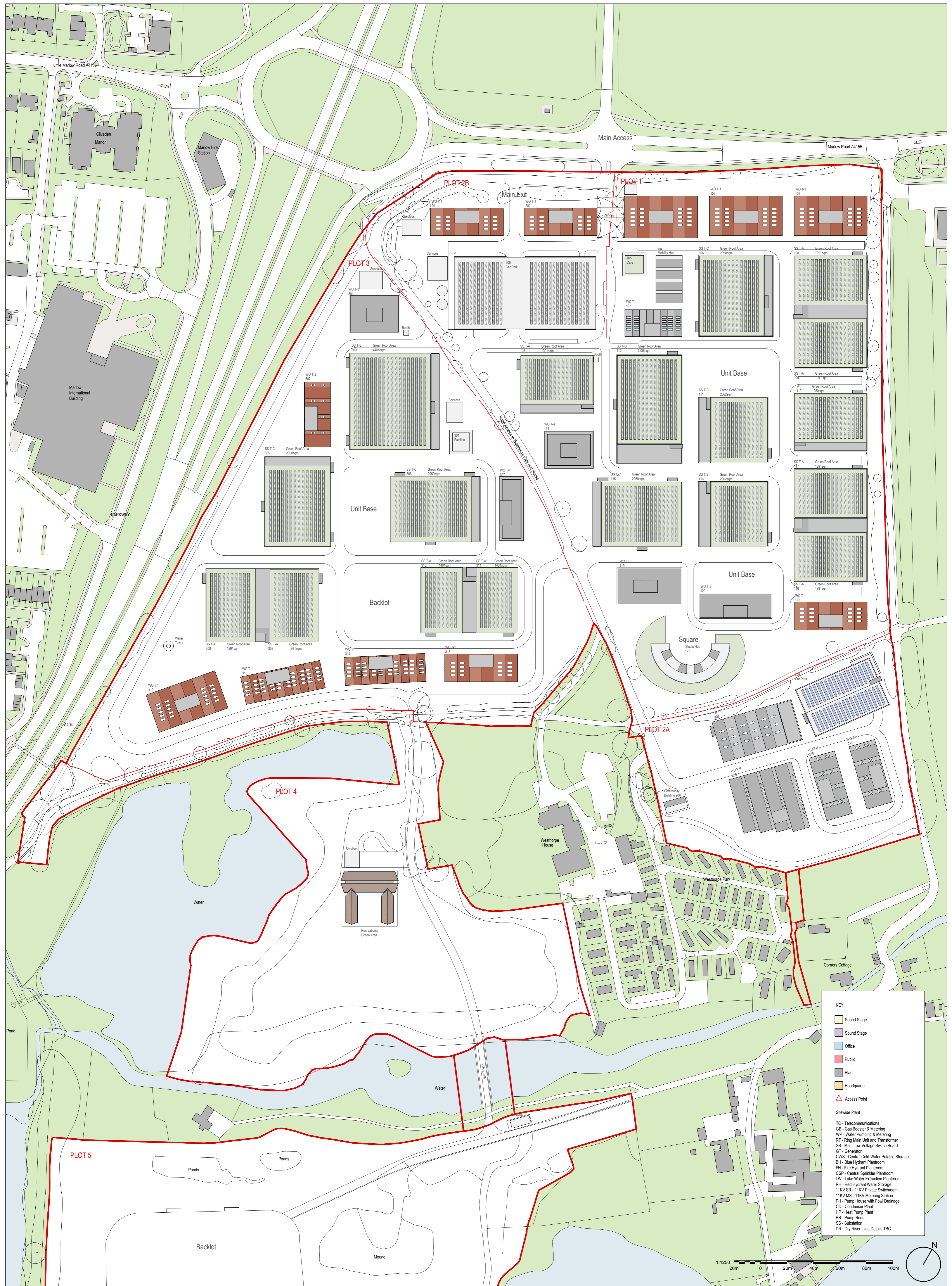
- 9.22. This TA shows that:
- Genuine opportunities to travel to and from the Site by public transport and active travel modes are available.
 - Safe and suitable access can be achieved by all modes of travel.
 - The Site will provide car parking in line with operational needs, including supplying accessible parking bays and EV charging points in accordance with policy and best practice.
 - The Site will provide secure and covered cycle parking in line with operational needs and BREEAM compliant standards.
 - Transport infrastructure can be cost effectively delivered to meet the Proposed Development's needs.
 - Trip generation and mode share will be managed across the Site by the implementation of a 'Monitor and Manage' strategy, supported by a Mode Share Incentive Scheme (MSIS) to ensure that mode share targets are achieved.
 - The Proposed Development integrates with other committed and planned development such that the cumulative residual impact will not be severe.
- 9.23. This TA therefore demonstrates that the Proposed Development can be accommodated within the surrounding highway and transport networks and that there will be no material traffic impact caused by the development proposals. The Applicant continues to engage with Buckinghamshire Council to establish the optimum configuration for the A4155 corridor.
- 9.24. In accordance with Paragraph 111 of the Framework, it is considered that there are no material transport or highway reasons why the highway authority should withhold or refuse planning permission.

9.25. Accordingly, there is no transport associated reason why the Proposed Development should not be approved by Buckinghamshire Council.



APPENDICES

A. Site Masterplan



KEY	
[Yellow Box]	Sound Stage
[Light Blue Box]	Sound Stage
[Blue Box]	Office
[Red Box]	Public
[Grey Box]	Plant
[Orange Box]	Headquarter
[Red Triangle]	Access Point
Site-wide Plant	
TC	- Telecommunications
GB	- Gas Booster & Metering
WP	- Water Pumping & Metering
RT	- Ring Main Unit and Transformer
SB	- Main Low Voltage Switch Board
GT	- Generator
CWS	- Central Cold Water Potable Storage
BH	- Blue Hydrant Plantroom
FH	- Fire Hydrant Plantroom
CSP	- Central Sprinkler Plantroom
LW	- Lake Water Extraction Plantroom
RH	- Red Hydrant Water Storage
11KV SR	- 11KV Private Switchroom
11KV MS	- 11KV Metering Station
PH	- Pump House with Flow Drainage
CD	- Condenser Plant
HP	- Heat Pump Plant
PR	- Pump Room
SS	- Substation
DR	- Dry Riser Inlet. Details TBC

Do not scale. Use figured dimensions only. All dimensions to be checked on site.
 All drawings to be read in conjunction with the Architectural Specification.
 All drawings to be read in conjunction with the Engineers' documentation.
 Any discrepancies between Consultants' drawings to be reported to the Architect before any work commences.
 The Contractor's attention is drawn to the Health & Safety matters that have been identified as being potentially hazardous in the Health & Safety Plan.
 These items should not be considered as a complete and final list.
 The work package Contractor's Health & Safety obligations apply to all construction operations.

Issue Status
DRAFT PLANNING

Client
STAGE 2 DRAFT

WilkinsonEyre
 Wilkinson Eyre Architects
 33 Bowling Green Lane, London
 EC2R 0BJ, United Kingdom
 +44 (0) 20 7608 7900 T
 +44 (0) 20 7608 7901 F
 www.wilkinsoneye.com

Project
 Marlow Film Studios
 Drawing Title
 Masterplan - Roof Level GA Plan
 Scale at A1
 1:1250
 Drawing and CAD File Number
 01841-WEA-MP-RF-DR-A-0299
 Rev
P06

Rev	Date	Description	By	Chkd
P06	23/03/2022	Stage 2 for Coordination	PH	EK



B. 2011 Census 'Travel to Work' Data

Appendices

Document 9, Transport Assessment

Project Number: WIE18037

Document Reference: WIE18037.110.R.2.1.3 TA

usual residence	Driving a car or van	Percentage	1,469	
E02003714 : Wycombe 019	39	2.7%	2.7%	A4155 East
E02003713 : Wycombe 018	36	2.5%	2.5%	A4155 East
E02003711 : Wycombe 016	24	1.6%	1.6%	A4155 East
E02003716 : Wycombe 021	25	1.7%	1.7%	A4155 East
E02003422 : Windsor and Maidenhead 002	17	1.2%	1.2%	A4155 East
E02003688 : South Bucks 001	14	1.0%	1.0%	A4155 East
E02003704 : Wycombe 009	12	0.8%	0.8%	A4155 East
E02003693 : South Bucks 006	10	0.7%	0.7%	A4155 East
				12.0%
E02003715 : Wycombe 020	103	7.0%	7.0%	A4155 West
E02003717 : Wycombe 022	88	6.0%	6.0%	A4155 West
E02003712 : Wycombe 017	57	3.9%	3.9%	A4155 West
E02003718 : Wycombe 023	46	3.1%	3.1%	A4155 West
				20.0%
South Bucks (Rest of)	19	1.3%	1.3%	West on A4155 then A404 North then East on M40
E02003705 : Wycombe 010	15	1.0%	1.0%	West on A4155 then A404 North then East on M40
E02003706 : Wycombe 011	14	1.0%	1.0%	West on A4155 then A404 North then East on M40
Hillingdon	14	1.0%	1.0%	West on A4155 then A404 North then East on M40
Dacorum	7	0.5%	0.5%	West on A4155 then A404 North then East on M40
Kingston upon Thames	7	0.5%	0.5%	West on A4155 then A404 North then East on M40
Spelthorne	6	0.4%	0.4%	West on A4155 then A404 North then East on M40
Central Bedfordshire	5	0.3%	0.3%	West on A4155 then A404 North then East on M40
St Albans	5	0.3%	0.3%	West on A4155 then A404 North then East on M40
E02003689 : South Bucks 002	4	0.3%	0.3%	West on A4155 then A404 North then East on M40
Elmbridge	4	0.3%	0.3%	West on A4155 then A404 North then East on M40
Mid Sussex	4	0.3%	0.3%	West on A4155 then A404 North then East on M40
Welwyn Hatfield	4	0.3%	0.3%	West on A4155 then A404 North then East on M40
Bexley	3	0.2%	0.2%	West on A4155 then A404 North then East on M40
Ealing	3	0.2%	0.2%	West on A4155 then A404 North then East on M40
Enfield	3	0.2%	0.2%	West on A4155 then A404 North then East on M40
Hammersmith and Fulham	3	0.2%	0.2%	West on A4155 then A404 North then East on M40
Lewisham	3	0.2%	0.2%	West on A4155 then A404 North then East on M40
Bedford	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Brent	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Chichester	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
E02003691 : South Bucks 004	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Harrow	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Hertsmere	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Peterborough	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Reigate and Banstead	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Runnymede	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Rutland	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
South Kesteven	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Thanet	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Three Rivers	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Watford	2	0.1%	0.1%	West on A4155 then A404 North then East on M40
Barnet	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Basildon	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Braintree	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Broadland	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Camden	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Dover	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Gravesham	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Huntingdonshire	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Maidstone	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Medway	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Merton	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Milton Keynes	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Redbridge	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Rother	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Stevenage	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Swale	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Wandsworth	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
Westminster, City of London	1	0.1%	0.1%	West on A4155 then A404 North then East on M40
				11.5%
Wokingham	47	3.2%	3.2%	West on A4155 then A404 North then North on A4010
E02003707 : Wycombe 012	38	2.6%	2.6%	West on A4155 then A404 North then North on A4010
E02003696 : Wycombe 001	12	0.8%	0.8%	West on A4155 then A404 North then North on A4010
E02003697 : Wycombe 002	8	0.5%	0.5%	West on A4155 then A404 North then North on A4010
E02003708 : Wycombe 013	17	1.2%	1.2%	West on A4155 then A404 North then North on A4010
				8.3%

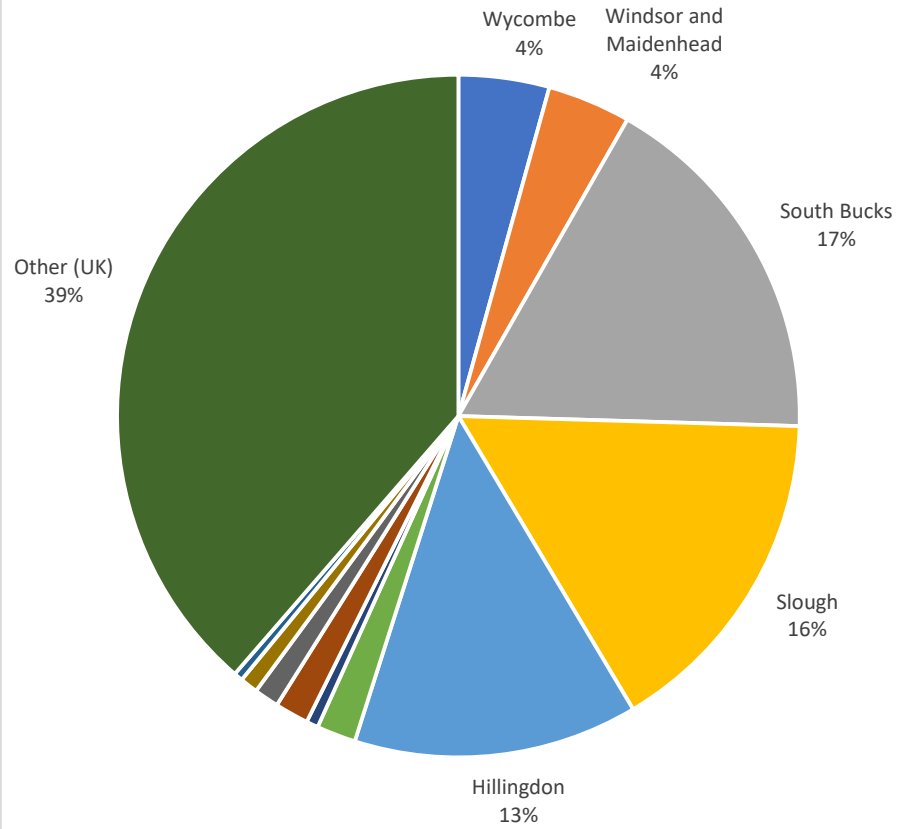
National Census 2011 'Travel to Work' - Usual Place of Work Wycombe 020 (MSOA)

Chiltern	44	3.0%	3.0%	West on A4155 then A404 North then North on A404
E02003710 : Wycombe 015	39	2.7%	2.7%	West on A4155 then A404 North then North on A404
E02003701 : Wycombe 006	33	2.2%	2.2%	West on A4155 then A404 North then North on A404
E02003698 : Wycombe 003	28	1.9%	1.9%	West on A4155 then A404 North then North on A404
E02006824 : Wycombe 024	23	1.6%	1.6%	West on A4155 then A404 North then North on A404
E02003703 : Wycombe 008	17	1.2%	1.2%	West on A4155 then A404 North then North on A404
E02003709 : Wycombe 014	9	0.6%	0.6%	West on A4155 then A404 North then North on A404
				13.1%
E02003699 : Wycombe 004	28	1.9%	1.9%	West on A4155 then A404 North then West on M40
South Oxfordshire	64	4.4%	4.4%	West on A4155 then A404 North then West on M40
Vale of White Horse	8	0.5%	0.5%	West on A4155 then A404 North then West on M40
Cherwell	5	0.3%	0.3%	West on A4155 then A404 North then West on M40
Manchester	3	0.2%	0.2%	West on A4155 then A404 North then West on M40
Oxford	3	0.2%	0.2%	West on A4155 then A404 North then West on M40
Swindon	3	0.2%	0.2%	West on A4155 then A404 North then West on M40
Northampton	2	0.1%	0.1%	West on A4155 then A404 North then West on M40
Staffordshire Moorlands	2	0.1%	0.1%	West on A4155 then A404 North then West on M40
Birmingham	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Broxtowe	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Cheshire East	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Chorley	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Daventry	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Derby	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Dudley	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
East Staffordshire	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Forest of Dean	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Harborough	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Herefordshire, County of	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Leeds	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Lincoln	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Nottingham	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Rugby	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Rushcliffe	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Sheffield	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Solihull	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
South Northamptonshire	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Stockport	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Stratford-on-Avon	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Tameside	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Wellingborough	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
West Oxfordshire	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Wigan	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Wolverhampton	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
Wychavon	1	0.1%	0.1%	West on A4155 then A404 North then West on M40
				9.9%
E02003702 : Wycombe 007	21	1.4%	1.4%	West on A4155 then North on B482
				1.4%
Reading	21	1.4%	1.4%	West on A4155 then South A404
E02003426 : Windsor and Maidenhead 006	19	1.3%	1.3%	West on A4155 then South A404
E02003428 : Windsor and Maidenhead 008	15	1.0%	1.0%	West on A4155 then South A404
Hounslow	7	0.5%	0.5%	West on A4155 then South A404
Surrey Heath	7	0.5%	0.5%	West on A4155 then South A404
Wiltshire	6	0.4%	0.4%	West on A4155 then South A404
Rushmoor	5	0.3%	0.3%	West on A4155 then South A404
				5.4%
Guildford	3	0.2%	0.2%	West on A4155 then South A404 then east on A308
Woking	1	0.1%	0.1%	West on A4155 then South A404 then east on A308
				0.3%
Slough	45	3.1%	3.1%	West on A4155 then South A404 then East on M4
Windsor and Maidenhead (Rest of)	34	2.3%	2.3%	West on A4155 then South A404 then East on M4
Richmond upon Thames	4	0.3%	0.3%	West on A4155 then South A404 then East on M4
				5.7%
Wokingham	61	4.2%	4.2%	West on A4155 then South A404 then West on M4
West Berkshire	17	1.2%	1.2%	West on A4155 then South A404 then West on M4
Hart	8	0.5%	0.5%	West on A4155 then South A404 then West on M4
Basingstoke and Deane	7	0.5%	0.5%	West on A4155 then South A404 then West on M4
Waverley	4	0.3%	0.3%	West on A4155 then South A404 then West on M4
Test Valley	3	0.2%	0.2%	West on A4155 then South A404 then West on M4
Winchester	3	0.2%	0.2%	West on A4155 then South A404 then West on M4
West Devon	2	0.1%	0.1%	West on A4155 then South A404 then West on M4
Weymouth and Portland	2	0.1%	0.1%	West on A4155 then South A404 then West on M4
Bournemouth	1	0.1%	0.1%	West on A4155 then South A404 then West on M4
East Hampshire	1	0.1%	0.1%	West on A4155 then South A404 then West on M4
North Somerset	1	0.1%	0.1%	West on A4155 then South A404 then West on M4

National Census 2011 'Travel to Work' - Usual Place of Work Wycombe 020 (MSOA)

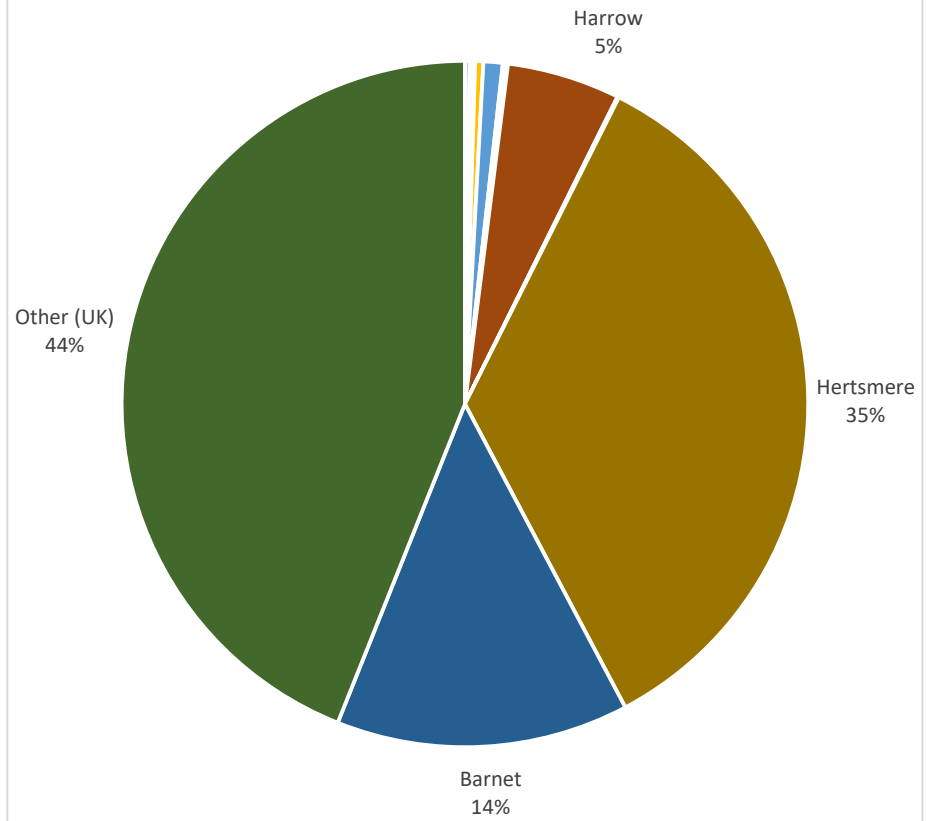
Southampton	1	0.1%	0.1%	West on A4155 then South A404 then West on M4	
Taunton Deane	1	0.1%	0.1%	West on A4155 then South A404 then West on M4	
Torridge	1	0.1%	0.1%	West on A4155 then South A404 then West on M4	
					7.7%
E02003421 : Windsor and Maidenhead 001	11	0.7%	0.7%	West on A4155 then South A404	
E02003425 : Windsor and Maidenhead 005	11	0.7%	0.7%	West on A4155 then South A404	
Bracknell Forest	23	1.6%	1.6%	West on A4155 then South A404	
E02003424 : Windsor and Maidenhead 004	9	0.6%	0.6%	West on A4155 then South A404	
E02003423 : Windsor and Maidenhead 003	8	0.5%	0.5%	West on A4155 then South A404	
E02003427 : Windsor and Maidenhead 007	6	0.4%	0.4%	West on A4155 then South A404	
					4.6%

Pinewood

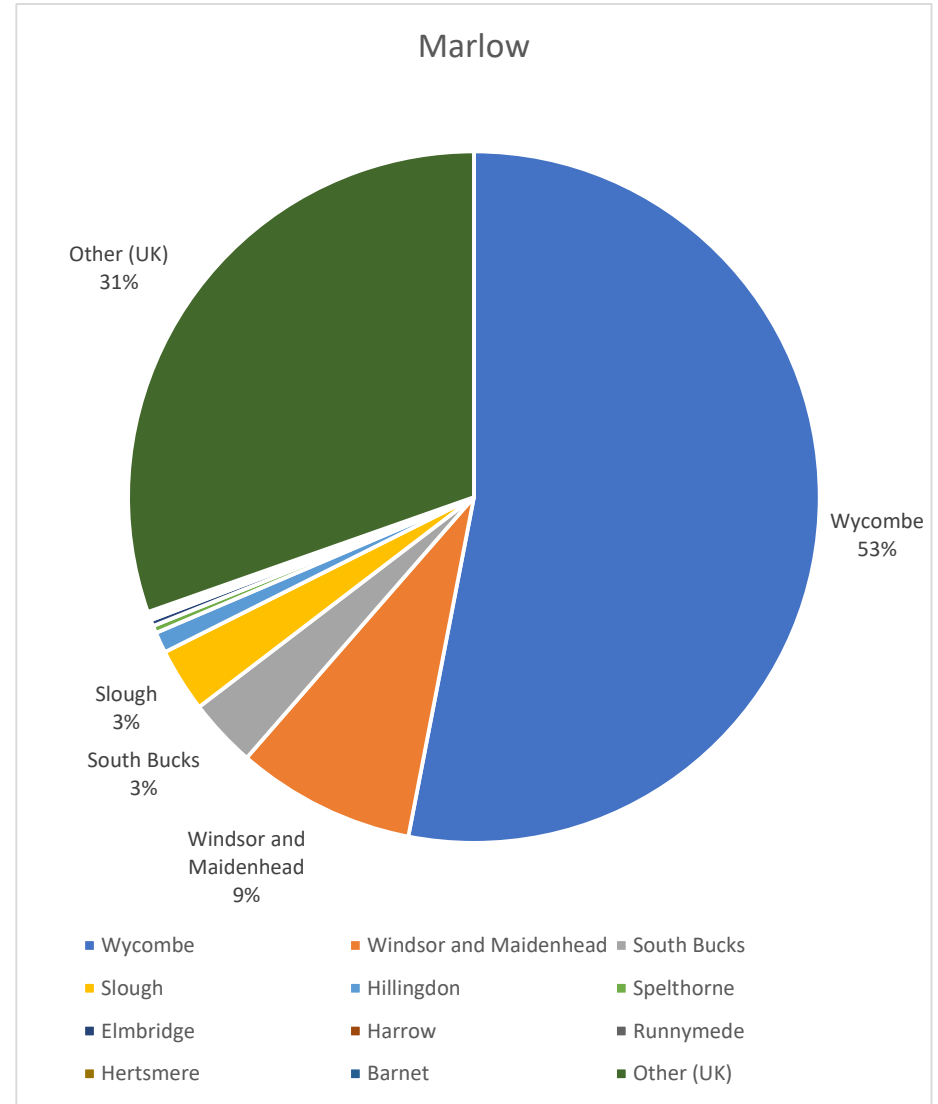
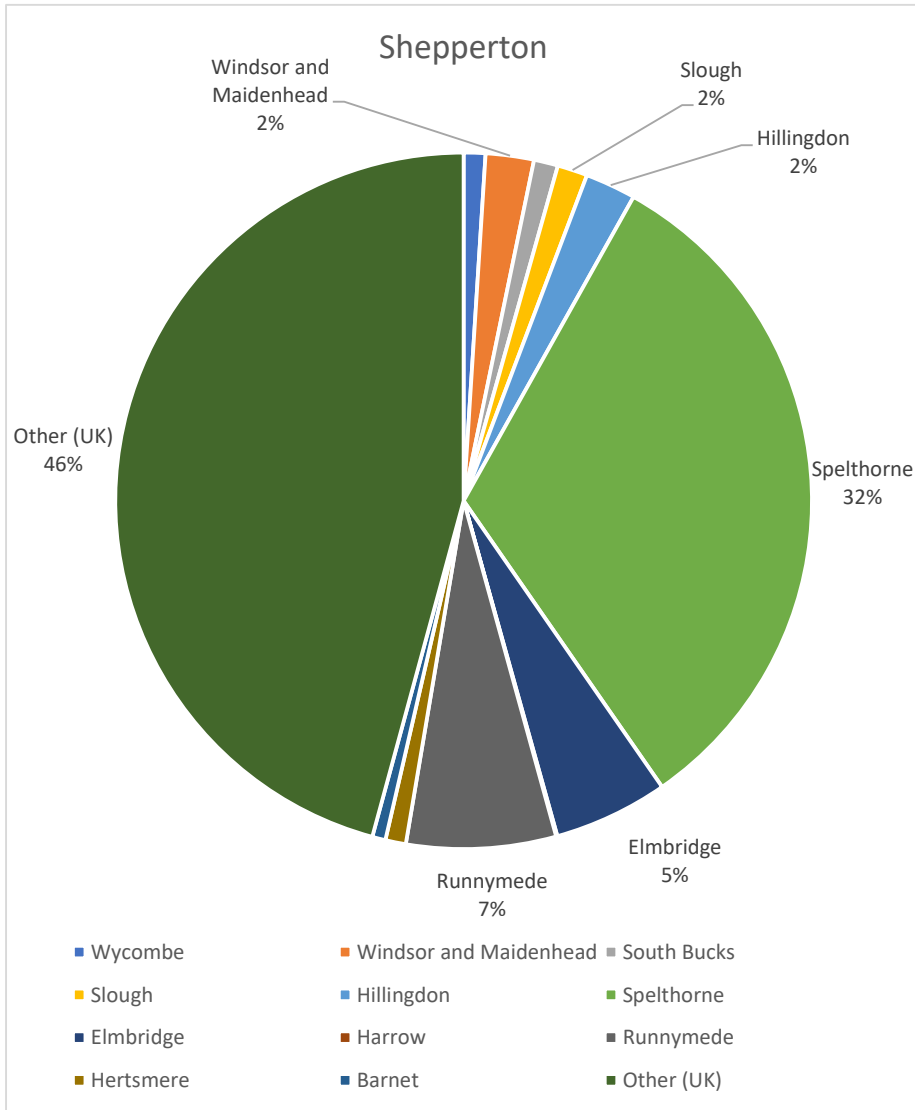


- Wycombe
- Windsor and Maidenhead
- South Bucks
- Slough
- Hillingdon
- Spelthorne
- Elmbridge
- Harrow
- Runnymede
- Hertsmere
- Barnet
- Other (UK)

Elstree



- Wycombe
- Windsor and Maidenhead
- South Bucks
- Slough
- Hillingdon
- Spelthorne
- Elmbridge
- Harrow
- Runnymede
- Hertsmere
- Barnet
- Other (UK)





C. Accessibility Index

Appendices

Document 9, Transport Assessment

Project Number: WIE18037

Document Reference: WIE18037.110.R.2.1.3 TA

Parameters

Walk speed	80
Bus reliability	2
Rail reliability	0.75

Services	Stop	Distance	Frequency	Weight	Walk time	SWT	Average SWT	Access	EDF	AI
Buses										
155	Winchbottom Lane	430	0.33	1	5.38	90.91	92.91	98.28	0.31	0.31
160	Winchbottom Lane	430	0.25	0.5	5.38	120.00	122.00	127.38	0.24	0.12
									Total AI	0.42

Assumptions:

Walk distance from the site access

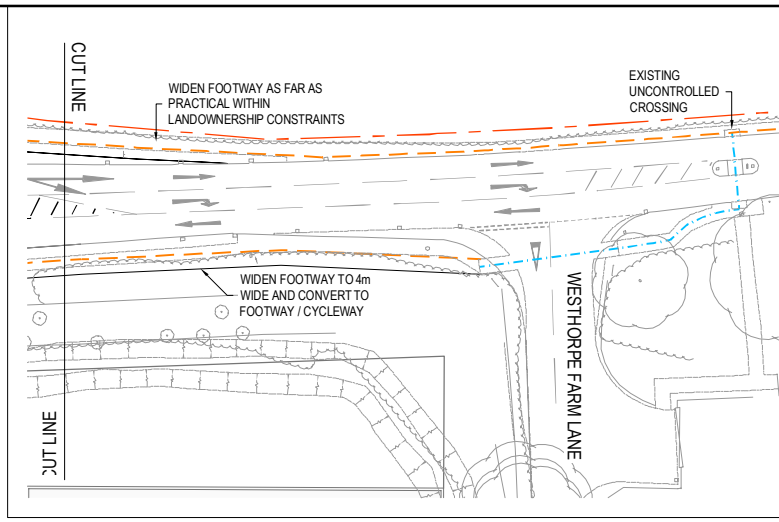
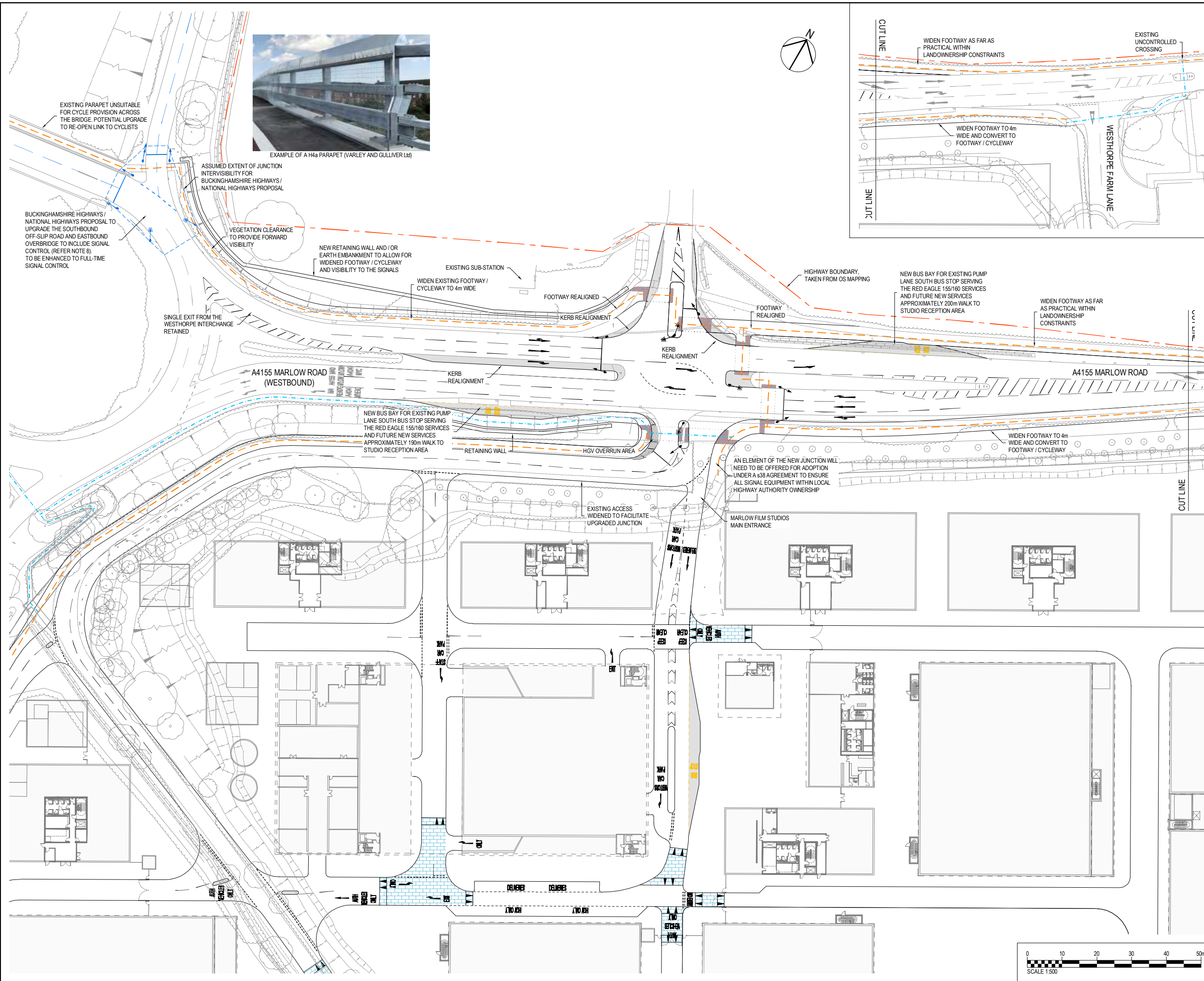
D. Conceptual Junction Arrangement (Option 2)

Appendices

Document 9, Transport Assessment

Project Number: WIE18037

Document Reference: WIE18037.110.R.2.1.3 TA



1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SERVICES AND SPECIALIST DRAWINGS AND SPECIFICATION.
2. ANY DISCREPANCIES IN DIMENSIONS OR DETAILS ON OR BETWEEN THESE DRAWINGS SHOULD BE DRAWN TO THE ATTENTION OF THE ARCHITECT AND/OR THE ENGINEER FOR CLARIFICATION.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. DO NOT SCALE THIS DRAWING.
5. THIS CONCEPT PROPOSAL IS PREPARED FOR THE PURPOSE OF PROJECT CONSULTATION AND A STAGE 1 ROAD SAFETY AUDIT.
6. THE USE OF HIGH FRICTION SURFACING WILL BE DETERMINED IN CONSULTATION WITH BUCKINGHAMSHIRE HIGHWAYS DURING THE DETAILED DESIGN.
7. JUNCTION DESIGN BASED ON DESIGN SPEED OF 70kph (40mph). EXISTING NATIONAL SPEED LIMIT TO BE REDUCED TO 40mph FROM WEST OF A404 WESTHORPE INTERCHANGE TO LITTLE MARLOW.
8. BUCKINGHAMSHIRE HIGHWAYS / NATIONAL HIGHWAYS SCHEME (IN BLUE) REPRODUCED FROM BALFOUR BEATTY A404/A4155 WESTHORPE JUNCTION IMPROVEMENTS SOUTHBOUND OFFSLIP GENERAL ARRANGEMENT DRAWING (WIS-STN-PH1-XX-DR-C-0150 P03) TAKEN FROM THE BUCKINGHAMSHIRE WEBSITE.

KEY

	PEDESTRIAN ROUTE
	PEDESTRIAN AND CYCLE ROUTE
	HIGHWAY BOUNDARY

ISSUE/REVISION

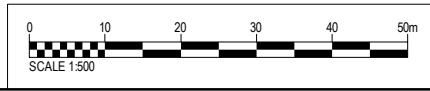
NO	DATE	DESCRIPTION
P03	16.05.2022	ISSUED FOR PLANNING
P02	07.04.2022	SECOND ISSUE
P01	08.02.2022	FIRST ISSUE
I/R	DATE	DESCRIPTION

SUITABILITY

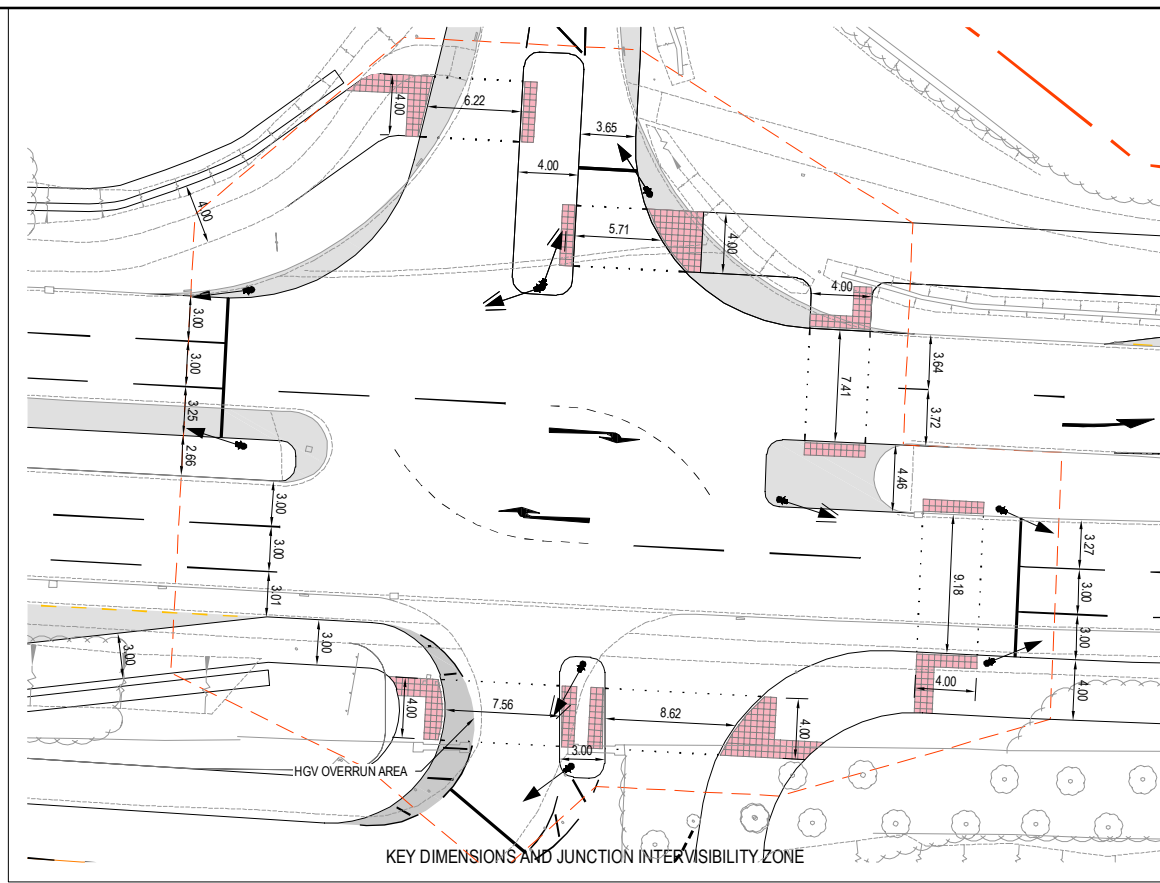
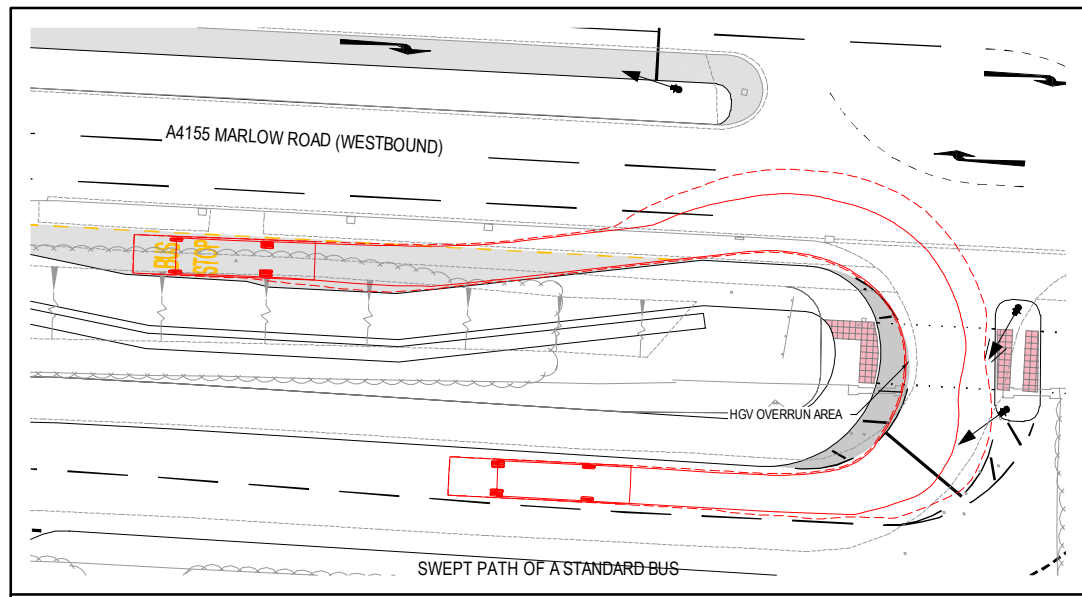
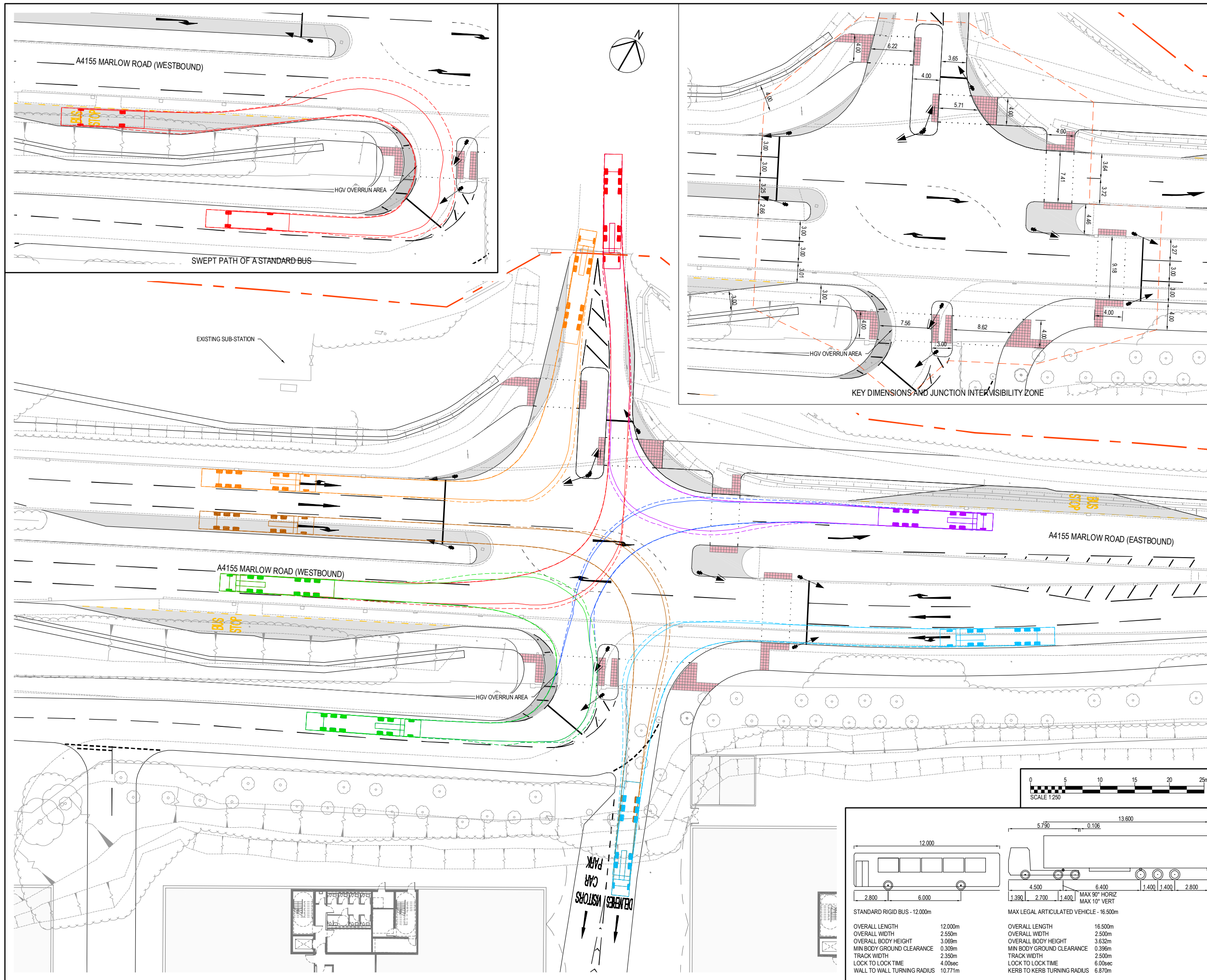
PROJECT NUMBER
60654980

SHEET TITLE
CONCEPTUAL JUNCTION
ARRANGEMENT
OPTION 2

SHEET NUMBER
60654980-ACM-XX-XX-DR-HW-000003



This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability, whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.



- GENERAL NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SERVICES AND SPECIALIST DRAWINGS AND SPECIFICATION.
 2. ANY DISCREPANCIES IN DIMENSIONS OR DETAILS ON OR BETWEEN THESE DRAWINGS SHOULD BE DRAWN TO THE ATTENTION OF THE ARCHITECT AND/OR THE ENGINEER FOR CLARIFICATION.
 3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
 4. DO NOT SCALE THIS DRAWING.
 5. THIS CONCEPT PROPOSAL IS PREPARED FOR THE PURPOSE OF PROJECT CONSULTATION AND A STAGE 1 ROAD SAFETY AUDIT.
 6. THE USE OF HIGH FRICTION SURFACING WILL BE DETERMINED IN CONSULTATION WITH BUCKINGHAMSHIRE HIGHWAYS DURING THE DETAILED DESIGN.
 7. JUNCTION DESIGN BASED ON DESIGN SPEED OF 70kph (40mph). EXISTING NATIONAL SPEED LIMIT TO BE REDUCED TO 40mph FROM WEST OF A404 WESTHORPE INTERCHANGE TO LITTLE MARLOW.

- KEY
- VEHICLE WHEEL PATH
 - - - VEHICLE BODY OVERHANG PATH
 - - - HIGHWAY BOUNDARY
 - - - JUNCTION INTERVISIBILITY ZONE

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P03	16.05.2022	ISSUED FOR PLANNING
P02	07.04.2022	SECOND ISSUE
P01	08.02.2022	FIRST ISSUE

SUITABILITY

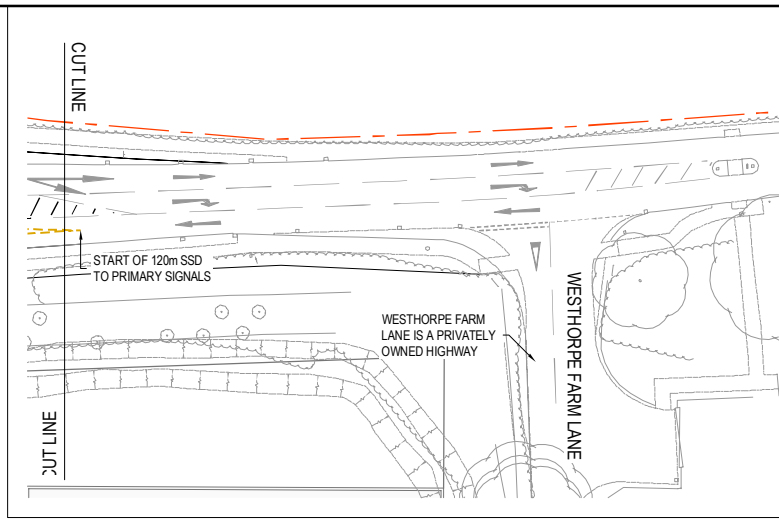
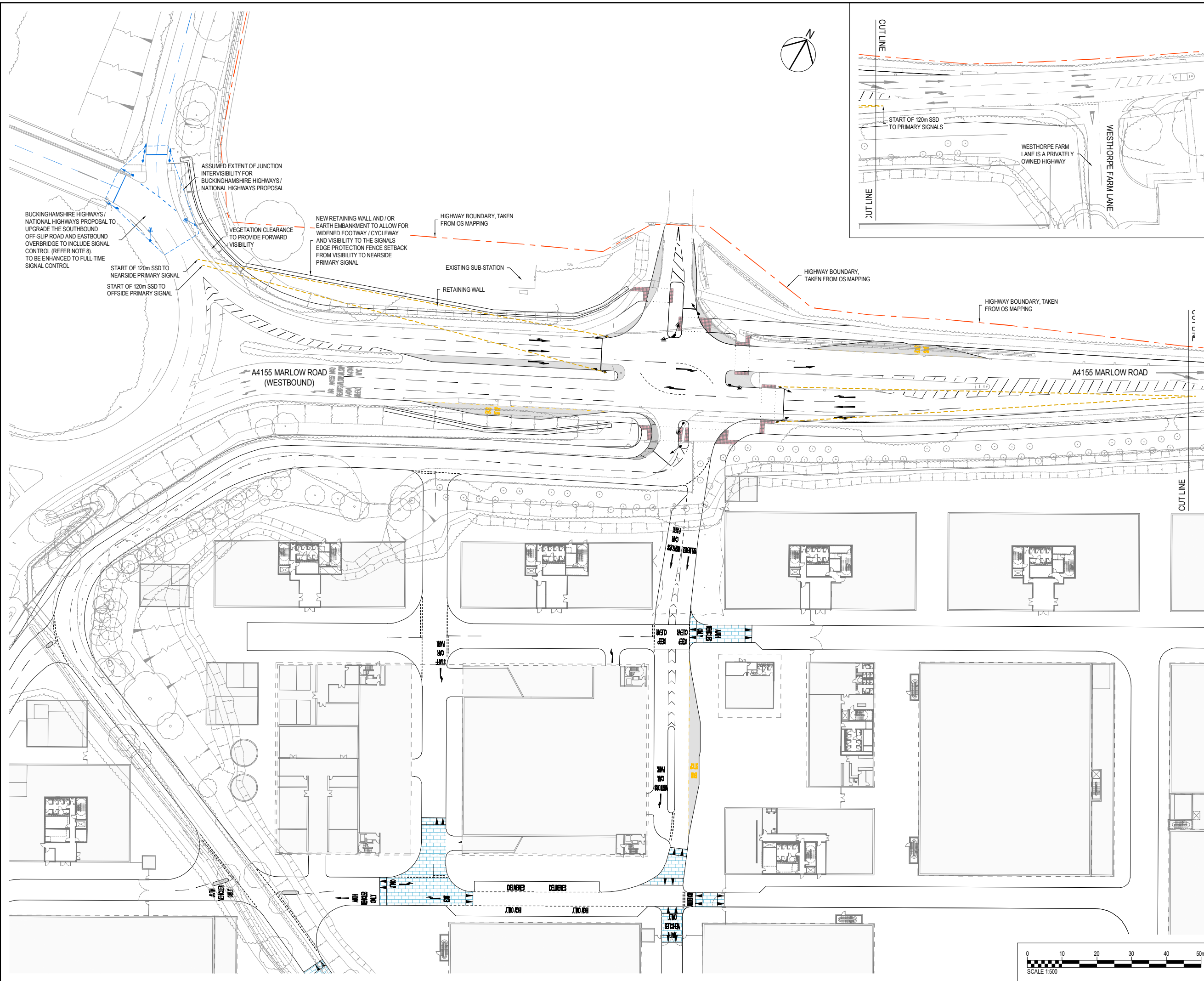
PROJECT NUMBER
 60654980

SHEET TITLE
 CONCEPTUAL JUNCTION ARRANGEMENT, OPTION 2 SWEEP PATH ANALYSIS

SHEET NUMBER
 60654980-ACM-XX-XX-DR-HW-00004

STANDARD RIGID BUS - 12.000m		MAX LEGAL ARTICULATED VEHICLE - 16.500m	
OVERALL LENGTH	12.000m	OVERALL LENGTH	16.500m
OVERALL WIDTH	2.550m	OVERALL WIDTH	2.500m
OVERALL BODY HEIGHT	3.069m	OVERALL BODY HEIGHT	3.632m
MIN BODY GROUND CLEARANCE	0.309m	MIN BODY GROUND CLEARANCE	0.396m
TRACK WIDTH	2.350m	TRACK WIDTH	2.500m
LOCK TO LOCK TIME	4.00sec	LOCK TO LOCK TIME	6.00sec
WALL TO WALL TURNING RADIUS	10.771m	KERB TO KERB TURNING RADIUS	6.870m

This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. All measurements must be obtained from the stated dimensions.



AECOM

PROJECT
 Marlow Film Studios

CLIENT
 Dido Property Limited

CONSULTANT
 AECOM Limited
 Midpoint, Alencon Link,
 Basingstoke, Hampshire, RG21 7PP
 +44 (0)1256 824 500 tel
 www.aecom.com

GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SERVICES AND SPECIALIST DRAWINGS AND SPECIFICATION.
2. ANY DISCREPANCIES IN DIMENSIONS OR DETAILS ON OR BETWEEN THESE DRAWINGS SHOULD BE DRAWN TO THE ATTENTION OF THE ARCHITECT AND/OR THE ENGINEER FOR CLARIFICATION.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. DO NOT SCALE THIS DRAWING.
5. THIS CONCEPT PROPOSAL IS PREPARED FOR THE PURPOSE OF PROJECT CONSULTATION AND A STAGE 1 ROAD SAFETY AUDIT.
6. THE USE OF HIGH FRICTION SURFACING WILL BE DETERMINED IN CONSULTATION WITH BUCKINGHAMSHIRE HIGHWAYS DURING THE DETAILED DESIGN.
7. JUNCTION DESIGN BASED ON DESIGN SPEED OF 70kph (40mph). EXISTING NATIONAL SPEED LIMIT TO BE REDUCED TO 40mph FROM WEST OF A404 WESTHORPE INTERCHANGE TO LITTLE MARLOW.
8. BUCKINGHAMSHIRE HIGHWAYS / NATIONAL HIGHWAYS SCHEME (IN BLUE) REPRODUCED FROM BALFOUR BEATTY A404/A4155 WESTHORPE JUNCTION IMPROVEMENTS SOUTHBOUND OFFSLIP GENERAL ARRANGEMENT DRAWING (WJIS-STN-PH-XX-DR-C-0150 P03) TAKEN FROM THE BUCKINGHAMSHIRE WEBSITE.

KEY

- HIGHWAY BOUNDARY
- - - 120m SSD TO PRIMARY SIGNAL (NOTE 7)

ISSUE/REVISION

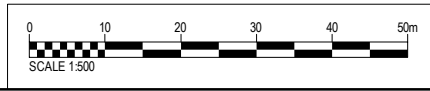
NO	DATE	DESCRIPTION
P02	16.05.2022	ISSUED FOR PLANNING
P01	07.04.2022	FIRST ISSUE
I/R	DATE	DESCRIPTION

SUITABILITY

PROJECT NUMBER
 60654980

SHEET TITLE
 CONCEPTUAL JUNCTION
 ARRANGEMENT, OPTION 2
 VISIBILITY ANALYSIS

SHEET NUMBER
 60654980-ACM-XX-XX-DR-HW-000006



This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. Do not scale this document. All measurements must be obtained from the stated dimensions.



E. Highway Basis of Report

Appendices

Document 9, Transport Assessment

Project Number: WIE18037

Document Reference: WIE18037.110.R.2.1.3 TA

Marlow Film Studios

Highways Basis of Design

Dido Property Limited


Project number: 60654980
60654980-ACM-XX-XX-RP-HW-000004

16 May 2022

Quality information

Prepared by	Checked by	Verified by	Approved by
			
Neil Tims Principal Engineer	Neil Bond Associate Director	Mike Wells Technical Director	Bryn Milliner Technical Director

Revision History

Revision	Revision date	Details	Authorised	Name	Position
P03	16 May 2022	Issued for Planning		B.Milliner	Technical Director

Distribution List

# Hard Copies	PDF Required	Association / Company Name

Prepared for:

Dido Property Limited

Prepared by:

AECOM Limited
Midpoint, Alencon Link
Basingstoke
Hampshire RG21 7PP
United Kingdom

T: +44(0)1256 824500
aecom.com

© 2022 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited ("AECOM") for sole use of Dido Property Limited (the "Client") in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

Table of Contents

1.	Executive Summary	6
2.	Introduction.....	7
2.1	The Site	7
2.2	Proposed Development	8
2.3	Existing Arrangement	11
2.4	Existing Land Ownership	15
2.5	Consultation.....	15
3.	Identified Constraints.....	17
3.1	Highway Constraints.....	17
3.2	Utility Constraints	19
4.	Conceptual Designs.....	20
4.1	Introduction.....	20
4.2	Design Principles	21
4.3	General Arrangement	22
4.4	Visibility.....	23
4.5	Swept Path Analysis.....	26
4.6	Cross Section.....	28
4.7	A4155 Marlow Road Long Section	30
4.8	Other Considerations.....	30
5.	Road Safety Audit	32
	Appendix A Option 1 Drawings	33
	Appendix B Option 2 Drawings.....	34
	Appendix C Stage 1 Road Safety Audit, Brief.....	35
	Appendix D Stage 1 Road Safety Audit.....	36
	Appendix E Stage 1 Road Safety Audit, Designers Response	37
	Appendix F Statutory Undertakers Asset Plans	38

Figures

Figure 2-1: Site Location	7
Figure 2-2: Marlow Film Studios Masterplan (Aerial image Google Maps, © 2022 Google).....	9
Figure 2-3: Site Red Line and Plots	10
Figure 2-4: Aerial Image of the A4155 Marlow Road (Google Maps, © 2022 Google)	11
Figure 2-5: Photo of A4155 Marlow Road, looking West, with the drive to Westhorpe House on the left (21 April 2021).....	11
Figure 2-6: Photo of Pump Lane South, north of the drive to Westhorpe House (21 April 2021)	12
Figure 2-7: Photo of A4155 Marlow Road Westbound Approach to the A404 Interchange (21 April 2021).....	12
Figure 2-8: Photo of A4155 Marlow Road Eastbound (21 April 2021).....	13
Figure 2-9: Photo of A4155 Marlow Road Junction with Westhorpe Farm Lane (21 April 2021).....	13
Figure 2-10: Photo of the drive to Westhorpe House connection to the A4155 Marlow Road (21 April 2021).....	14
Figure 2-11: Existing Non-Motorised User Routes (Google Maps, © 2022 Google).....	14
Figure 2-12: Highway Ownership (Google Maps, © 2022 Google)	15
Figure 3-1: Gillespies LLP GIS Data on the AONB Boundary (black line) (received 26 April 2021)	17
Figure 3-2: AONB Boundary (red line) as shown on the Magic website	18
Figure 4-1: Option 1 Snapshot (refer 60654980-ACM-XX-XX-DR-HW-000001 in Appendix A)	20
Figure 4-2: Option 2 Snapshot (refer 60654980-ACM-XX-XX-DR-HW-000003 in Appendix B).....	20
Figure 4-3: Additional diversion to access Pump Lane South (Aerial image Google Earth, © 2022 Google).....	21
Figure 4-4: Option 1 Junction Intervisibility (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)	24
Figure 4-5: Option 2 Junction Intervisibility (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)	24
Figure 4-6: Option 1 Eastbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000005 in Appendix A).....	25

Figure 4-7: Option 1 Westbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000005 in Appendix A)..... 25

Figure 4-8: Option 2 Eastbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000006 in Appendix B)..... 25

Figure 4-9: Option 2 Westbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000006 in Appendix B)..... 26

Figure 4-10: Option 1 HGV Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)..... 26

Figure 4-11: Option 2 HGV Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)..... 27

Figure 4-12: Option 1 Bus Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)..... 27

Figure 4-13: Option 2 Bus Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)..... 28

Figure 4-14: Option 1 Lane Widths (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)..... 29

Figure 4-15: Option 2 Lane Widths (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)..... 29

Tables

Table 4-1: Junction Lane Widths at the Stop Lines 28

1. Executive Summary

This Highways Basis of Design Report has been prepared as part of an overall package of documents, to be submitted to support a Full Planning Application (FPA) for Marlow Film Studios (the 'proposed Development'). This FPA seeks permission for the development of production space and supporting buildings for screen-based media and associated services / industries located on land to the east of the A404 near Marlow, Buckinghamshire (the 'Site').

The proposed Development will comprise sound stages; workshops; office accommodation; Studio Hub; associated outdoor space such as backlots and unit bases; entrance structures and reception; security infrastructure; mobility hub; cafes; parking; bridge; incidental supporting buildings; associated infrastructure; public art; upgraded vehicular access onto Marlow Road; new cycle and pedestrian accesses; a new cultural / educational / recreational building; a new community building; and, associated landscaping, publicly accessible recreational land and ecological and environmental enhancements / habitat creation and will be located on a 36.34 hectare site to the east of the A404 near Marlow, Buckinghamshire (the 'Site').

This report considers the location and layout of an upgraded junction off the A4155 Marlow Road to access the proposed Development, which is subject to the FPA. It has been prepared to demonstrate that:

- An improved junction with signal-controls can be located on the A4155 Marlow Road, at the location of the existing junction with the drive to Westthorpe House and Pump Lane South to facilitate access to the proposed Development.
- Enhanced pedestrian and cycle facilities can be included from the A404 Westthorpe Interchange to the new junction and onwards to the existing junction with Westthorpe Farm Lane.
- Existing highway and utility constraints have been considered.

Two conceptual layouts have been considered, for the main access to the proposed Development and submitted for a Stage 1 Road Safety Audit (RSA) by an independent team. The Audit has been reviewed by the Design Team, with the RSA Brief, RSA Report and RSA Designer's Response included in this Report. In addition, these documents have been provided to Buckinghamshire Council for review and approval.

2. Introduction

AECOM has been commissioned by Dido Property Limited (the 'Applicant') to provide highway engineering advice to support a Planning Application for the development of production space and supporting buildings for screen-based media and associated services / industries (hereafter referred to as the 'proposed Development') on land to the east of the A404 near Marlow, Buckinghamshire (the 'Site').

This Highways Basis of Design Report has been prepared to demonstrate that:

- An improved junction with signal-controls can be located on the A4155 Marlow Road, at the location of the existing junction with the drive to Westhorpe House and Pump Lane South to facilitate access to the proposed Development.
- Enhanced pedestrian and cycle facilities can be included from the A404 Westhorpe Interchange to the new junction and onwards to the existing junction with Westhorpe Farm Lane.
- Existing highway and utility constraints have been considered.

Two conceptual layouts have been considered, for the main access to the proposed Development and submitted for a Stage 1 Road Safety Audit (RSA) by an independent team. The Audit has been reviewed by the Design Team, with the RSA Brief, RSA Report and RSA Designer's Response included in this Report. In addition, these documents have been provided to Buckinghamshire Council for review and approval.

2.1 The Site

The Site located on land to the east of the A404, covers an area of approximately 36.34 ha and is situated at National Grid Reference SU865874, refer to Figure 2-1 below.

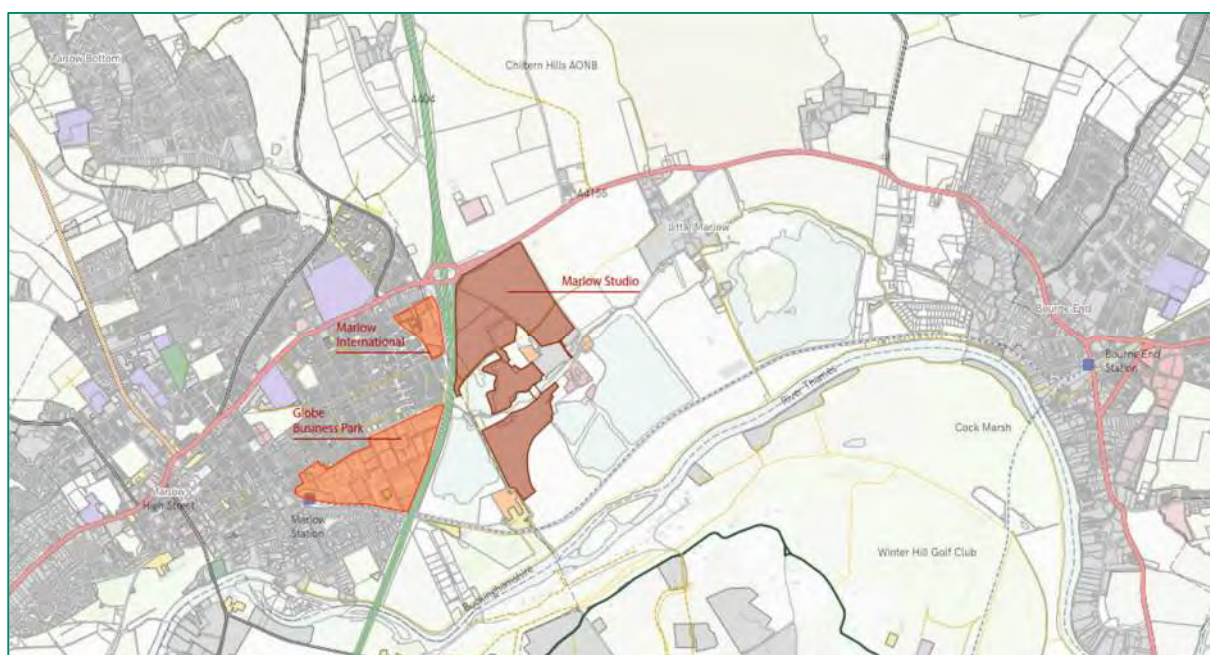


Figure 2-1: Site Location

The Site is bounded to the north by the A4155 Marlow Road, the west by the A404 and the associated slip road from the grade separated Westhorpe interchange at the north-west corner of the Site, Westhorpe Farm Lane to the east and a combination of an existing access road to the Crowne Plaza Hotel (Fieldhouse Lane) and existing lakes to the south.

2.2 Proposed Development

Full planning permission for production space and supporting buildings for screen-based media and associated services / industries. The proposed Development in respect of which approval will be sought comprises: sound stages; workshops; office accommodation; Studio Hub; associated outdoor space such as backlots and unit bases; entrance structures and reception; security infrastructure; mobility hub; cafes; parking; bridge; incidental supporting buildings; associated infrastructure; public art; upgraded vehicular access onto Marlow Road; new cycle and pedestrian accesses; a new cultural / educational / recreational building; a new community building; and, associated landscaping, publicly accessible recreational land and ecological and environmental enhancements / habitat creation.

A masterplan for the proposed Development is shown in Figure 2-2 and the plot references shown in Figure 2-3.

As outlined in Figure 2-2, the main buildings comprising the proposed sound stages; workshops; office accommodation and Studio Hub will be located towards the north of the Site on Plots 1-3, a new community / educational / environmental / recreational building with publicly accessible recreational land will be located on Plot 4 and the proposed backlots developed on Plot 5.

2.2.1 Proposed Access Strategy

Vehicles wishing to access the proposed Development will do so via an upgraded signal-controlled junction on the A4155 Marlow Road. This junction location will remain the access point for vehicles travelling to Westhorpe House and Westhorpe Park Homes.

Pedestrians and cyclists will be able to access the proposed Development from the signal-controlled junction on the A4155 Marlow Road, where upgraded facilities and formal crossing locations are provided. In addition, pedestrians will be able to access via the existing footbridge over the A404 (to the south of the Westhorpe Interchange) and other existing public footpath and cycle routes.

Enhanced bus provision is planned to promote sustainable travel to the proposed Development. These enhancements include increased frequency of the existing 800 / 850 bus route, introduction of a new bus route, connecting High Wycombe and Maidenhead to the Site, and provision of a private bus shuttle from key locations and / or for specific events. In addition, new off-carriageway bus stops are proposed on the A4155 Marlow Road and bus services will route into the Site.

Incentives are proposed for car sharing, the use of sustainable travel and active mobility by employees of the proposed Development. Electric vehicle charge points are also included within the proposed Development to promote the use of electric cars and vans.

Further details regarding the strategy for pedestrian and cycle access to the proposed Development together with details of the proposed sustainable travel measures can be found within the Transport Assessment and Sustainable Travel Plan.



Figure 2-2: Marlow Film Studios Masterplan (Aerial image Google Maps, © 2022 Google)

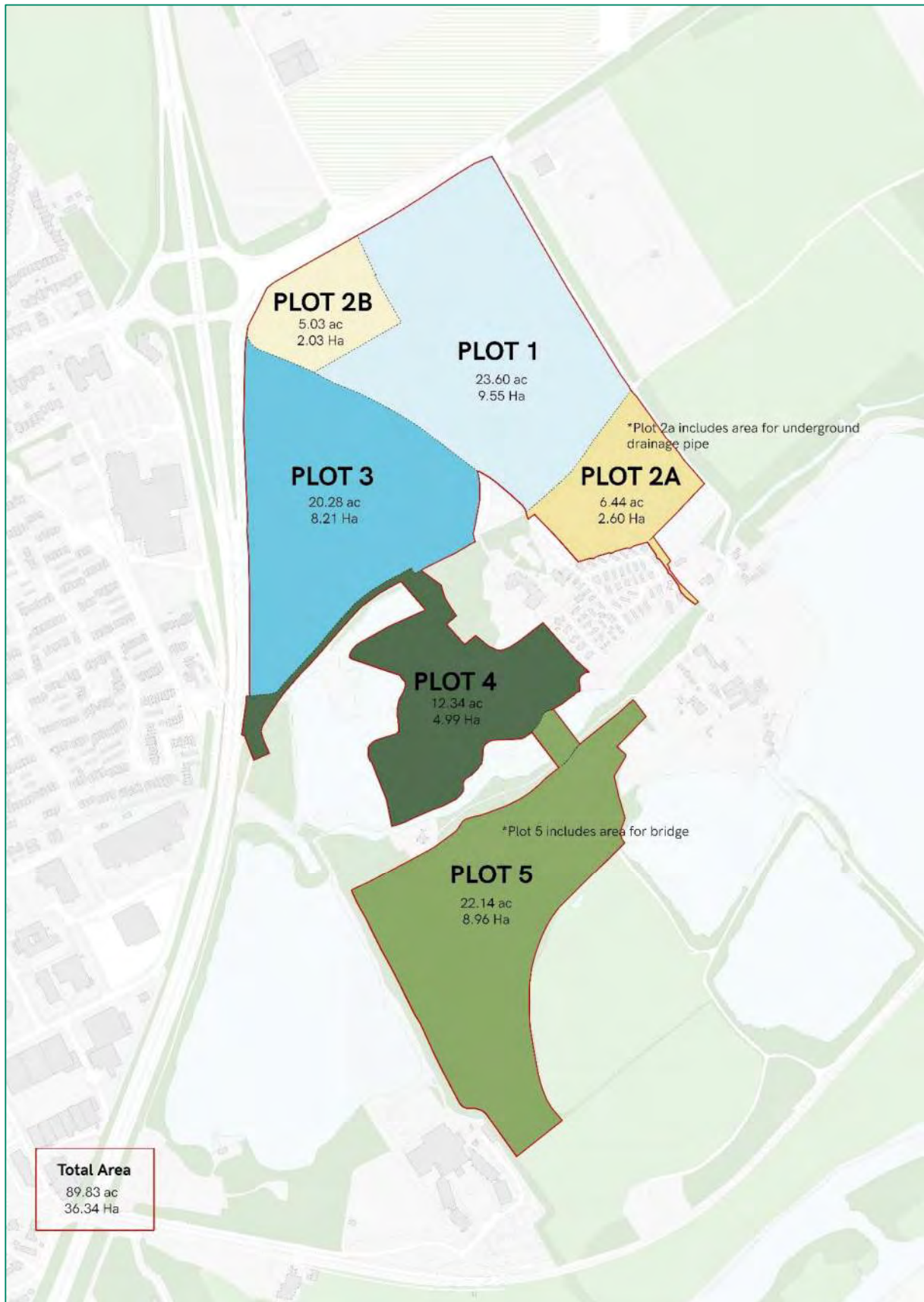


Figure 2-3: Site Red Line and Plots

2.3 Existing Arrangement

Figure 2-4 below shows an aerial image of the A4155 Marlow Road, with the A404 Interchange to the west of the existing access to the Site and Westhorpe Farm Lane to the east. The A404 Interchange comprises a grade separated roundabout that is located above the main carriageways to the A404 with approach and exit ramps to the north and south, Little Marlow Road to the East and the A4155 Marlow Road to the west. All arms of the interchange currently operate as priority junctions however, Buckinghamshire Council have approved improvements to the A404 Westhorpe Interchange, including the signalisation of the southbound off-slip road connection with the northern overbridge.



Figure 2-4: Aerial Image of the A4155 Marlow Road (Google Maps, © 2022 Google)

The existing vehicular access drive to Westhorpe House and Westhorpe Park Homes is connected to the A4155 Marlow Road at a priority junction, which forms a type of crossroads with Pump Lane South to the north. Figure 2-5 below shows the A4155 looking west towards the A404 Interchange, with the drive to Westhorpe House on the left. Figure 2-6 below shows Pump Lane South which aligns directly opposite the drive to Westhorpe House.



Figure 2-5: Photo of A4155 Marlow Road, looking West, with the drive to Westhorpe House on the left (21 April 2021)



Figure 2-6: Photo of Pump Lane South, north of the drive to Westthorpe House (21 April 2021)

The westbound A4155 Marlow Road connects with the A404 Westthorpe Interchange approximately 130m west of the Westthorpe House junction, with a three-lane entry at the give way line as can be seen in Figure 2-7 below.

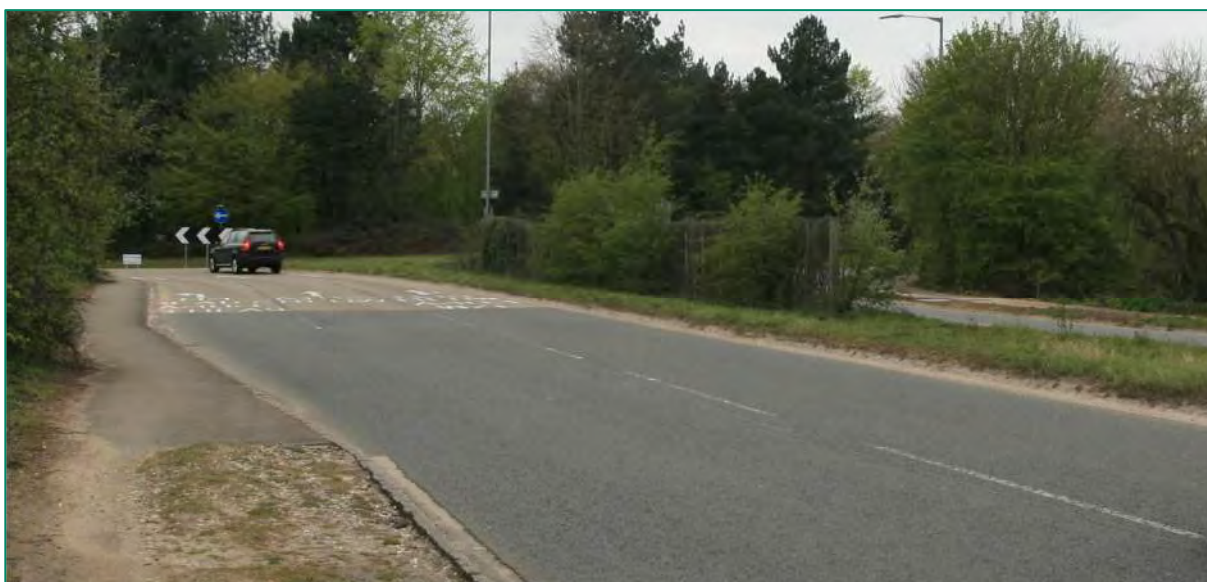


Figure 2-7: Photo of A4155 Marlow Road Westbound Approach to the A404 Interchange (21 April 2021)

The eastbound A4155 Marlow Road continues towards Little Marlow. Approximately 200m to the east of the Westthorpe House junction, there is a priority junction to access the privately owned Westthorpe Farm Lane, which allows access to the Little Marlow Athletics track, residential properties and other clubs and businesses. Figure 2-8 below shows the A4155 Marlow Road looking eastbound with Figure 2-9 showing the existing Westthorpe Farm Lane junction with the A4155 Marlow Road.



Figure 2-8: Photo of A4155 Marlow Road Eastbound (21 April 2021)



Figure 2-9: Photo of A4155 Marlow Road Junction with Westthorpe Farm Lane (21 April 2021)

The existing drive to Westthorpe House includes a narrow entrance between stone pillars (measured at approximately 6.5m - 7m) and a 90-degree bend on the approach. Both of these features can be seen in Figure 2-10 below.



Figure 2-10: Photo of the drive to Westhorpe House connection to the A4155 Marlow Road (21 April 2021)

The existing pedestrian and cycle facilities on the A4155 Marlow Road and across the A404 Interchange are of low quality.

- An existing footway is located adjacent to the southern side of the A4155 Marlow Road, which starts to the east of the junction with Westhorpe Farm Lane, crosses the Site access, then crosses the A404 Westhorpe Interchange on the southern bridge (crossing the southbound on-slip road and the northbound off-slip road) and continues into Marlow. The existing footway appears to be less than the minimum 2m width recommended by Buckinghamshire Council and in places is overgrown with vegetation.
- An existing shared use footway and cycleway is located adjacent to the northern side of the A4155 Marlow Road. This shared use facility crosses the A404 Westhorpe Interchange on the northern bridge (crossing the northbound on-slip road and the southbound off-slip road) and continues towards Little Marlow. The existing provision is narrow and in places overgrown with vegetation. In addition, the northern A404 Westhorpe Interchange overbridge includes signage requesting cyclists dismount due to a low bridge parapet.
- Existing on-demand bus stops are also located on the A4155 Marlow Road between the A404 Westhorpe Interchange and the junction with Pump Lane South / the Site. These stops serve the Red Eagle 155 and 160 services.

These elements are shown in Figure 2-11 below.

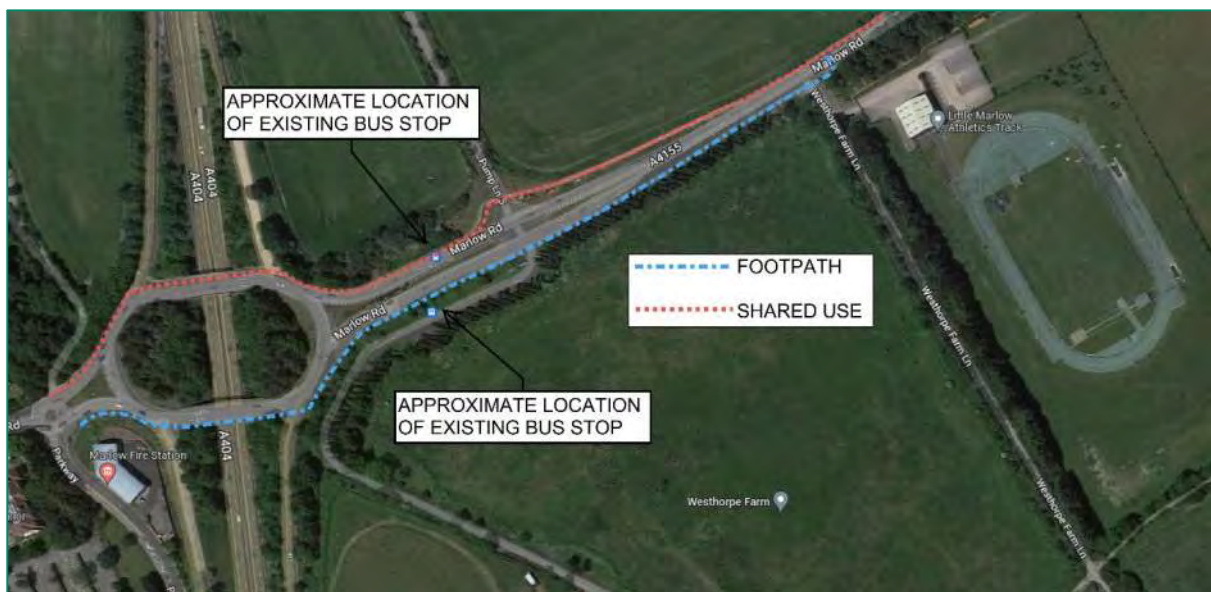


Figure 2-11: Existing Non-Motorised User Routes (Google Maps, © 2022 Google)

2.4 Existing Land Ownership

The existing A4155 Marlow Road is a public highway under the ownership of Buckinghamshire Council as the Highway Authority. To the west, the A4155 Marlow Road connects with the A404 Westthorpe Interchange, the slip-roads of which are under the ownership of National Highways.

The existing drive to Westthorpe House and Westthorpe Park Homes is privately owned from the existing highway boundary which aligns with the stone pillars shown in Figure 2-10.

Pump Lane South becomes a private road approximately 34m north of its junction with the A4155 Marlow Road.

Westthorpe Farm Lane becomes a private road approximately 7m south of its junction with the A4155 Marlow Road.

The approximate extents of highway ownership are shown in Figure 2-12 below.



Figure 2-12: Highway Ownership (Google Maps, © 2022 Google)

2.5 Consultation

Formal Pre-Planning Application consultation meetings regarding transport and highways have been held with Buckinghamshire Council through the Planning Performance Agreement process, as outlined below:

2.5.1 10 November 2021

- This meeting primarily focused on the transport modelling; however, an initial conceptual junction layout was presented which did not allow for westbound traffic on the A4155 Marlow Road to turn right into Pump Lane South. This is shown as Option 1 within this Report.

Buckinghamshire Council noted that from a planning perspective they were uncomfortable with the removal of the right-turn to Pump Lane South. However, the Transport Consultant advised that given low turning movements and short diversion there are efficiency and safety benefits to this approach and that the future VISSIM modelling would enable a more detailed analysis to be undertaken.

No further formal feedback on the conceptual junction layout was received from Buckinghamshire Council.

2.5.2 9 December 2021

- This meeting covered a number of topics related to the proposed Development. The discussion regarding off-site highway provision was focused on the transport modelling.

2.5.3 21 January 2022

- This meeting focused on the transport modelling however, Buckinghamshire Council noted they require the output from the modelling to confirm that a signal-controlled junction was an acceptable solution for the upgraded access to the Site.

2.5.4 4 May 2022

- This meeting focused on the transport modelling, in particular the latest Buckinghamshire Council highways response to Waterman technical information, the VISSIM / PID agreement and update on technical aspects of the planning application.

3. Identified Constraints

Our assessment of the A4155 Marlow Road, and the existing drive to Westhorpe House identified a number of constraints, which have been considered in developing a new junction to access the proposed Development.

3.1 Highway Constraints

- An upgraded junction is required to facilitate vehicular access to the proposed Development. This will need to be located between two existing junctions, namely the A404 Westthorpe Interchange and the priority junction with Westthorpe Farm Lane (a private highway). The distance between these two existing junctions is approximately 330m.
- An upgraded junction to access the proposed Development will need to incorporate Pump Lane South, to the north of the A4155 Marlow Road, which serves a Garden Centre business and a small number of residential properties.
- To the north of the A4155 Marlow Road is the Chiltern Hills Area of Outstanding Natural Beauty (AONB). The southern boundary of this AONB is understood to align closely with the northern kerb line of the A4155 Marlow Road as shown in Figure 3-1 and Figure 3-2 below.



Figure 3-1: Gillespies LLP GIS Data on the AONB Boundary (black line) (received 26 April 2021)

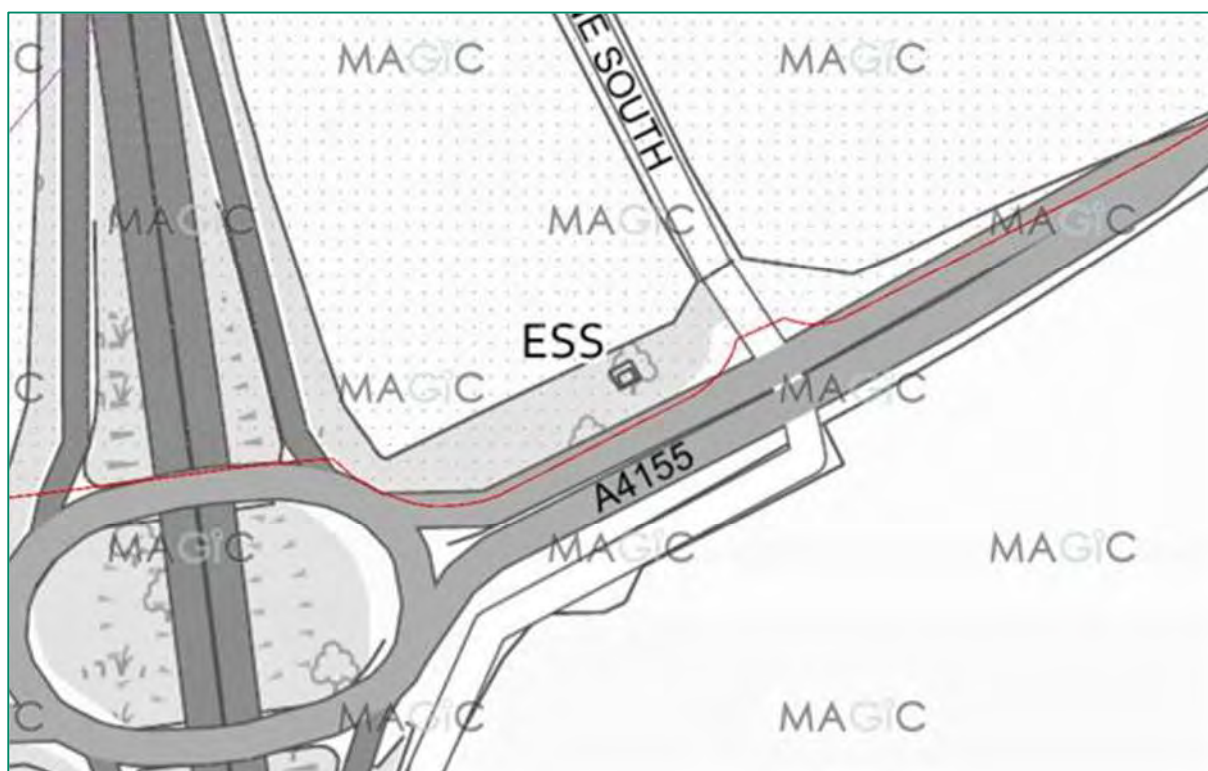


Figure 3-2: AONB Boundary (red line) as shown on the Magic1 website

- Buckinghamshire Council has approved improvements to the A404 Westthorpe Interchange, including the signalisation of the southbound off-slip road connection with the northern overbridge. This signalisation is likely to provide a positive improvement in terms of upgrading the existing vehicular access to the Site, as the signals will naturally reduce the speed of traffic exiting the A404 Westthorpe Interchange and travelling eastbound on the A4155 Marlow Road. The inclusion of this scheme has formed a consideration during preparation of the conceptual junction layouts prepared for the proposed Development described later in this Report.
- A forecast construction programme for the above improvement scheme has not been provided by Buckinghamshire Council. Should this scheme not progress further or be amended significantly, this may need to be reflected during the detailed design phase for the upgraded access to the proposed Development.
- The existing A4155 Marlow Road is subject to the national speed limit from the west of the A404 Westthorpe Interchange to the entrance to Little Marlow.
- Westthorpe House and Westthorpe Park Homes both use the existing junction as their access. They do not have use of a separate vehicular access.
- A local bus service operates on the A4155 Marlow Road, namely the Red Eagle 155 and 160 service. This service routes down to Westthorpe Park Homes, turning around in their car park area. Continuity of this service will need to be maintained.
- The existing pedestrian and cycle facilities on the A4155 Marlow Road and across the A404 Interchange are of low quality.
 - An existing footway is located adjacent to the southern side of the A4155 Marlow Road, which starts to the east of the junction with Westthorpe Farm Lane, crosses the Site access, then crosses the A404 Westthorpe Interchange on the southern bridge (crossing the southbound on-slip road and the northbound off-slip road) and continues into Marlow. The existing footway appears to be less than the minimum 2m width recommended by Buckinghamshire Council and in places is overgrown with vegetation.

¹ <https://magic.defra.gov.uk/home.htm>

- An existing shared use footway and cycleway is located adjacent to the northern side of the A4155 Marlow Road. This shared use facility crosses the A404 Westthorpe Interchange on the northern bridge (crossing the northbound on-slip road and the southbound off-slip road) and continues towards Little Marlow. The existing provision is narrow and in places overgrown with vegetation. In addition, the northern A404 Westthorpe Interchange overbridge includes signage requesting cyclists dismount due to a low bridge parapet.

3.2 Utility Constraints

In March 2021, an enquiry was made to the Statutory Authorities that may own utility infrastructure within the Site and the surrounding area, requesting they provide a copy of their current asset information.

The information received identified that there are a number of utility constraints to be considered on the A4155 Marlow Road.

- Buckinghamshire Council provided details of the gullies on the A4155 Marlow Road but no information on the surface water drainage network which accepts surface water runoff from these gullies. Additionally, the asset plans received from Thames Water do not show any highway surface water drainage networks on the A4155 Marlow Road.
 - Copies of the Buckinghamshire Council asset location record drawings are included in Appendix F.
- Thames Water have foul sewers within the A4155 Marlow Road highway corridor.
 - Copies of their overview asset location record drawings are included in Appendix F.
- Scottish and Southern Electricity Networks have an existing High Voltage network in Pump Lane South which connects to an electrical substation at the Pump Lane South junction with the A4155 Marlow Road. They also have an existing Low Voltage network within the A4155 Marlow Road.
 - Copies of their overview asset location record drawings are included in Appendix F.
- Thames Water (potable water), Cadent (gas), Openreach, Virgin Media and TATA (telecommunications) all have existing utilities within the A4155 Marlow Road highway corridor.
 - Copies of the applicable asset location record drawings are included in Appendix F.
- We also understand from an alternative source² that GTT (Hibernia) also have existing assets within the A4155 Marlow Road.
 - A screen print from the Infrapedia website is included in Appendix F.

It is considered that the above utilities are unlikely to represent a significant constraint to development of a signal-controlled junction on the A4155 Marlow Road to serve the proposed Development. Based upon the asset plans received to date, the existing utilities are typically located within highway boundary and diversion and / or protection of these services during highway works is standard practice.

On commencement of the detailed design, a new asset enquiry will be made to the Statutory Authorities to understand if any alterations have been made to the existing utilities since the initial enquiry in March 2021. In addition, a buried utilities survey, in accordance with the current version of the Specification for Underground Utility Detection, Verification and Location (PAS 128), will be commissioned to positively locate and identify the existing utilities within the area, so protection and / or diversion of the affected assets can be discussed with the relevant owner.

It is also anticipated that a drainage CCTV survey will be commissioned to inform the existing highway drainage network and its condition.

² <https://www.infrapedia.com/app>

4. Conceptual Designs

4.1 Introduction

Vehicular access for the proposed Development will be accommodated by improving the existing Westthorpe House access off the A4155 Marlow Road to accommodate the predicted traffic volume, whilst maintaining a safe and efficient access for existing residents of Westthorpe House, Westthorpe Park Homes, and users of Pump Lane South on the northern side of the A4155 Marlow Road.

Two conceptual signal-controlled junction layouts have been explored at the existing access location on the A4155 Marlow Road (see Figure 4-1 and Figure 4-2 below) to facilitate an upgraded junction to access the proposed Development, while retaining access for residents of Westthorpe House, Westthorpe Park Homes, and provide access to Pump Lane South.



Figure 4-1: Option 1 Snapshot (refer 60654980-ACM-XX-XX-DR-HW-000001 in Appendix A)



Figure 4-2: Option 2 Snapshot (refer 60654980-ACM-XX-XX-DR-HW-000003 in Appendix B)

Both options are similar in nature, with the key difference being that Option 1 does not include for a right turn facility off the westbound A4155 Marlow Road to access Pump Lane South. Instead, vehicles from this direction wishing to access Pump Lane South would be diverted a short distance (approx. 600m, see Figure 4-3 below) around the A404 Westthorpe Interchange and back eastbound.

This possible approach was identified through early traffic assessment which showed a low number of vehicles currently access Pump Lane South from the Little Marlow direction and therefore removal could allow for more efficient operation of a signal-controlled junction. A risk that drivers could still attempt to turn right into Pump Lane South will remain with this layout as it will be challenging to mitigate.

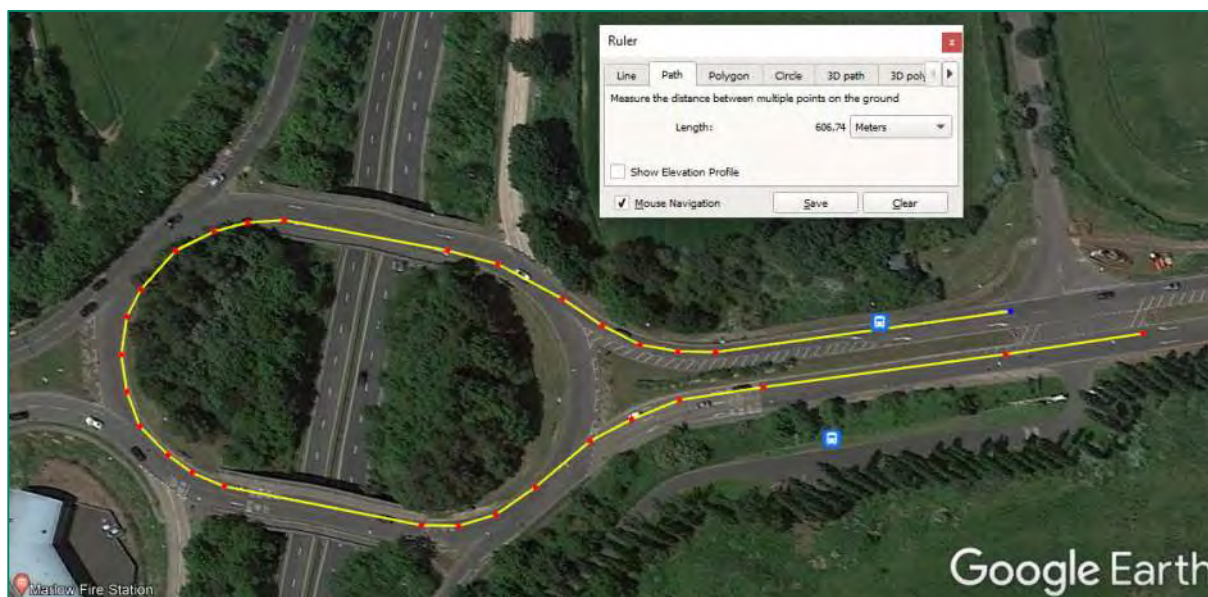


Figure 4-3: Additional diversion to access Pump Lane South (Aerial image Google Earth, © 2022 Google)

4.2 Design Principles

The purpose of the proposed junction is to provide an upgraded, signal-controlled junction, suitable to cater for the anticipated traffic flows generated by the proposed Development and to provide a safe means of access and crossing for pedestrians and cyclists.

The conceptual junction layouts have sought to minimise impact on the existing highway to both avoid, where possible, impact on the boundary of the Chiltern Hills AONB and the line of Poplar trees within the Site boundary and to reduce the extent of construction works associated with the proposed junction.

The conceptual junction layouts have been designed to be functional whilst catering for the various commercial vehicles that are expected to require access to the proposed Development. The layouts have also considered the existing bus service to Westhorpe Park Homes and new bus services being introduced as part of the proposed Development.

The existing speed limit for the A4155 Marlow Road is national (60mph) from western side of the A404 Westhorpe Interchange to approximately 110m west of the A4155 Marlow Road junction with Church Road.

It is proposed that this speed limit will be reduced to allow for any additional queuing and visibility resulting from provision of a new signal-controlled junction for the proposed Development. The design speed for the conceptual junction layouts has been considered as 64kph (40mph). An application to Buckinghamshire Highways will be made to reduce the existing speed limit to 40mph supported by the introduction of repeater signs in appropriate locations. A Traffic Regulation Order will need to be enacted to coincide with the completion of the highway works.

The conceptual junction layouts have been developed to align with the Design Manual for Roads and Bridges (DMRB). The key design standards used are:

- **CD 109:** Highway Link Design
- **CD 123:** Geometric Design of at-grade Priority and Signal-Controlled Junctions
- **CD 127:** Cross-Sections and Headrooms

A Stage 1 Road Safety Audit has been undertaken on the two conceptual junctions. Further details are included in Section 5 of this report.

4.3 General Arrangement

The key general arrangement elements that have been included within both options are:

4.3.1 A4155 Marlow Road Eastbound (both options)

- Retaining the single lane eastbound exit off the A404 Westhorpe Interchange onto the A4155 Marlow Road.
- Developing a second lane on approach to the new signal-controlled junction stop line. Approximately 78m of marked two-lane highway has been provided. The nearside lane will be marked straight-on and left (into Pump Lane South), while the second lane will only be marked straight-on.
- A two-lane eastbound exit from the new junction towards Little Marlow, allowing a minimum of 100m of taper for vehicles to merge into a single lane. The single lane commences in advance of the Westhorpe Farm Lane right-turn ghost island.
- Developing a dedicated right-turn lane into the Site and for residents of Westhorpe House and Westhorpe Park Homes. The right-turn capacity provided is approximately 51m.
- Retaining the existing northern kerb line so as not to encroach into the Chiltern Hills AONB.
- Provision of a new westbound off-carriageway bus stop layby for existing and future bus services.

4.3.2 A4155 Marlow Road Westbound

- **Option 1:** Development of a second lane on approach to the new signal-controlled junction stop line. Approximately 78m of marked two-lane highway has been provided. The nearside lane will be marked straight-on and left (into the Site), while the second lane will only be marked straight-on.
- **Option 1:** No provision is allowed for a right turn into Pump Lane South.
- **Option 1:** A two-lane westbound exit from the new junction towards the A404 Westhorpe Interchange. This two-lane section extends for approximately 70m before becoming a three-lane approach to the interchange give-way line.
- **Option 1:** Retaining the existing southern kerb line.
- **Option 2:** Development of a second lane on approach to the new signal-controlled junction stop line. Approximately 51m of marked two-lane highway has been provided. The nearside lane will be marked straight-on and left (into the Site), while the second lane will only be marked straight-on.
- **Option 2:** Developing a dedicated right-turn lane into Pump Lane South. The right-turn capacity provided is approximately 24m.
- **Option 2:** A three-lane westbound exit from the new junction towards the A404 Westhorpe Interchange give-way line. The eastern end of this section may require hatching to be included in Lane 3 to discourage drivers attempting to use the Pump Lane South right turn lane but continue straight ahead.
- **Option 2:** Re-alignment of the existing southern kerb line from approximately 105m east of the new junction to the western side of the new off-carriageway bus stop.
- **Both Options:** A new eastbound off-carriageway bus stop layby for existing and future bus services.

4.3.3 Pump Lane South (both options)

- Re-alignment of the existing Pump Lane South approach kerb line to the junction (within the publicly owned highway extents) to both widen the approach taper and narrow the corner radii.
- Inclusion of a new 4m wide pedestrian / cycle refuge island, allowing for a staggered crossing.

4.3.4 The Site

- **Both Options:** Widening the existing drive to Westhorpe House on approach to the new junction to allow for HGVs and bus access / exit.
- **Both Options:** Widening on the nearside exit lane to allow for over-run by HGVs and buses.
- **Option 1:** Inclusion of a new 3m wide pedestrian refuge island, allowing for a staggered crossing.
- **Option 2:** Inclusion of a new 3m wide pedestrian refuge island, with a straight-through crossing.

4.3.5 Pedestrians / Cyclists

Enhancements are proposed to the existing footways between the A404 Westhorpe Interchange and Westhorpe Farm Lane to encourage increased use by pedestrians and cyclists both wishing to access the proposed Development and also travelling between Marlow and Little Marlow.

- **Both Options:** Widening the existing northern shared use facility to 4m from the A404 Westhorpe Interchange to Pump Lane South. Users then cross Pump Lane South via the new 4m wide staggered crossing island. The existing northern shared use facility to the east of Pump Lane South is also widened to 4m for approximately 46m, until landownership constraints mean the facility will reduce in width over approximately 116m to the current width, just prior to Westhorpe Farm Lane.
- **Both Options:** Widening the existing southern footway to 4m from Westhorpe Farm Lane to the Site access and reallocate as a shared use facility. Users then cross the Site access via the new 3m crossing island, with cyclists dismounting, or they can access the Site at this point.
- **Both Options:** Realignment and widening the southern footway to 3m from the Site access to the western end of the new off-carriageway bus stop layby, where it will revert to its existing width and alignment.
- **Both Options:** A new crossing of the A4155 Marlow Road on the eastern side of the junction, via a 4m wide staggered crossing island. The location of the crossing has been placed on the eastern side to allow for the A4155 Marlow Road eastbound stop line to be located as far away from the A404 Westhorpe Interchange as feasible.
- **Option 1:** The carriageway crossings of the A4155 Marlow Road and Pump Lane South are 4m in width, while the crossing of the Site is 3m in width.
- **Option 2:** All three carriageway crossings are 4m in width.

The alignment for both options has been designed to minimise the extent of physical highway works to reduce the construction period and reduce the impact on all users.

Retaining walls on either side of the A4155 Marlow Road (west of the junction) will be necessary to allow for widening of the existing pedestrian / cycle facilities and the westbound bus stop. These retaining walls will be retaining the public highway.

The existing shared use footway and cycleway crosses the A404 Westhorpe Interchange on the northern side of the northern overbridge (crossing the northbound on-slip road and the southbound off-slip road) and continues towards Little Marlow. However, existing signage advises cyclists to dismount when crossing the overbridge due to a low bridge parapet. The proposals include for a potential replacement of this existing bridge parapet with a compliant parapet to allow cyclists to resume cycling across the overbridge. The potential replacement will be discussed with Buckinghamshire Council and National Highways during the detailed design phase.

Details regarding the strategy for pedestrian and cycle access to the proposed Development together with details on proposed sustainable travel can be found within the Transport Assessment and Sustainable Travel Plan.

4.4 Visibility

4.4.1 Junction Intervisibility

The intervisibility within the junction has been determined for both Options as shown in Figure 4-4 and Figure 4-5 below. In both cases a small amount of vegetation clearance will be required as will the relocation of the existing advance direction sign on the westbound A4155 Marlow Road.

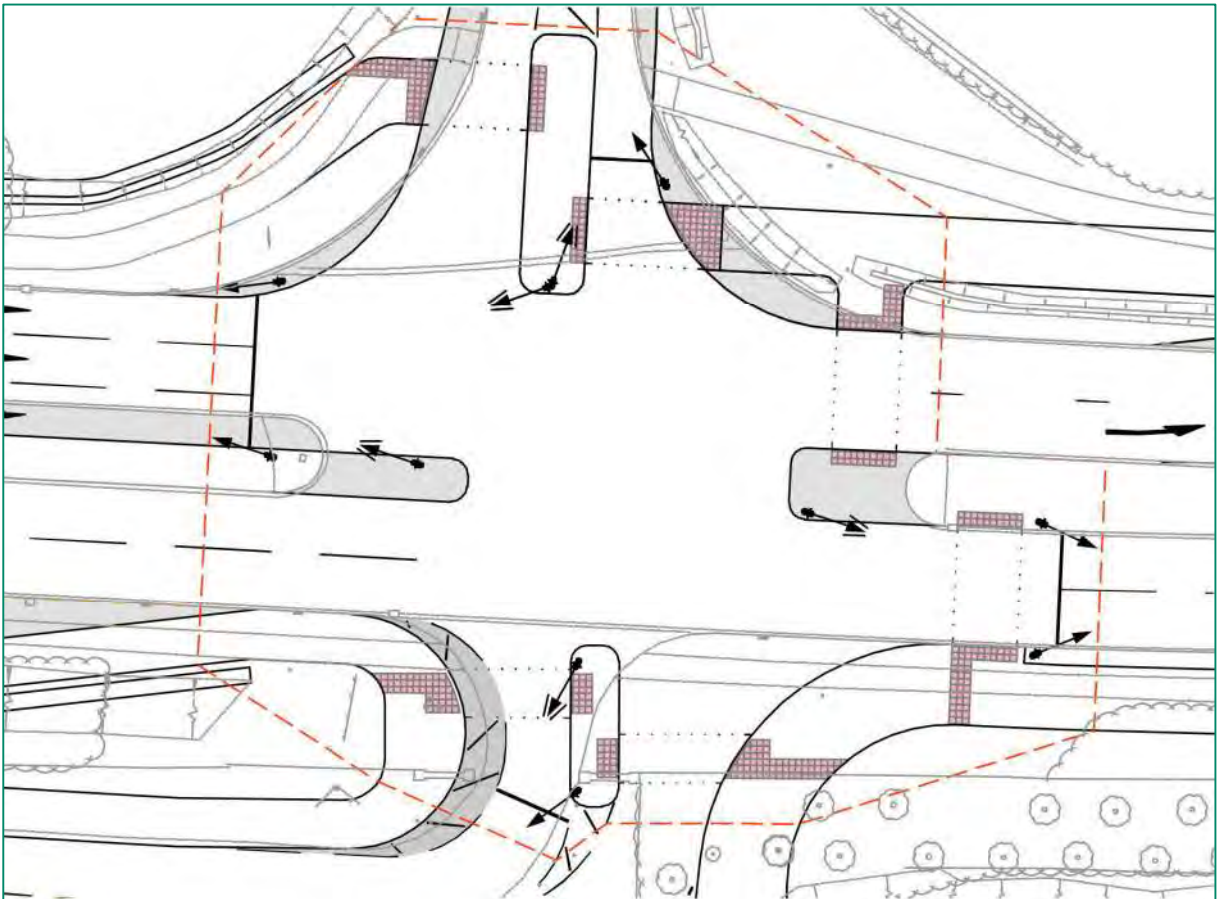


Figure 4-4: Option 1 Junction Intervisibility (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)

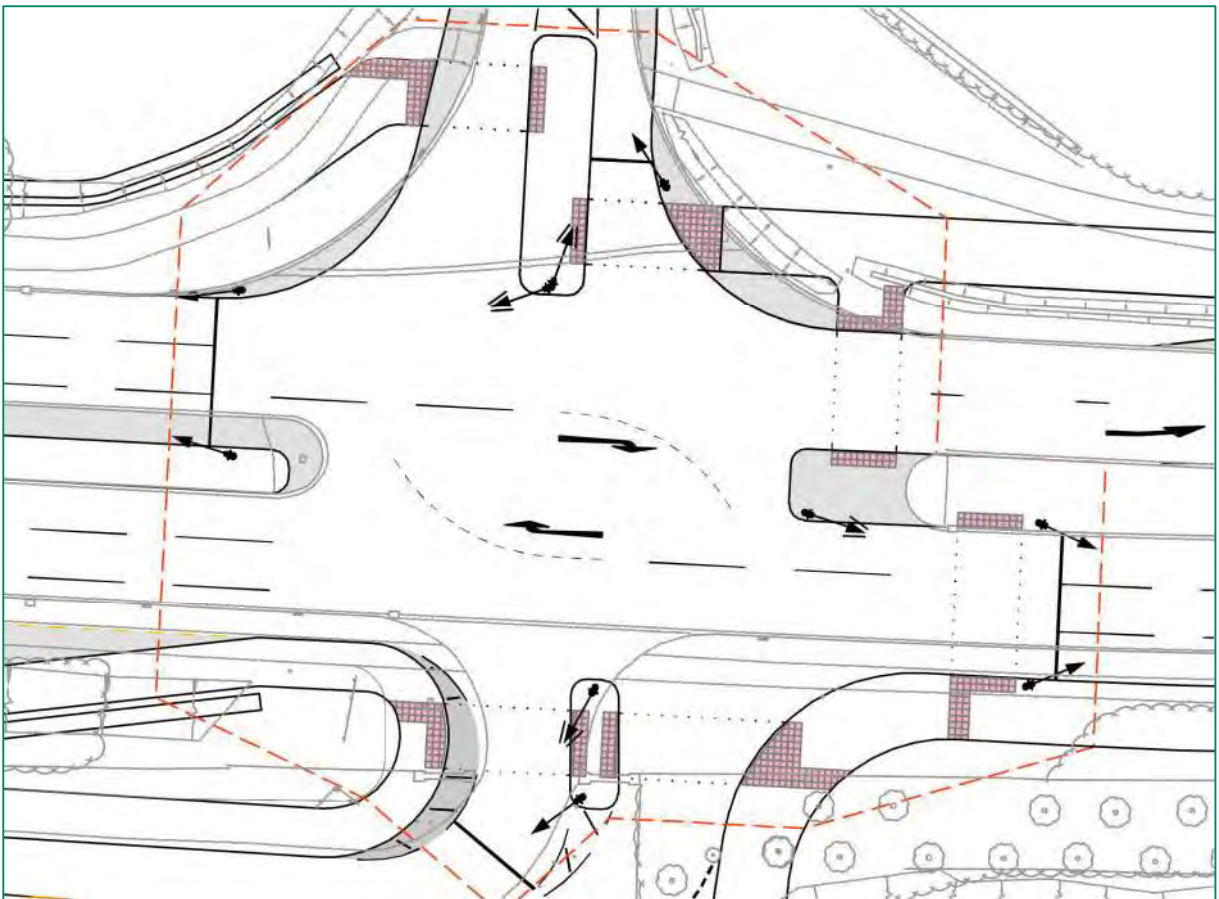


Figure 4-5: Option 2 Junction Intervisibility (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)

4.4.2 Primary Traffic Signal Visibility

The junction layouts for both options have allowed for each traffic lane to have clear visibility of the primary traffic signal from a distance equivalent to the desirable minimum Stopping Sight Distance (120m) on the approach road.

Figure 4-6 to Figure 4-9 below show the visibility splay on the A4155 Marlow Road approaches to each of the primary signals.

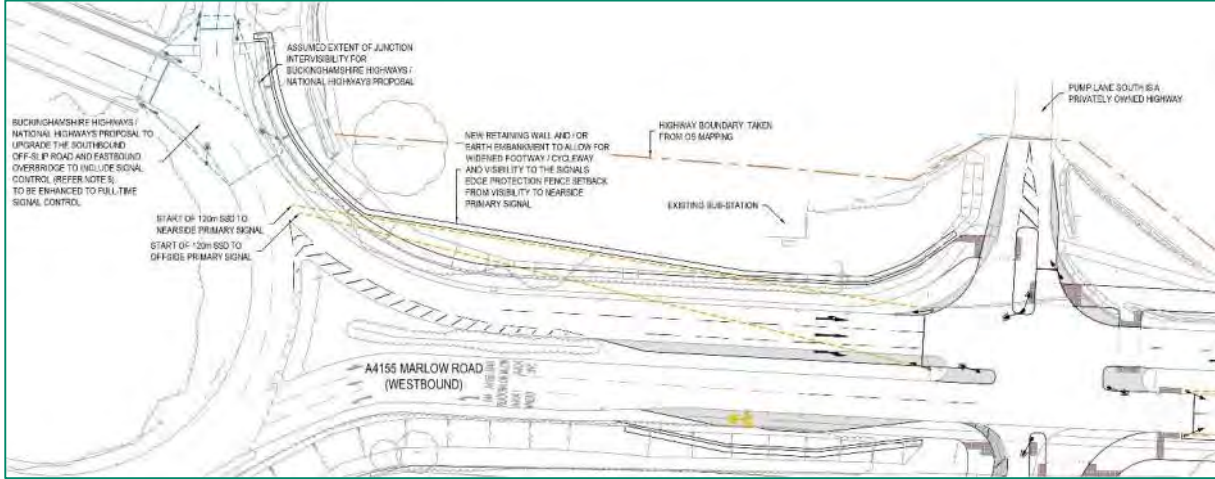


Figure 4-6: Option 1 Eastbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000005 in Appendix A)

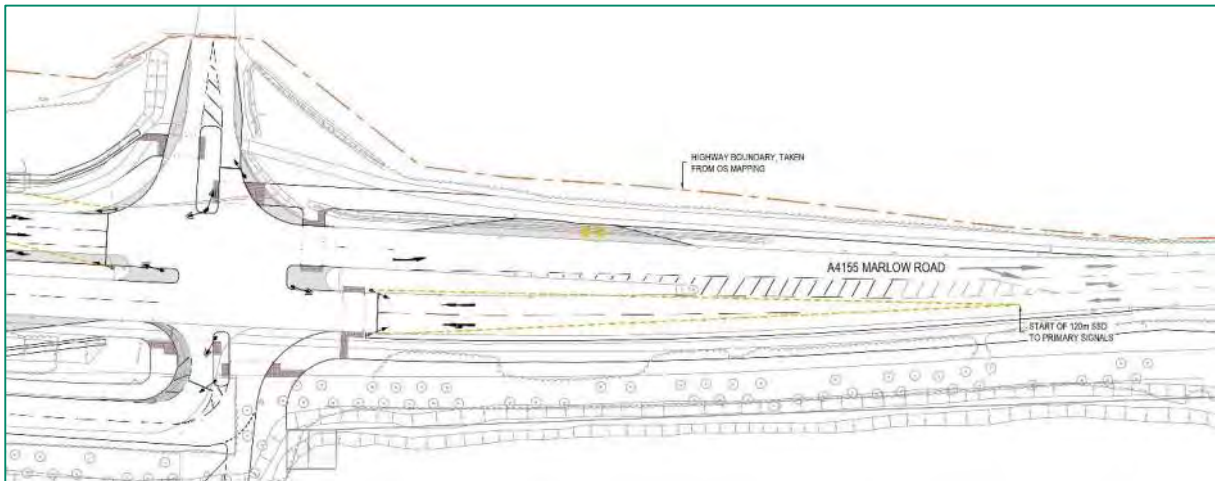


Figure 4-7: Option 1 Westbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000005 in Appendix A)

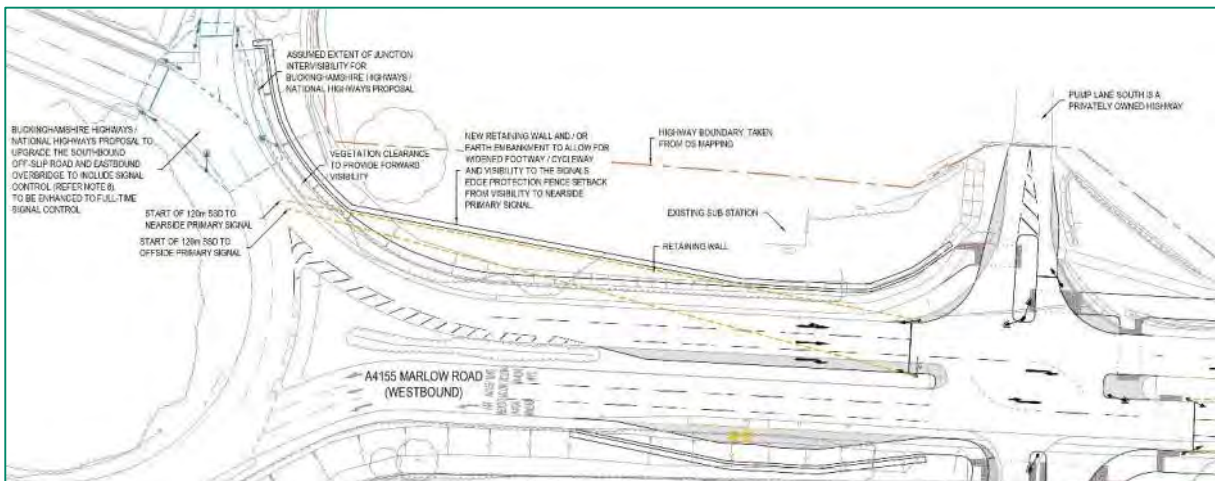


Figure 4-8: Option 2 Eastbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000006 in Appendix B)

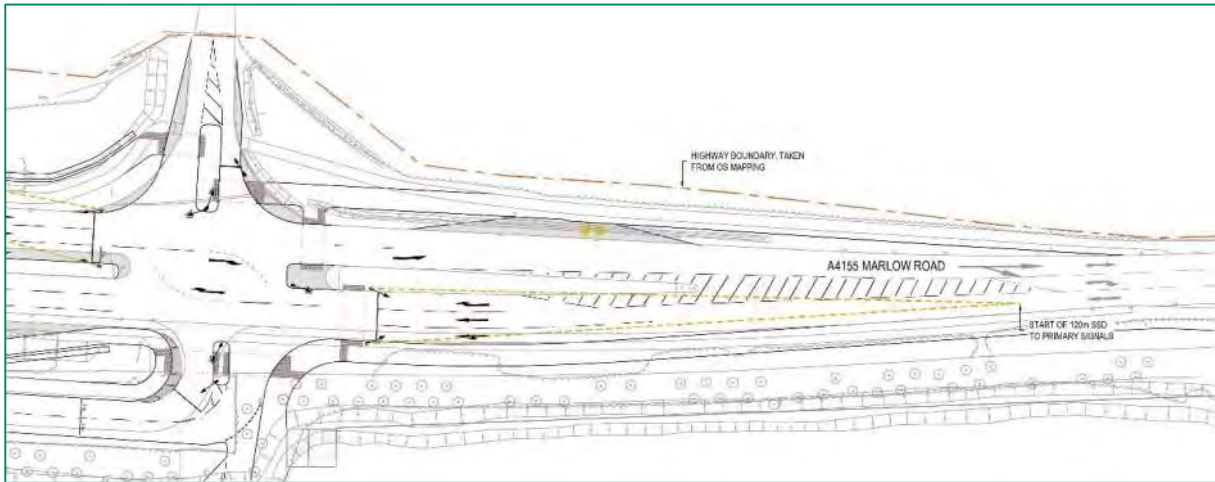


Figure 4-9: Option 2 Westbound Primary Signal SSD (refer 60654980-ACM-XX-XX-DR-HW-000006 in Appendix B)

4.5 Swept Path Analysis

The junction layouts for both options have been developed to allow for 16.5m long articulated heavy goods vehicles (HGVs) to negotiate the junction. Swept path analysis drawings to show this vehicle type using the junction layouts have been prepared as shown in Figure 4-10 and Figure 4-11 below and are included in Appendix A and B.

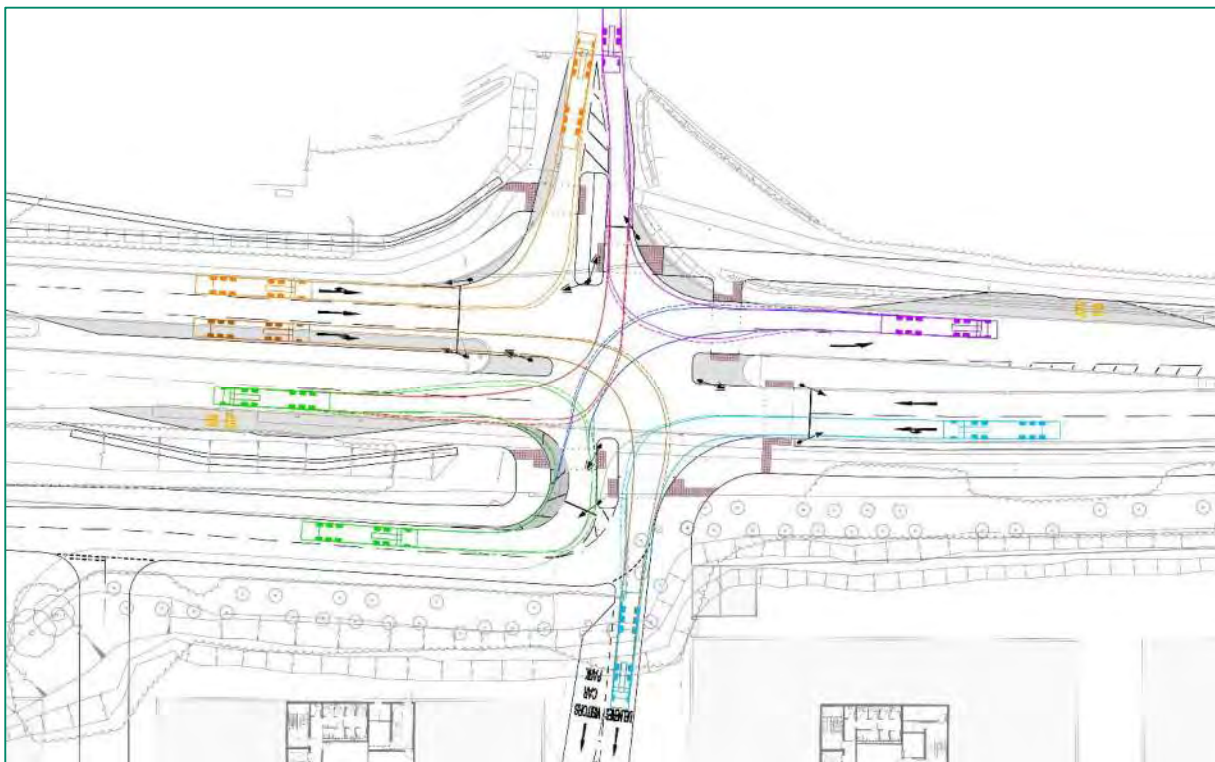


Figure 4-10: Option 1 HGV Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)

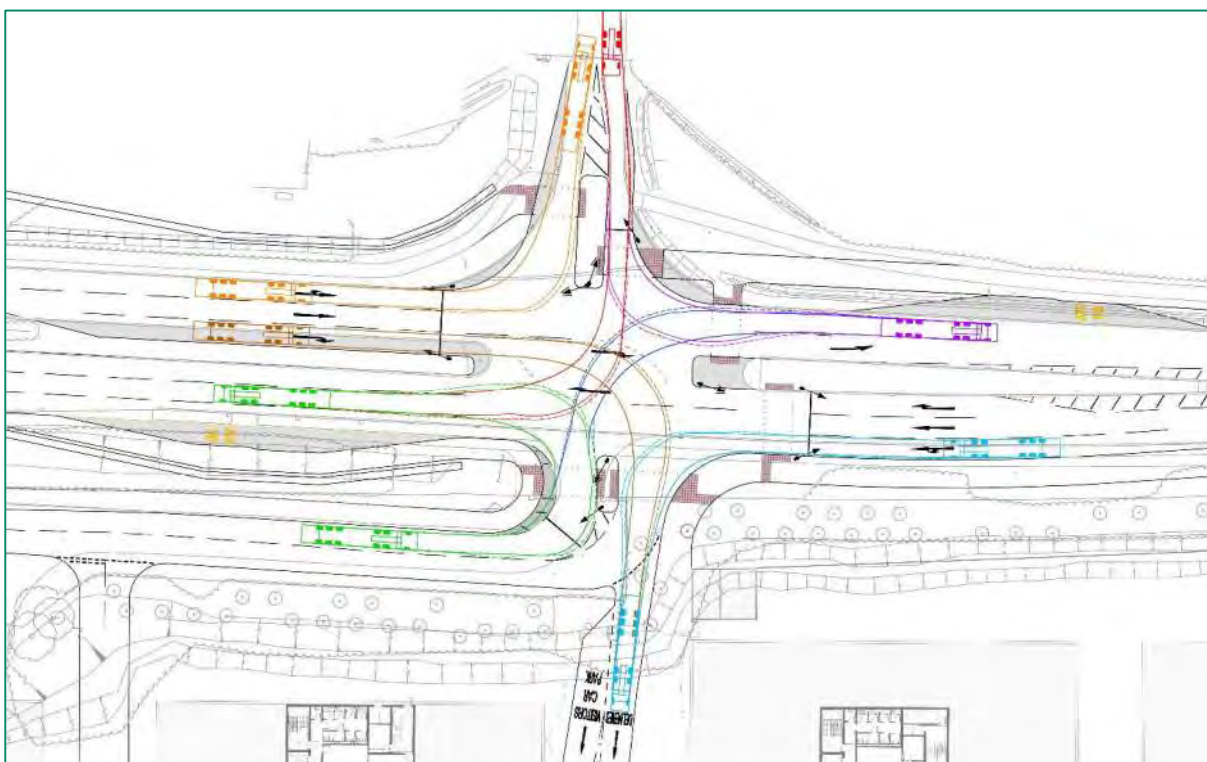


Figure 4-11: Option 2 HGV Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)

The exit from the drive to Westthorpe House, and therefore the Site, is tight for HGVs turning onto the westbound A4155 Marlow Road however, the inclusion of a hatched over run area and the multiple lanes of the A4155 Marlow Road will allow HGVs to safely undertake this manoeuvre.

There will be occasions where an abnormal load will be brought to the proposed Development as part of a production. These vehicles will be brought to the Site under a pre-planned and managed schedule, during off-peak times and possibly escorted, and will likely require overrunning of multiple lanes to enter and exit the Site. To facilitate these, the highway furniture (traffic signals, bollards and signs) will be designed to be safety and efficiently removable / collapsible to ensure the least disruption to other users.

The exit from the Site has been designed to ensure that a standard rigid bus (12m long) can exit from the drive to Westthorpe House and pull into the proposed new off-carriageway bus stop layby (see Figure 4-12 and Figure 4-13 below).

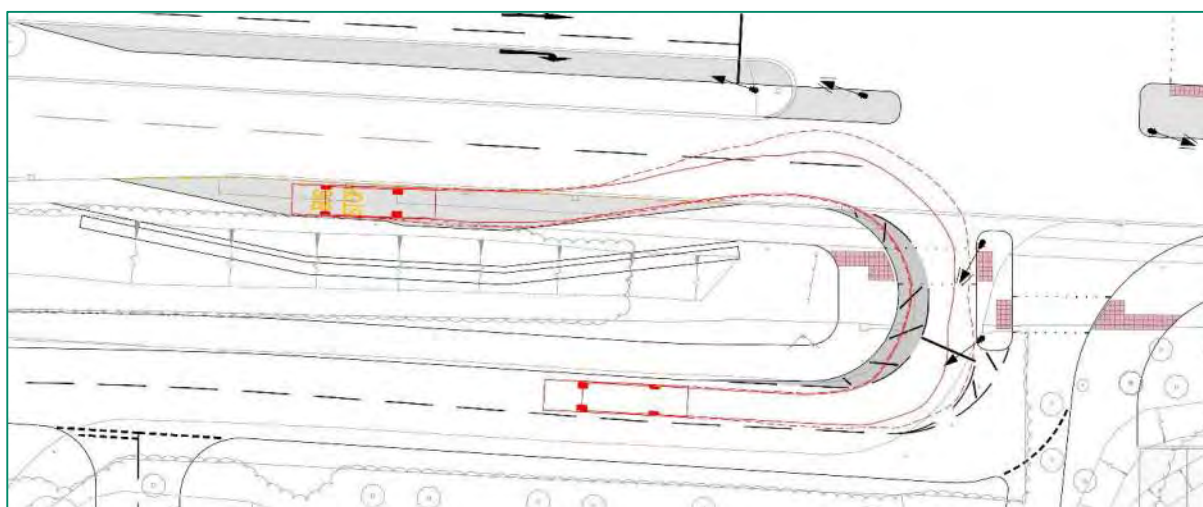


Figure 4-12: Option 1 Bus Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)

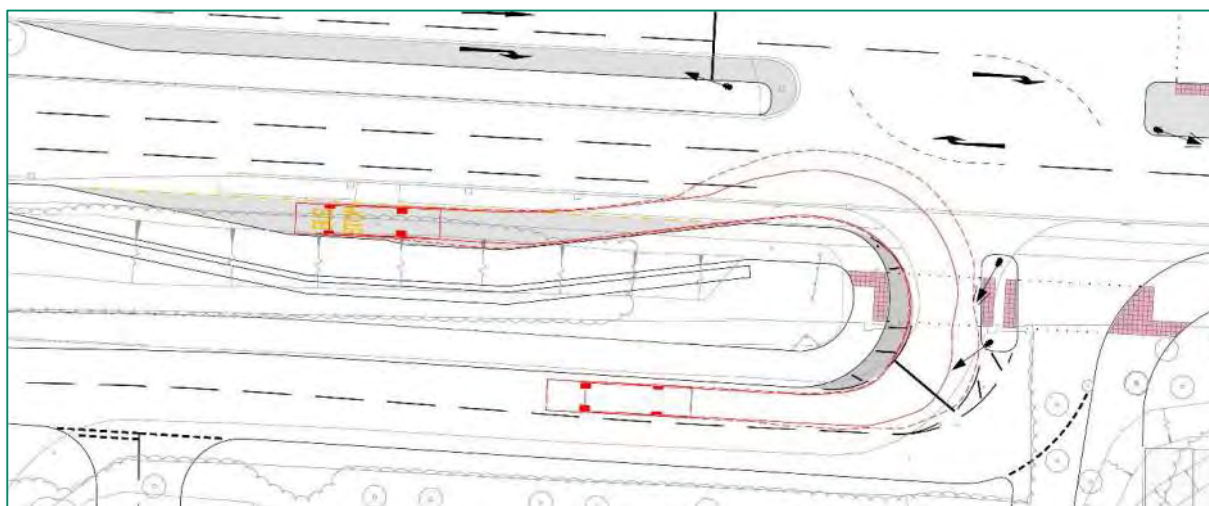


Figure 4-13: Option 2 Bus Swept Path (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)

4.6 Cross Section

4.6.1 Lane Widths

The concept layouts for both options have sought to maximise the lane widths within the confines of the highway corridor, refer to Table 4-1, Figure 4-14 and Figure 4-15 below.

Table 4-1: Junction Lane Widths at the Stop Lines

Lane	Movement	Option 1	Option 2
A4155 Marlow Road Eastbound			
Lane 1	Straight Ahead and Left	3.00m	3.00m
Lane 2	Straight Ahead	3.00m	3.00m
Lane 3	Right	3.25m	3.25m
A4155 Marlow Road Westbound			
Lane 1	Straight Ahead and Left	3.73m	3.00m
Lane 2	Straight Ahead	3.60m	3.00m
Lane 3	Right	N/A	3.27m
Pump Lane South			
Lane 1	All Movements	3.65m	3.65m
The Site			
Lane 1	All Movements	4.93m*	6.55m*

* Width does not include for the HGV overrun area on the nearside.

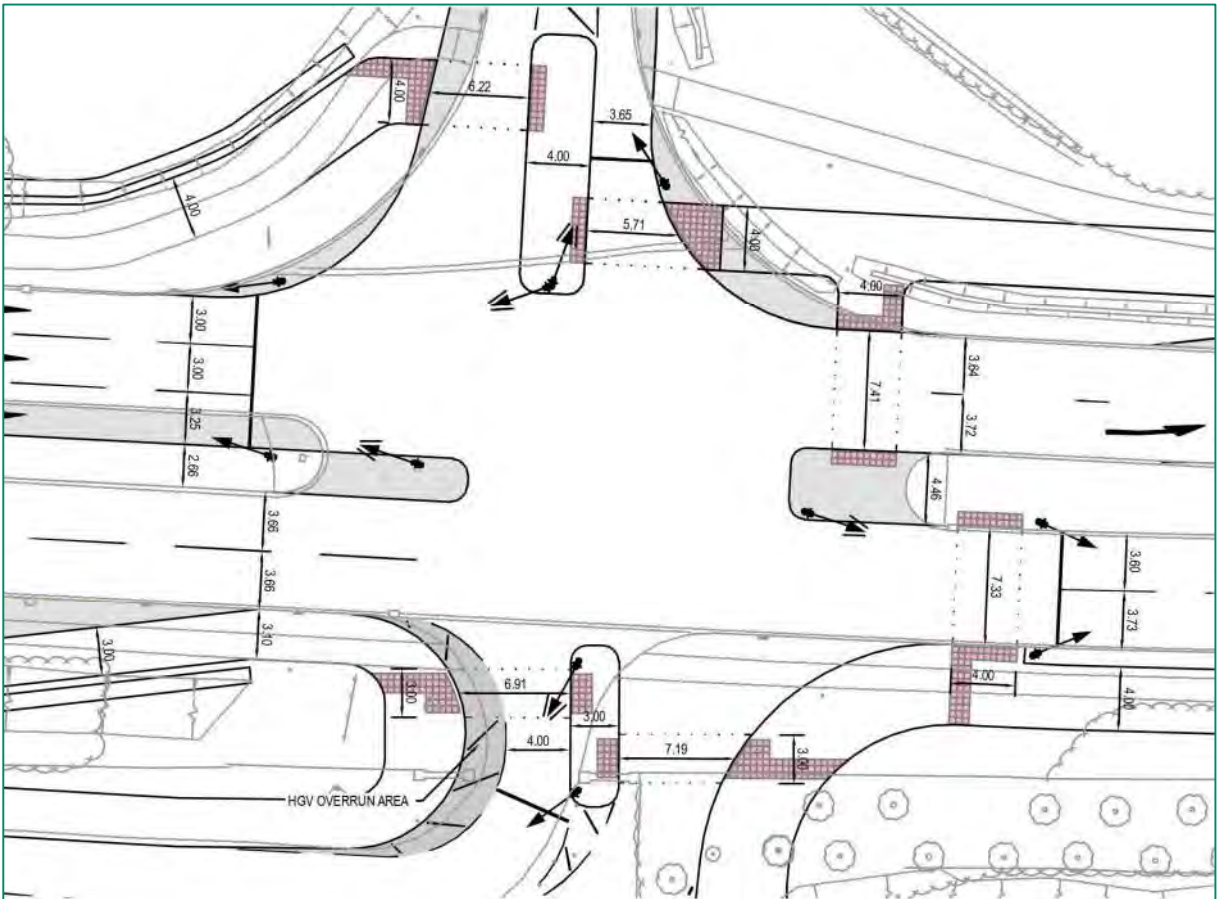


Figure 4-14: Option 1 Lane Widths (refer 60654980-ACM-XX-XX-DR-HW-000002 in Appendix A)

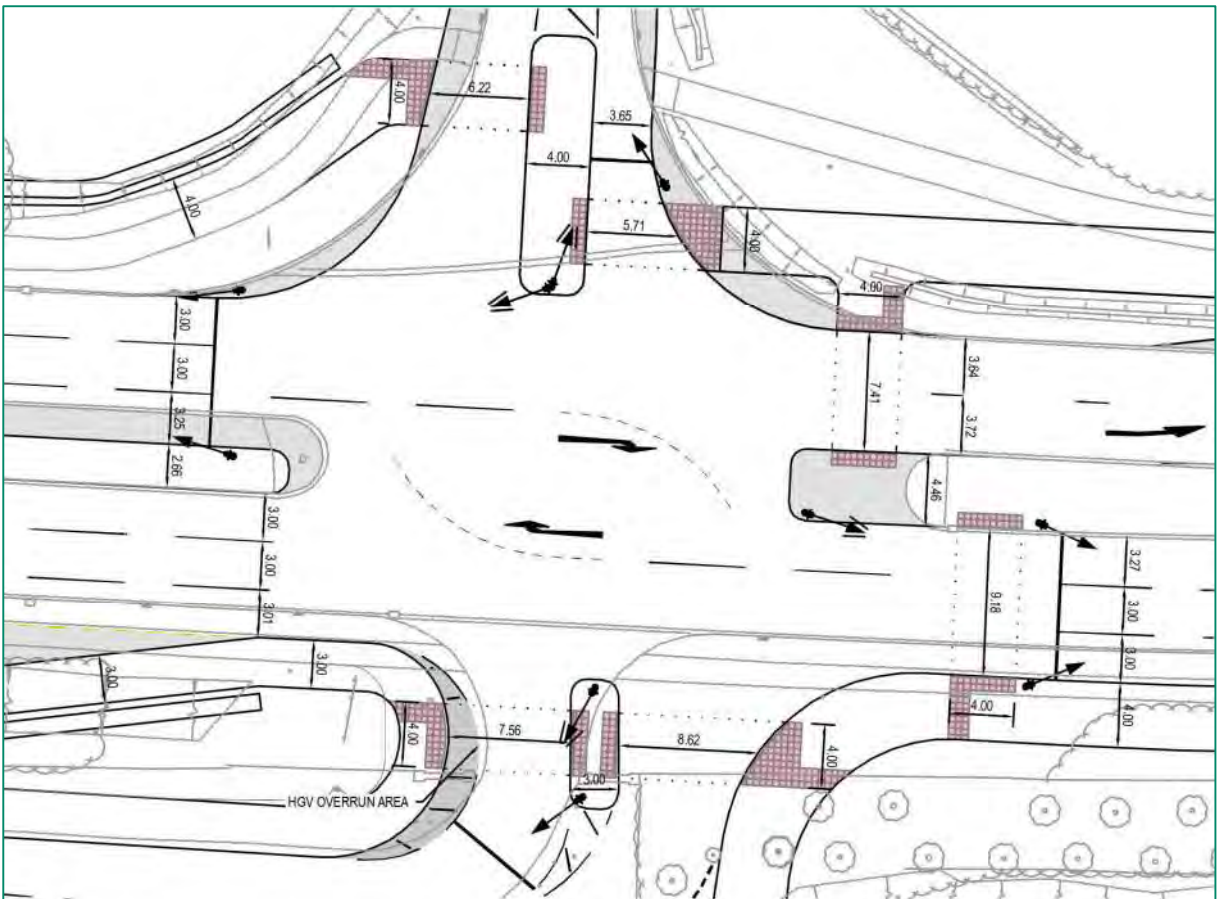


Figure 4-15: Option 2 Lane Widths (refer 60654980-ACM-XX-XX-DR-HW-000004 in Appendix B)

4.7 A4155 Marlow Road Long Section

The existing A4155 Marlow Road from the A404 Westthorpe Interchange to Westthorpe Farm Lane is predominately flat.

The existing eastbound channel line exiting the A404 Westthorpe Interchange has a level of approximately 37.27m, while at Westthorpe Farm Lane (approximately 340m away) the level is approximately 36.77m. This is an effective gradient of 1:680.

The existing westbound channel line at Westthorpe Farm Lane has a level of approximately 36.77m, while at the entry to the A404 Westthorpe Interchange (approximately 340m away) the level is approximately 36.65m. This is an effective gradient in excess of 1:2800.

The proposed conceptual junctions do not include any amendments to the existing vertical alignments along the A4155 Marlow Road however, due to the shallow longitudinal gradients, the introduction of a combined kerb and drainage system may be required to ensure the satisfactory drainage of surface water runoff from the carriageway. This will be further assessed at the detailed design stage, when details of the existing drainage networks are better understood through additional surveys.

4.8 Other Considerations

4.8.1 Site Clearance

Both Options 1 & 2 have sought to retain the existing physical infrastructure where possible however it is anticipated that site clearance of the following items will be required:

- Existing kerbs where carriageway channel lines are amended, or kerbs replaced for a combined kerb and drainage system.
- Existing surfacing.
- Existing vegetation.
- Existing street furniture, such as bollards, road signs, road markings, etc.
- Potentially street lighting columns.

4.8.2 Pavement, Kerbs and Footways

At the detailed design stage an existing pavement condition and depth survey will be commissioned to inform the life remaining within the existing carriageway and footway pavement, any remediation works that may be required, the design of widened carriageway and footway sections and any additional pavement works required as a result of new levels through the junction.

Buckinghamshire Council will be consulted during detailed design on the extent of pavement works required on approach and through the proposed junction, and the specification of the pavement design.

Buckinghamshire Council will also be consulted on the use of high friction carriageway surfacing during the detailed design.

Where necessary, existing kerbing within the scheme extents which is scheduled for retention, will be replaced should it be identified that the units are damaged.

Tactile paving will be included at all formal crossing points to aid the mobility of visually impaired and blind pedestrians. The inclusion of pedestrian guardrails at the pedestrian / cycle crossings will be discussed with Buckinghamshire Council during the detailed design stage to incorporate any requirements they have.

4.8.3 Traffic Signs

The existing road signs will be reviewed at the detailed design phase to determine those that should remain and those to be replaced and / or relocated.

New traffic signs for the proposed Development will be determined at the detailed design phase in consultation with Buckinghamshire Council.

All new traffic signs will be installed in accordance with the Traffic Signs Regulations and General Directions applicable at the time of detailed design (currently 2016). Existing traffic signs not affected by the proposed works will be retained in consultation with Buckinghamshire Council during the detailed design phase.

4.8.4 Road Markings

All new road markings will be installed in accordance with the Traffic Signs Regulations and General Directions applicable at the time of detailed design (currently 2016). Existing road markings not affected by the proposed works will be refreshed as necessary in consultation with Buckinghamshire Council during the detailed design phase.

4.8.5 Street Lighting

The A4155 Marlow Road is currently illuminated through a series of street lighting columns. A full street lighting review will be undertaken during detailed design to ensure the lighting of the highway and pedestrian links complies with national standards and Buckinghamshire Council requirements.

5. Road Safety Audit

The two conceptual signal-controlled junction layouts have been assessed under the Stage 1 Road Safety Audit (RSA) process to CG 119, undertaken by an independent RSA Team within AECOM. The use of an independent AECOM RSA Team was agreed with Buckinghamshire Council in September 2021.

A Stage 1 RSA Brief (document ref: 60654980-ACM-XX-XX-RP-HW-000001 P01, dated 11 February 2022) was prepared and issued to the AECOM RSA Team and Buckinghamshire Council. A copy of this report is included in Appendix C.

The Stage 1 RSA was undertaken in February 2022 with a site visit by the RSA Team on 15 February 2022. The Stage 1 RSA (document ref: 60654980-ACM-XX-XX-RP-HW-000002 P01, dated 2 March 2022) was received on 2 March 2022. A copy of this report is included in Appendix D.

A Designer's Response to the Stage 1 RSA was prepared by the design team (document ref: 60654980-ACM-XX-XX-RP-HW-000003 P01, dated 1 April 2022). A copy of this report is included in Appendix E and will form a key document for the detailed design of the agreed junction to ensure that the items identified by the RSA Team are considered and where possible mitigated.

The above-mentioned reports have been provided to Buckinghamshire Council (as the Overseeing Organisation). At the time of preparing this Report we have not received any feedback on these reports from Buckinghamshire Council.

At a suitable stage during detailed design, the agreed junction design will be assessed under the Stage 2 RSA process by an independent RSA Team.

Appendix A Option 1 Drawings

Document Number	Document Title	Revision
60654980-ACM-XX-XX-DR-HW-000001	Conceptual Junction Arrangement, Option 1	P03
60654980-ACM-XX-XX-DR-HW-000002	Conceptual Junction Arrangement, Option 1, Swept Path Analysis	P03
60654980-ACM-XX-XX-DR-HW-000005	Conceptual Junction Arrangement, Option 1, Visibility Analysis	P02

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SERVICES AND SPECIALIST DRAWINGS AND SPECIFICATION.
2. ANY DISCREPANCIES IN DIMENSIONS OR DETAILS ON OR BETWEEN THESE DRAWINGS SHOULD BE DRAWN TO THE ATTENTION OF THE ARCHITECT AND/OR THE ENGINEER FOR CLARIFICATION.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. DO NOT SCALE THIS DRAWING.
5. THIS CONCEPT PROPOSAL IS PREPARED FOR THE PURPOSE OF PROJECT CONSULTATION AND A STAGE 1 ROAD SAFETY AUDIT.
6. THE USE OF HIGH FRICTION SURFACING WILL BE DETERMINED IN CONSULTATION WITH BUCKINGHAMSHIRE HIGHWAYS DURING THE DETAILED DESIGN.
7. JUNCTION DESIGN BASED ON DESIGN SPEED OF 70kph (40mph). EXISTING NATIONAL SPEED LIMIT TO BE REDUCED TO 40mph FROM WEST OF A404 WESTHORPE INTERCHANGE TO LITTLE MARLOW.
8. BUCKINGHAMSHIRE HIGHWAYS / NATIONAL HIGHWAYS SCHEME (IN BLUE) REPRODUCED FROM BALFOUR BEATTY A404/A4155 WESTHORPE JUNCTION IMPROVEMENTS SOUTHBOUND OFFSLIP GENERAL ARRANGEMENT DRAWING (WIS-STN-PH1-XX-DR-C-0150 P03) TAKEN FROM THE BUCKINGHAMSHIRE WEBSITE.

KEY

- PEDESTRIAN ROUTE
- PEDESTRIAN AND CYCLE ROUTE
- HIGHWAY BOUNDARY

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P03	16.05.2022	ISSUED FOR PLANNING
P02	07.04.2022	SECOND ISSUE
P01	08.02.2022	FIRST ISSUE

SUITABILITY

PROJECT NUMBER

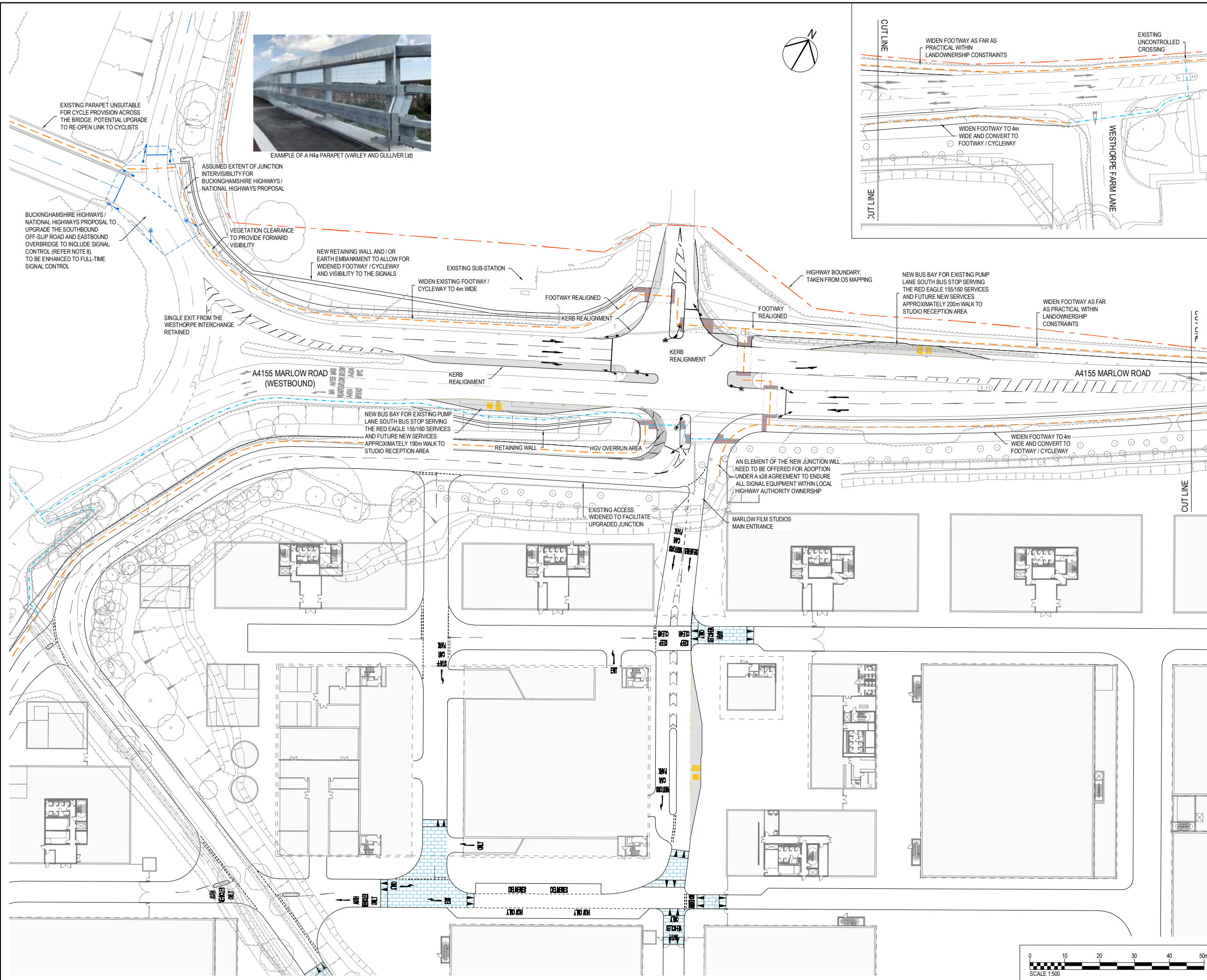
60654980

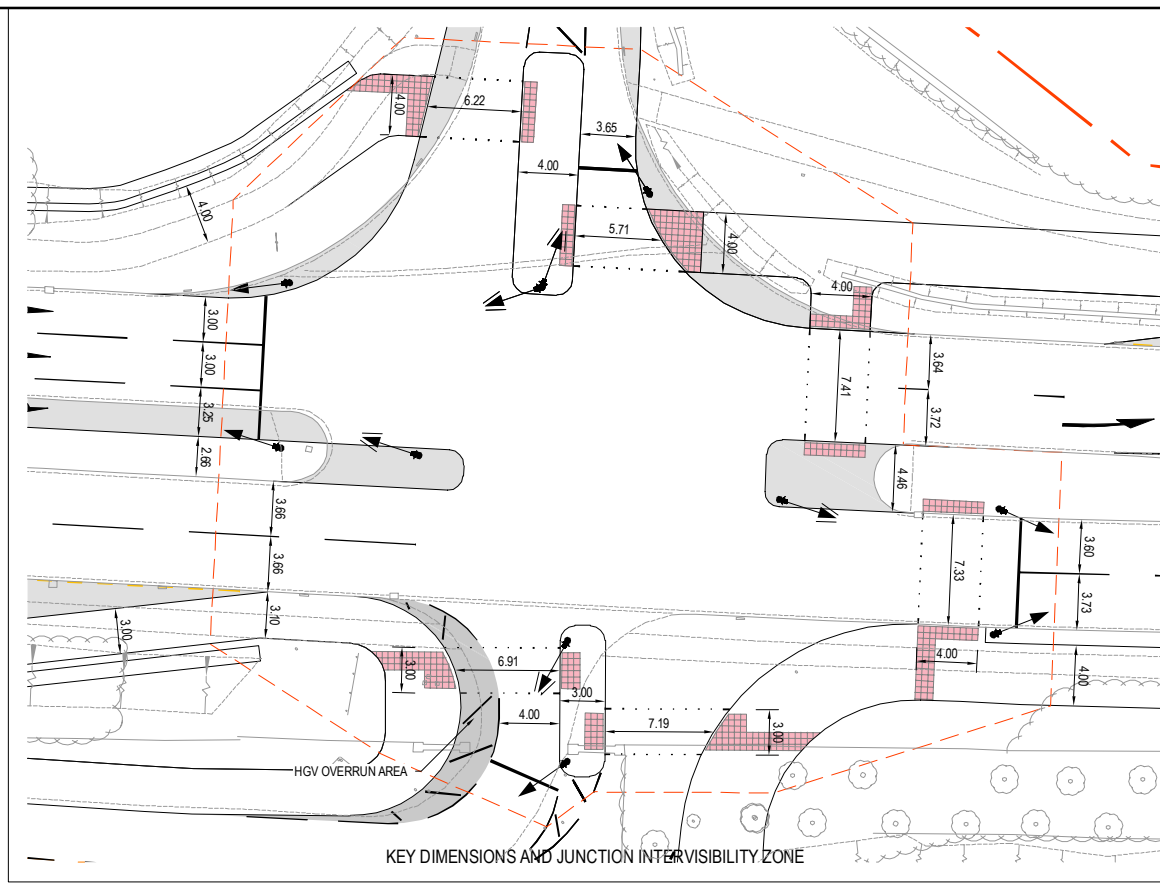
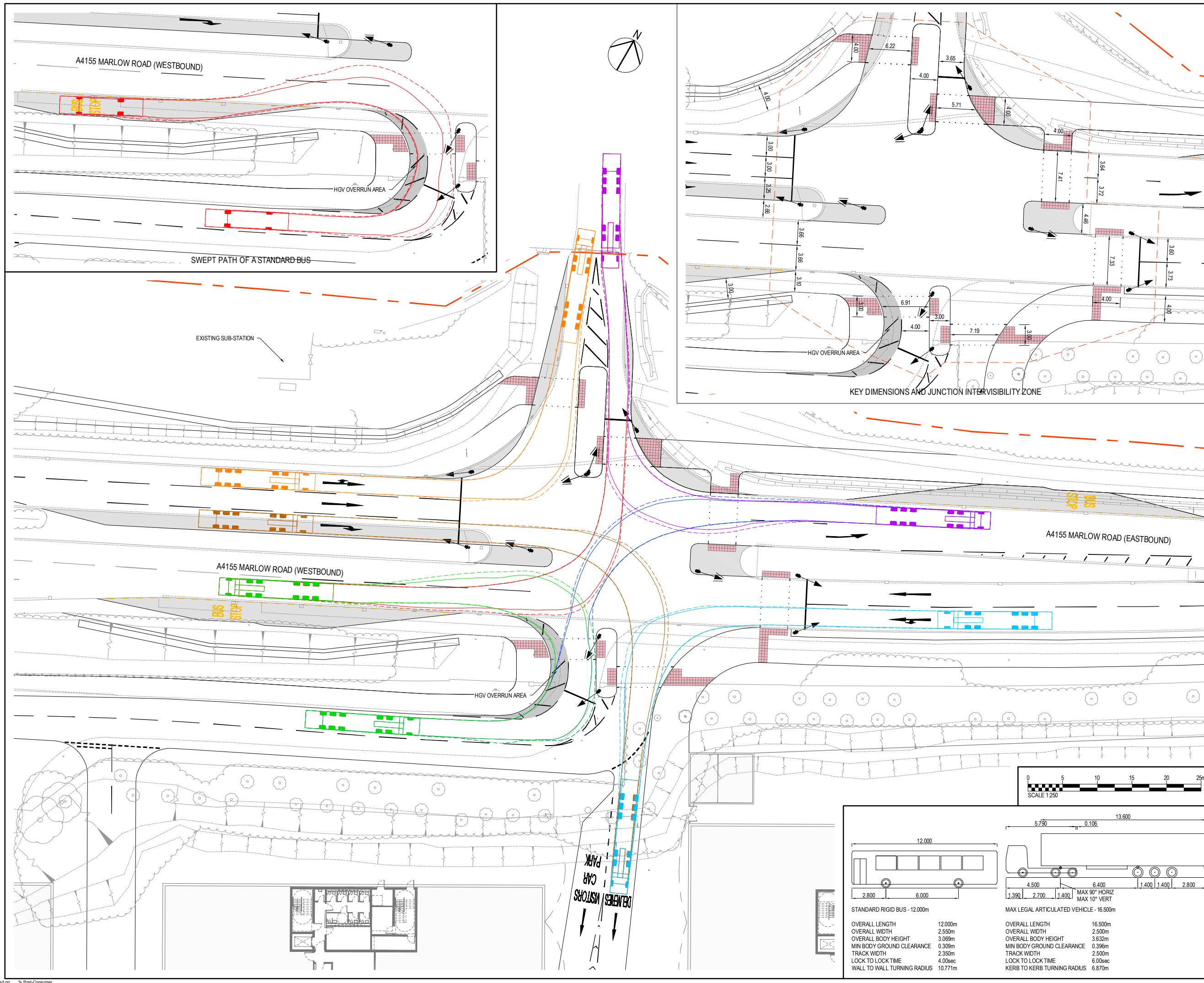
SHEET TITLE

CONCEPTUAL JUNCTION
 ARRANGEMENT
 OPTION 1

SHEET NUMBER

60654980-ACM-XX-XX-DR-HW-00001





- GENERAL NOTES**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SERVICES AND SPECIALIST DRAWINGS AND SPECIFICATION.
 2. ANY DISCREPANCIES IN DIMENSIONS OR DETAILS ON OR BETWEEN THESE DRAWINGS SHOULD BE DRAWN TO THE ATTENTION OF THE ARCHITECT AND/OR THE ENGINEER FOR CLARIFICATION.
 3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
 4. DO NOT SCALE THIS DRAWING.
 5. THIS CONCEPT PROPOSAL IS PREPARED FOR THE PURPOSE OF PROJECT CONSULTATION AND A STAGE 1 ROAD SAFETY AUDIT.
 6. THE USE OF HIGH FRICTION SURFACING WILL BE DETERMINED IN CONSULTATION WITH BUCKINGHAMSHIRE HIGHWAYS DURING THE DETAILED DESIGN.
 7. JUNCTION DESIGN BASED ON DESIGN SPEED OF 70kph (40mph). EXISTING NATIONAL SPEED LIMIT TO BE REDUCED TO 40mph FROM WEST OF A404 WESTHORPE INTERCHANGE TO LITTLE MARLOW.

- KEY**
- VEHICLE WHEEL PATH
 - - - VEHICLE BODY OVERHANG PATH
 - HIGHWAY BOUNDARY
 - - - JUNCTION INTERVISIBILITY ZONE

ISSUE/REVISION

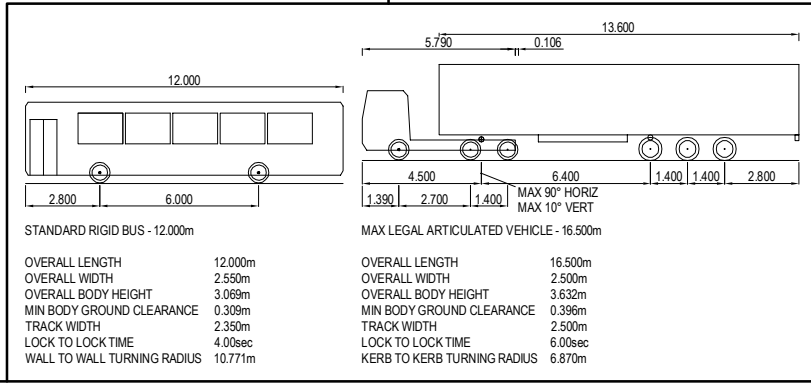
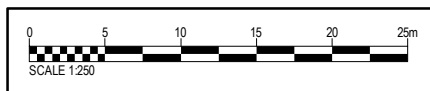
I/R	DATE	DESCRIPTION
P03	16.05.2022	ISSUED FOR PLANNING
P02	07.04.2022	SECOND ISSUE
P01	08.02.2022	FIRST ISSUE

SUITABILITY

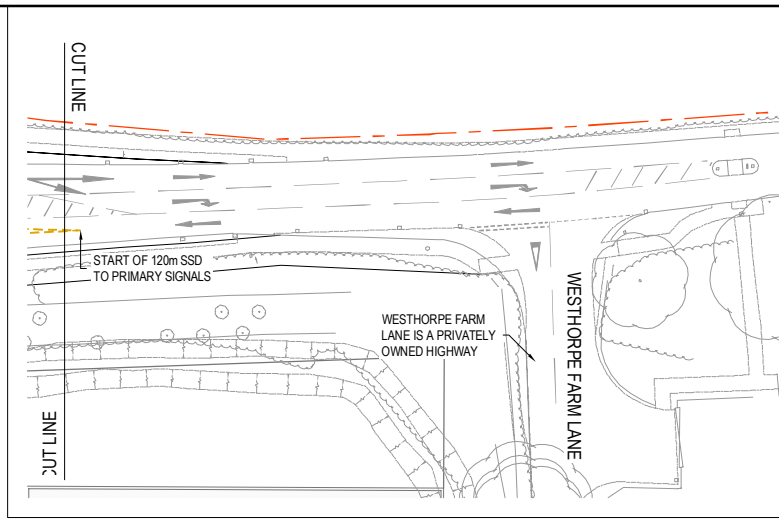
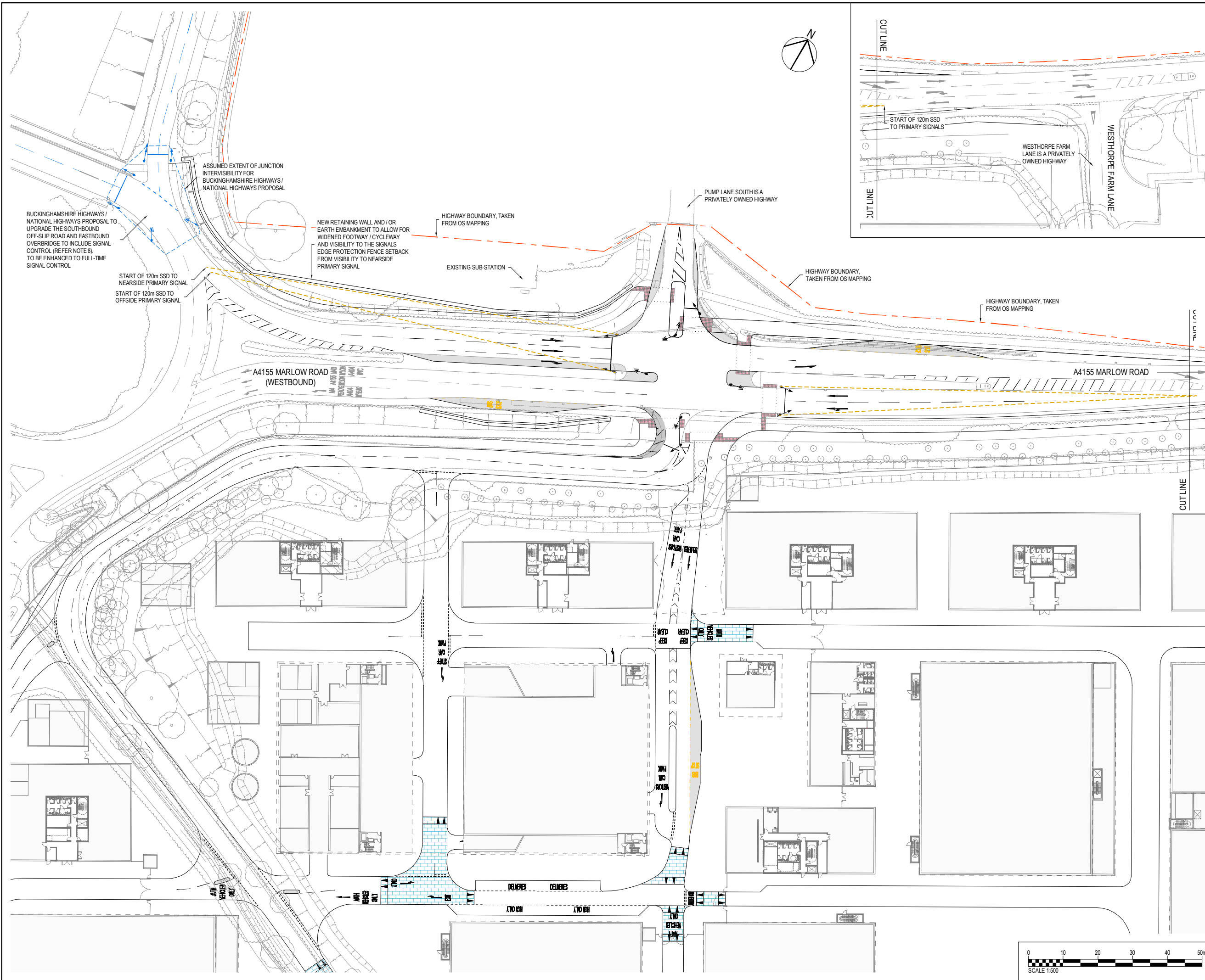
PROJECT NUMBER
 60654980

SHEET TITLE
 CONCEPTUAL JUNCTION
 ARRANGEMENT, OPTION 1
 SWEEP PATH ANALYSIS

SHEET NUMBER
 60654980-ACM-XX-XX-DR-HW-00002



This drawing has been prepared for the use of AECOM's client. It may not be used, modified, reproduced or relied upon by third parties, except as agreed by AECOM or as required by law. AECOM accepts no responsibility, and denies any liability whatsoever, to any party that uses or relies on this drawing without AECOM's express written consent. All measurements must be obtained from the stated dimensions.



1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS, SERVICES AND SPECIALIST DRAWINGS AND SPECIFICATION.
2. ANY DISCREPANCIES IN DIMENSIONS OR DETAILS ON OR BETWEEN THESE DRAWINGS SHOULD BE DRAWN TO THE ATTENTION OF THE ARCHITECT AND/OR THE ENGINEER FOR CLARIFICATION.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. DO NOT SCALE THIS DRAWING.
5. THIS CONCEPT PROPOSAL IS PREPARED FOR THE PURPOSE OF PROJECT CONSULTATION AND A STAGE 1 ROAD SAFETY AUDIT.
6. THE USE OF HIGH FRICTION SURFACING WILL BE DETERMINED IN CONSULTATION WITH BUCKINGHAMSHIRE HIGHWAYS DURING THE DETAILED DESIGN.
7. JUNCTION DESIGN BASED ON DESIGN SPEED OF 70kph (40mph). EXISTING NATIONAL SPEED LIMIT TO BE REDUCED TO 40mph FROM WEST OF A404 WESTHORPE INTERCHANGE TO LITTLE MARLOW.
8. BUCKINGHAMSHIRE HIGHWAYS / NATIONAL HIGHWAYS SCHEME (IN BLUE) REPRODUCED FROM BALFOUR BEATTY A404 / A4155 WESTHORPE JUNCTION IMPROVEMENTS SOUTHBOUND OFFSLIP GENERAL ARRANGEMENT DRAWING (WJIS-STN-PH1-XX-DR-C-0150 P03) TAKEN FROM THE BUCKINGHAMSHIRE WEBSITE.

KEY

- - - - - HIGHWAY BOUNDARY
- - - - - 120m SSD TO PRIMARY SIGNAL (NOTE 7)

ISSUE/REVISION

I/R	DATE	DESCRIPTION
P02	16.05.2022	ISSUED FOR PLANNING
P01	07.04.2022	FIRST ISSUE

SUITABILITY

PROJECT NUMBER

60654980

SHEET TITLE

CONCEPTUAL JUNCTION
ARRANGEMENT, OPTION 1
VISIBILITY ANALYSIS

SHEET NUMBER

60654980-ACM-XX-XX-DR-HW-000005

