Homes England

WESTERN BRIDGE AND LINK ROAD PHASE 2

Further Information Report

JANUARY 2023

CONFIDENTIAL

Homes England

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Further Information Report

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1 INTRODUCTION

1.1 OVERVIEW

1.1.1 Jackson Civil Engineering and WSP Real Estate and Infrastructure (formerly Capita Real Estate and Infrastructure) (herein referred to as JCT) has been commissioned by Homes England (the 'Applicant') to submit a Reserved Matters application for the second phase of the Western Bridge and Link Road (WBLR). This is pursuant to an outline planning permission for wider mixed-use development on land to the north-west of Burgess Hill (Application Reference: DM/18/5114).

1.2 PURPOSE OF THE FURTHER INFORMATION REPORT

1.2.1 The outline planning application was supported by an Environmental Statement (ES) (hereafter referred to as the '2018 ES') which considered the potential for significant environmental effects as a result of the Northern Arc Allocation development. It was further supported by the 2019 ES Addendum (hereafter referred to as the '2019 ES Addendum') which was prepared to support the submission of supplementary information for the Northern Arc Allocation development.

1.2.2 This Further Information Report considers whether the detailed design for Phase 2 of the WBLR (hereafter referred to as 'the Proposed Scheme') results in any additional, or change to, the significant effects reported in the 2018 ES and 2019 ES Addendum. This Further Information Report has been informed by a review of the Proposed Scheme, the 2018 ES and the 2019 ES Addendum. Therefore, this Further Information Report should be read alongside these documents.

2 THE PROPOSED SCHEME

2.1 LOCATION

2.1.1 The Proposed Scheme site boundary (hereafter referred to as 'the Site') is located north of the town of Burgess Hill, and is within the administrative district of Mid Sussex District Council (MSDC).

2.1.2 The Site is broadly linear and covers an area of approximately 1.5 hectares, which comprises a 400m long strip of land located between the A2300 and the new bridge over the River Adur. The Site is approximately centred on National Grid Reference Centre 529492N, 120540E with an approximate postcode of RH15 8GA.

2.1.3 The location of the Site is still within the Northern Arc Allocation development boundary and has not changed since the submission of the 2018 ES or 2019 ES Addendum.

2.2 DESCRIPTION

2.2.1 The general arrangement of the Proposed Scheme is shown in Appendix A and shows the following proposed infrastructure:

- A connection to the northern arm of the new roundabout on the A2300;
- A6.5m wide single carriageway new highway link between the A2300 and the end of the bridge over the River Adur;
- Three side road connections to the future development area;
- Shared access surface for non-motorised users with connection to a Green Super Highway;
- Surface water and foul water drainage infrastructure;
- Street lighting; and
- Landscaping.

2.2.2 The new link road will provide access to the adjacent development parcels and provide the connection to the next phase of the Northern Arc Allocation development. This is the Central link Road which is to the north of the Proposed Scheme. The carriageway will remain largely at grade for the first 250m, following the existing ground level as it travels north. Approach embankments to the new bridge over the River Adur will rise to a height of approximately 3m at the abutments. Walls will be installed on three of the bridge approaches to reduce the footprint of the highway and enable adjacent plots to be developed closer to the carriageway. The verge will be removed on approach to the bridge where the walls are being installed. The bridge will fall from west to east, reducing the eastern embankment by approximately 1m. Three priority junctions will provide vehicular access to the adjacent Northern Arc Allocation development areas.

2.2.3 There will be 3m wide shared surfaces on both sides of the carriageway. The surfaces will generally be separated from the carriageway by a 2.75m soft verge.

2.2.4 A Green Superhighway and Green Circle network is proposed to provide safe and attractive links between the urban and rural areas. The Green Superhighway and footway connect to the shared surfaces that are being provided along the A2300. They will be continued north into the central section of the wider Northern Arc Allocation development.

2.2.5 Just north of the connection to the A2300 roundabout, there is also a signalised pedestrian and equestrian crossing to be provided.

2.3 PLANNING CONTEXT

Planning Policy

2.3.1 A review of national, regional and local planning policy since the 2018 ES and 2019 ES Addendum has been conducted however no changes to these policies have been identified.

Relevant Planning History

2.3.2 The outline planning application (hereafter referred to as 'the Northern Arc Allocation development'), was submitted to MSDC in December 2018 and was accompanied by an ES. The planning application sought:

2.3.3 "*Outline planning permission, with all matters reserved for later determination with the exception of some access, is sought for:*

Comprehensive, phased, mixed-use development comprising approximately 3,040 dwellings including 60 units of extra care accommodation (Use Class C3) and six permanent gypsy and traveller pitches, including a Centre for Community Sport with ancillary facilities (Use Class D2), three local centres (comprising Use Classes A1-A5 and B1, and stand-alone community facilities within Use Class D1), healthcare facilities (Use Class D1), and employment development comprising a 4 hectare dedicated business park (Use Classes B1 and B2), two primary school campuses and a secondary school campus (Use Class D1), public open space, recreation areas, play areas, associated infrastructure including pedestrian and cycle routes, roads, car parking, bridges, landscaping, surface water attenuation, recycling centre and waste collection infrastructure with associated demolition of existing buildings and structures, earthworks, temporary and permanent utility infrastructure and associated works.

Full planning permission is sought at this time for the following highway access works:

New roundabout on A2300"

2.3.4 Following the submission of the Northern Arc Allocation development, the Reserved Matters application for Phase 1 of the WBLR was submitted. The description of development for that Reserved Matters application was:

2.3.5 "*Reserved Matters application for DM/18/5114 - the first phase of the Western Bridge and Link Road, comprising the construction of a new all-movements roundabout on the A273 Jane Murray Way, a single-carriageway 7.3-metre wide highway link with two 3-metre shared footways/cycleways and two 2.75-metre verges, connecting to the A2300 via a new all-movements roundabout, junction to the UKPN electricity substation, junction to future employment uses, zones for two minor junctions, signalised crossing points, earthworks, surface water and foul drainage infrastructure, utilities corridors, lighting, and landscaping*."

2.3.6 The Proposed Scheme represents Phase 2 of the WBLR. Therefore, the description of development for this Reserved Matters application is:

2.3.7 “Reserved Matters application for DM/18/5114 – the second Phase of the Western Bridge and Link Road, comprising c.460m, single-carriageway 6.5metre wide distributor road highway link running north from the A2300 roundabout with 3-metre shared footways/cycleways on the eastern and western sides. A c70metre three span bridge over the River Adur and embankments rising to a height of approximately 3-metres at the abutments, including zones for 3 minor priority junctions, signalised crossing points (pedestrian and equestrian), earthworks, surface water drainage infrastructure (including attenuation tanks), utilities corridors, lighting and landscaping.”

3 APPROACH TO THE FURTHER INFORMATION REPORT

3.1 EIA METHODOLOGY

3.1.1 This Further Information Report has been prepared in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations'). It also considers current EIA guidance, together with applicable best practice guidance and case law relating to the EIA process as mentioned in the 2018 ES and 2019 ES Addendum.

3.1.2 It should be noted however, that following the UK leaving the European Union on 31st January 2020 (a process commonly referred to as 'Brexit'), a new statutory instrument (SI), the Environmental Assessments and Miscellaneous Planning (Amendment) (EU Exit) Regulations 2018 (SI 2018 No.1232), came into force. This enables the process of EIA to continue to operate with no substantive changes. The amendments made through the regulations as part of the EU Withdrawal Act 2018 removed, where appropriate, references to obligations to EU law and clarified that the changes do not require re-examination of any decisions made prior to Brexit.

3.2 STRUCTURE OF THE FURTHER INFORMATION REPORT

3.2.1 As this Further Information Report forms part of a Reserved Matters application, there must also be consistency with the preceding documentation. This document therefore follows the structure of the previous assessments submitted as part of the Northern Arc Allocation development in the 2018 ES and 2019 ES Addendum. This includes further technical assessment of Ecology, Ground Conditions, Landscape and Visual, Cultural Heritage, Noise and Vibration and Air Quality in the structure outlined below:

- Introduction and Summary and Conclusions of the 2018 ES and 2019 ES Addendum;
- Legislation and Planning Policy Review;
- Assessment Methodology Review;
- Updated Baseline Conditions;
- Environmental Design and Management;
- Assessment of Effects and Significance;
- Additional Mitigation and Monitoring;
- Updated Residual Effects and Conclusions;
- Updated Cumulative Effects Assessment; and
- Summary and Conclusions.

3.2.2 For certain topics included in the 2018 ES however, no material changes are likely to occur to the previously identified effect (including Socio-economics and Health and Climate Change). It has therefore been demonstrated below why they do not therefore require further technical assessment.

Socio-economics and Health

3.2.3 In relation to Appendix 14-1: Health Impact Assessment (HIA) of the 2018 ES, the detailed design of the Proposed Scheme will have no material change to the impact on the health and well-being of new residents at the Northern Arc Allocation development or within the local community. Therefore, the Proposed Scheme will not alter the effects previously reported in Appendix 14-1: Health Impact

Assessment (HIA), with the conclusions and recommendations remaining the same as within the 2018 ES.

3.2.4 Therefore, as with the 2019 ES Addendum, it is considered that the conclusions presented in Chapter 14: Socio-Economics and Appendix 14-1: Health Impact Assessment (HIA) of the 2018 ES remain unchanged.

Climate Change

3.2.5 The detailed design of the Proposed Scheme does not change the assessments undertaken as part of the 2018 ES and 2019 ES Addendum. Therefore, it is considered that the Proposed Scheme will not give rise to any new or additional significant environmental effects from those reported previously in the 2018 ES in the 2019 ES Addendum.

Water Resources and Flood Risk

3.2.6 Planning Condition 25 (Fluvial Flooding) of the outline permission stipulated that "Prior to the commencement of the development the fluvial flood modelling must be peer reviewed by the Environment Agency with details of this process to be submitted to and approved in writing by the local planning authority." This condition was discharged by MSDC on 17th November 2020 and therefore this nor further assessment of this topic is required. Further information on this can be found at (DM/20/3936).

Traffic and Transport

3.2.7 A traffic and transport assessment was undertaken as part of the 2018 ES which considered the outline design for the Proposed Scheme, the parameters of which the detailed design is still within. The 2019 ES Addendum determined that the conclusions presented in Chapter 11: Traffic and Transport of the 2018 ES remain unchanged. It was also confirmed by Homes England on 16th February that the Transport Assessment1 undertaken as part of the 2018 ES should be used for the assessment of Air Quality and Noise and Vibration for the Proposed Scheme. Therefore, no further assessment of Traffic and Transport is required.

Materials Assets and Waste

3.2.8 Although not the only guidance used as part of this Further Information Report, in August 2019 the Design Manual for Roads and Bridges (DMRB) was updated to include Material Assets and Waste as a standalone chapter. It was therefore not included as a separate topic in either the 2018 ES or 2019 ES Addendum, however, Waste was scoped out of requiring further assessment by AECOM as part of the 2018 EIA Scoping Report. Planning Condition 17 stipulated that "*No development*

[1] AECOM (December 2018), Northern Arc Burgess Hill - Transport Assessment.

shall proceed within each reserved matters area unless and until a Waste and Recycling Management Strategy for that reserved matters area has been submitted to and approved in writing by the local planning authority. Such strategies will be developed to set targets for the reuse, recyclability and environmental safety of building materials to be used across the reserved matters area. The development of that reserved matters area shall proceed in accordance with such approved details unless otherwise agreed in writing with the local planning authority." This condition is currently in draft and based on the above, it has been determined that no further assessment of this topic is required.

Baseline

3.2.9 For the purposes of this Further Information Report, the 'baseline' year of 2022 has been used which is the period for which the most up-to-date environmental baseline information is available for the Proposed Scheme and its surrounding area. However, in cases where that is different, such as Air Quality and Nosie and Vibration, this will be noted and where possible, the closest date to this will be used.

3.3 CUMULATIVE EFFECTS ASSESSMENT

3.3.1 The criteria applied to identify cumulative schemes in the 2018 ES, and subsequent 2019 ES Addendum, were as follows:

- Located within an approximate 1km radius of the Site; and
- Result in an increase of more than 10,000m2 gross external area (GEA) in floor area (or over 150 residential units); and
- Have a planning application submitted, have planning permission or a resolution to grant consent, or are under construction; or
- Are key regional infrastructure projects; or
- Which are identified in the adopted MSDC planning policy (where relevant and sufficient information exists within the public domain).

3.3.2 On Thursday 22nd April, MSDC confirmed the additional schemes for consideration. These were checked against the criteria above to determine which need to be reviewed as part of this assessment. These schemes are as follows:

- DM/20/0254 - Reserved Matters application for Phase 1 of WBLR (Approved 10th July 2020); and
- DM/20/4546 - Reserved Matters application for The Hub (Approved 31st March 2021).

4 ECOLOGY

4.1 INTRODUCTION AND SUMMARY AND CONCLUSIONS OF THE 2018 ES

4.1.1 This chapter provides an update on the ecology features and constraints specific to the Proposed Scheme since the publication of the 2018 ES and the 2019 ES Addendum.

4.1.2 The above documents did not report any significant effects to any ecological features as a result of the Northern Arc Allocation development, apart from a 'Major adverse effect pre-mitigation and moderate adverse residual effect on woodland habitat associated with the Western Link Road habitat clearance in the medium term (0-30 years from site clearance). A number of further surveys have however been completed since the 2019 ES Addendum and will be discussed herein to determine any change from the initial assessment.

4.2 LEGISLATION AND PLANNING POLICY REVIEW

4.2.1 The 2019 ES Addendum noted changes to planning policy since the 2018 ES that were of particular relevance, but these were not considered to impact the findings of the 2018 ES. A review of the changes to the legislative framework and to planning policy, in respect of ecological matters, since the 2018 ES and 2019 ES Addendum has been conducted and there are no further relevant changes.

4.3 ASSESSMENT METHODOLOGY REVIEW

4.3.1 The assessment methodology remains unchanged since the submission of the 2019 ES Addendum.

4.3.2 This methodology is provided in the guidance for Ecological Impact Assessment (EcIA) in the UK and Ireland developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2019) as outlined in the 2018 ES and 2019 ES Addendum. The CIEEM guidance was updated between 2018 and 2019 but these updates did not have an impact on the assessment methodology. Therefore, please refer to the 2018 ES for the exact methodology used.

Additional Surveys

4.3.3 The following surveys have been conducted since the submission of the 2019 ES Addendum:

- National Vegetation Classification (NVC) survey of Woodland 1;
- hedgerow assessment; and
- Aerial tree inspections for bats.

4.4 UPDATED BASELINE CONDITIONS

Habitats

4.4.1 Woodland W1 was subject to an NVC assessment. The assessment classified the vegetation as W21 - *Crataegus monogyna – Hedera helix* scrub. The results indicate it may be the result of natural colonisation of an unmanaged field.

Hedgerows

4.4.2 None of the hedgerows within the Site meet the criteria for 'Important' hedgerows as set out within the Hedgerow Regulations 1997.

Bats

4.4.3 All trees within the Site that are to be affected were subject to an aerial tree inspection. All were subsequently downgraded to having low bat roost suitability.

4.5 ENVIRONMENTAL DESIGN AND MANAGEMENT

4.5.1 The Proposed Scheme has not resulted in any new or additional impacts to Ecology. There is the environmental design change of a retaining wall located to the west of the north abutment of the bridge over the River Adur. This is to prevent the abutment bank encroaching into the 15m development exclusion buffer around the Six Acre Shaw Ancient Woodland to the north. No other changes to the environmental design and management are required with regards to ecological features since the 2018 ES and 2019 ES Addendum.

4.6 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

4.6.1 Despite the updated survey results, the assessments presented in the 2018 ES and 2019 ES addendum remain valid. Therefore, no additional ecological impacts and effects of the Proposed Scheme are anticipated.

4.7 ADDITIONAL MITIGATION AND MONITORING

4.7.1 No further mitigation will be required in addition to what was included within the 2018 ES and 2019 Addendum, however pre commencement checks for nesting birds are required should vegetation clearance activities occur from late February to early August inclusive.

4.7.2 Updated surveys were carried out in 2022 to ensure certain protected species were still absent from the site (species with wide ranges). These species included:

- Water vole and otter on the River Adur;
- Bats within the trees along the River Adur with suitability for supporting bats; and
- Badgers.

4.7.3 It is advised that the client appoints a specialist contractor who has expertise in the eradication of invasive non-native plants. The specialist contractor is to prepare a full invasive species method statement detailing suitable control methods for the inns found on site. The contractor should employ staff with the necessary experience and qualifications to undertake the chosen control measures (for example applying herbicides).

4.7.4 Clearance in area of Himalayan Balsam should not proceed without implementation of biosecurity control measures such as boot wash for staff leaving the clearance area and that a thorough washdown of plant used in the area should be undertaken before demobilising.

4.8 UPDATED RESIDUAL EFFECTS AND CONCLUSIONS

4.8.1 There are no additional or changes to residual effects as a result of the Proposed Scheme.

4.9 UPDATED CUMULATIVE EFFECTS ASSESSMENT

4.9.1 There are no additional cumulative effects as a result of the Proposed Scheme.

4.10 SUMMARY AND CONCLUSIONS

4.10.1 There have been no changes to the legislation, assessment methodology or planning policy that are considered to impact the findings of the 2018 ES and 2019 ES Addendum.

4.10.2 No additional mitigation is required but pre commencement checks for nesting birds are required should vegetation clearance activities occur from late February to early August inclusive. However, sufficient surveys have been conducted to date to be confident that the Proposed Scheme will not result in a significant impact.

4.10.3 No additional residual and cumulative effects are considered above those identified within the 2018 ES and 2019 Addendum.

5 GROUND CONDITIONS

5.1 INTRODUCTION AND SUMMARY AND CONCLUSIONS OF THE 2018 ES AND 2019 ES ADDENDUM

5.1.1 This chapter provides an update on the ground conditions specific to the Proposed Scheme since the publication of the original Environmental Statement (ES) for the Northern Arc Allocation development in 2018.

5.1.2 The 2018 ES did not report any significant effects due to ground conditions at the site, with the majority of residual effects post-mitigation being negligible. Part of the mitigation proposed was the completion of a ground investigation which would allow for a more detailed assessment and quantification of actual risk. This ground investigation has since been completed and is discussed herein to determine any change from the initial assessment.

5.1.3 This assessment only focuses on areas that have benefitted from an increase in information since the 2018 ES. Topics such as mineral safeguarding and geological receptors have not been updated as the original baseline information is unchanged.

5.2 LEGISLATION AND PLANNING POLICY REVIEW

5.2.1 A review of the legislative framework and of planning policy since the 2018 ES has been conducted with relevant changes presented within this section.

National Planning Policy Framework

5.2.2 The National Planning Policy Framework was updated in July 2021 and supersedes the versions published in 2012, 2018 and 2019.

5.2.3 Paragraph 183 states that planning policies and decisions should ensure that:

A. a site is suitable for its proposed use taking account of ground conditions and any risks arising from land instability and contamination. This includes risks arising from natural hazards or former activities such as mining, and any proposals for mitigation including land remediation (as well as potential impacts on the natural environment arising from that remediation);
B. after remediation, as a minimum, land should not be capable of being determined as contaminated land under Part IIA of the Environmental Protection Act 1990; and
C. adequate site investigation information, prepared by a competent person, is available to inform these assessments.

Planning Practice Guidance

5.2.4 The Planning Practice Guidance are guidance documents designed to provide more detailed guiding principles for a range of topics. The guidance documents relevant to ground conditions are:

Land affected by contamination – updated in July 2019
Land stability – updated in July 2019.

West Sussex Plan (2022) 2021-2015

5.2.5 The West Sussex County Council Plan 2021-2025 was published in 2022 and sets out the areas which the County Council will focus on improving over the next 4 years. The priority outcomes are:

- Keeping people safe from vulnerable situations
- A sustainable and prosperous economy
- Helping people and communities fill their potential
- Making best use of resources

5.2.6 There are no policies in the Council Plan which are relevant to this ground conditions assessment.

Land Contamination Risk Management

5.2.7 In 2020, the Environment Agency released their updated guidance on how land contamination should be assessed and managed, replacing CLR11. This revised guidance, titled 'Land Contamination Risk Management', is available online. This is a four-part document which provides several updates to the superseded report, including a revised list of technical resources.

5.3 ASSESSMENT METHODOLOGY REVIEW

5.3.1 The assessment methodology outlined in the 2018 ES is still relevant today and will be used in this chapter.

5.3.2 Documents which have been consulted in the preparation of this update are listed below:

- Campbell Reith, Phase 2 Contaminated Land Risk Assessment (GQRA) (June 2020);
- Strata Geotechnics, Northern Arc, Burgess Hill 100 Series, Factual Ground Investigation Report, Ref: G194295 (June 2020); and
- Capita Property and Infrastructure, Geotechnical Design Report – Phase 1b, 1c and 2 (November 2020).

5.4 UPDATED BASELINE CONDITIONS

5.4.1 A scheme-wide ground investigation was undertaken by Strata Geotechnics between January and March of 2020. This report relies on information from this investigation and describes a baseline which is specific to the Proposed Scheme. Relevant exploratory holes have been identified from the investigation and comprise:

- 15 Trial Pits, TP101-TP115;
- 14 Window Samples, WS101-WS114; and
- 8 Rotary Core Boreholes, RC101-RC108.

5.4.2 In addition to this, four surface water monitoring points (SW101-SW104) in the River Adur are also located within 100m of the boundary of the Proposed Scheme.

5.4.3 Since the original ground investigation carried out in 2020, the red-line boundary has been extended to include an additional 50m length of road on the eastern side of the bridge, and the design has been updated to include three retaining walls.

5.4.4 A supplementary ground investigation was carried out by Geotechnical Engineering Limited in September 2022 to cover the area proposed to be occupied by the additional 50m length of road and the retaining walls. The holes explored as part of this investigation include:

- 2 Rotary Core Boreholes, RC301-RC302; and
- 9 Hand dug pits with windowless sample follow on, DCS301-DCS308, DCS310.

Geology

5.4.5 The 2018 ES stated that geological mapping of the region showed the majority of the Site to be directly underlain by a thickness of Weald Clay which is in excess of 100m. Locally, this is overlain by alluvial deposits along the banks of the River Adur which crosses the Proposed Scheme east-west.

5.4.6 This geology has since been confirmed by the 2020 ground investigation at the Site. Exploratory holes typically found sandy gravelly clays becoming sandy gravel attributed to weathered Weald Clay. Campbell Reith reported an average weathering thickness of 2.8m for the wider Northern Arc Allocation development with a minimum thickness of 1.6m recorded in the Proposed Scheme, beneath which lay the non-weathered mudstones of the Weald Clay. The base of the Weald Clay was not encountered, with a maximum depth of 40.2m reached in RC105. Alluvium was identified in exploratory holes on the sides of the River Adur, specifically in TP106-108 and RC101-RC105 and RC107, with a recorded maximum thickness of 6.2m. The Alluvium is typically described as orange/blueish grey mottled soft sandy clay with occasional sand pockets and pockets of black organic material.

5.4.7 Pockets of Made Ground were encountered in a small number of holes and comprised reworked weathered Weald Clay with ceramic fragments from clay pigeon shooting.

5.4.8 The additional 50m chainage has a similar geology to the rest of the site, sandy gravelly (gravel being mudstone lithorelicts) attributed to weathered Weald Clay. There is no presence of Made Ground found in this area.

5.4.9 The geology underlying the proposed area for the three retaining walls identified light-grey mottled orange-brown sandy clay which is also attributed to weathered Weald. Again, no Made Ground was present in these holes. The two rotary core holes, which were located at bridge pier positions, encountered a significant thickness of soft alluvial clay over a depressed profile of Weald Clay. This profile being expected at the edges of the River Adur.

Hydrogeological and Hydrological Conditions

5.4.10 Three locations relevant to the Proposed Scheme were subject to post-fieldwork groundwater monitoring and are presented in Table 5.1.

Table 5.1: Groundwater monitoring locations

Exploratory Hole	Response Zone	Strata	
RC101	1-15	Topsoil over Alluvium	0-4.7m below ground level (bgl)
		Weald Clay	4.7-15m bgl
WS105	1-3	Topsoil over Weald Clay	1-3m bgl
WS108	1-3	Topsoil over Weald Clay	1-3m bgl

5.4.11 Three monitoring rounds were conducted to measure groundwater levels between April and May 2020. These results are presented in **Table 5.2**.

Table 5.2: Observed groundwater levels

Exploratory Hole	Shallowest recorded measurement (m bgl)	Deepest recorded measurement (m bgl)
RC101	0.26	0.55
WS105	1.18	1.43
WS108	2.33	2.37

5.4.12 The piezometric level recorded in the piezometer in RC101 at 0.55m bgl is notably higher than the surrounding wells. The reasons for this are unclear, but one explanation would be that the Weald Clay has water heads which are almost artesian. The juxtaposition of the alluvial gravels with the River Adur suggests that there will be a level of continuity between the gravel aquifer and the river.

Contaminated Land

5.4.13 In order to quantify the risks identified in the 2018 ES, the 2020 ground investigation collected and analysed soil, water and gas samples from across the Northern Arc Allocation development. This section will make use of the locations relevant to the Proposed Scheme.

Soils

5.4.14 Twenty soil samples were collected from within the Proposed Scheme and tested for a standard suite of metals and hydrocarbons. Eleven samples were tested for the presence of asbestos and a shallow sample from TP110 also underwent testing for herbicides and pesticides. Made Ground was identified in seven locations in the Proposed Scheme, with three of the 20 samples tested for a standard suite from within these deposits along with six of the 11 asbestos tests. Two samples from 0.15m bgl were tested for sulphate.

5.4.15 In order to assess the potential human health impacts of soil contaminants, a generic quantitative risk assessment has been undertaken. The proposed end use of the Site does not easily fit into a defined land-use as described in Environment Agency Guidance SR32. Therefore, screening values are based on the public open space (parkland) or commercial scenarios, with the lower value selected. The criteria used in the screening assessment were those from the 2015 published LQM/CIEH Suitable 4 Use Levels (S4ULs). Values for 2.5% organic matter have been used, with an average Soil Organic Matter (SOM) in the Phase 2 area of 3.87%. A condensed selection of compounds can be seen in Table 5.3.

Table 5.3: Human health summary screening for soils

Analytical Parameter	Unit	GAC	No>GAC	Min	Max
PAHs					
Naphthalene	mg/kg	460	0	<0.5	-
Acenaphthylene	mg/kg	30000	0	<0.5	-
Acenaphthene	mg/kg	30000	0	<0.5	-
Fluorene	mg/kg	20000	0	<0.5	-
Phenanthrene	mg/kg	6200	0	<0.5	0.89
Anthracene	mg/kg	150000	0	<0.5	-
Fluoranthene	mg/kg	6300	0	<0.5	1.5
Pyrene	mg/kg	15000	0	<0.5	1.3
Benzo(a)anthracene	mg/kg	56	0	<0.5	0.82
Chrysene	mg/kg	110	0	<0.5	0.67

[2] Environment Agency, 2008. *Updated technical background to the CLEA model*, Science Report SC050021/SR3.

Analytical Parameter	Unit	GAC	No>GAC	Min	Max
Benzo(b)fluoranthene	mg/kg	15	0	<0.5	0.57
Benzo(k)fluoranthene	mg/kg	410	0	<0.5	0.52
Benzo(a)pyrene	mg/kg	12	0	<0.5	0.61
Indeno(1,2,3-cd)pyrene	mg/kg	170	0	<0.5	0.4
Dibenz(a,h)anthracene	mg/kg	1.3	0	<0.5	-
Benzo(ghi)perylene	mg/kg	1500	0	<0.5	0.51
Metals					
Arsenic	mg/kg	170	0	<0.1	25
Cadmium	mg/kg	190	0	<0.2	0.5
Copper	mg/kg	44000	0	<1	34
Chromium	mg/kg	8600	0	<1	54
Lead	mg/kg	1300	0	<1	110
Mercury	mg/kg	30	0	<0.3	-
Inorganics					
Total Sulphate as SO4	mg/kg	-	-	500	880

5.4.16 The shallow soil sample from TP110 was tested for a suite of 77 herbicides and pesticides, none of which were identified above detection limits. Eleven samples were tested for the presence of asbestos, with no asbestos found to be present in these soils.

Controlled Waters

5.4.17 The three monitoring wells, listed in **Table 5.1**, as well as four surface water points were monitored for a suite of chemical parameters. They were also screened against both the European Union (EU) Environmental Quality Standards (EQS) within the Water Framework Directive (WFD), to be protective of surface waters, and the EU/UK Drinking Water Standards (DWS), to be protective of the groundwater resource. A selection of results is provided in **Table 5.4** and **Table 5.5**.

Table 5.4: Groundwater screening

Analytical Parameter	Unit	EQS	DWS	No>GAC	Min	Max
Metals						
Arsenic	ug/l	50	10	0	0.17	2.08
Boron	ug/l	-	1000	0	81	1000
Cadmium	ug/l	0.2	5	0	0.02	0.05
Chromium	ug/l	4.7	50	0	0.5	0.8
Chromium (hexavalent)	ug/l	0.6	-	0	<5	-
Copper	ug/l	1*	2000	1 EQS	0.9	4.1
Lead	ug/l	1.2*	1	0	<0.2	0.8
Mercury	ug/l	0.07	1	0	<0.05	-
Nickel	ug/l	4*	20	1 DWS 1 EQS	<0.5	21
Zinc	ug/l	10.9*	-	1 EQS	2.5	12
Organics						
Total EPA-16 PAHs	ug/l	-	0.1	0	<0.16	-
TPH C10-C40	ug/l	-	-	-	<10	-

*bioavailable concentration

5.4.18 All exceedances reported in groundwater were identified in samples from WS108. This well is installed in natural geology and the dissolved metals and compounds are compatible with pore waters in Weald Clay.

Table 5.5: Surface water screening

Analytical Parameter	Unit	EQS	DWS	No>GAC	Min	Max
Metals						
Arsenic	ug/l	50	10	0	0.17	2.08
Boron	ug/l	-	1000	0	35	59

Cadmium	ug/l	0.2	5	0	<0.02	-
Chromium	ug/l	4.7	50	0	<0.2	1.4
Chromium (hexavalent)	ug/l	0.6	-	0	<5	-
Copper	ug/l	1*	2000	4 EQS	2.9	5.6
Lead	ug/l	1.2*	1	0	0.7	0.8
Mercury	ug/l	0.07	1	0	<0.05	-
Nickel	ug/l	4*	20	1 EQS	2.5	4.7
Zinc	ug/l	10.9*	-	0	2.4	5.8
Organics						
Total EPA-16 PAHs	ug/l	-	0.1	0	<0.16	-
TPH C10-C40	ug/l	-	-	-	<10	-

*bioavailable concentration

5.4.19 In surface water samples, all locations reported failures for copper and SW103 also reported one failure for nickel against EQS limits. No DWS limits were exceeded.

5.4.20 Several contaminants tested have legislative limits below limits of detection. For these, it has been assumed that the contaminant would not register an exceedance should detection limits be lowered.

5.4.21 Values reported for copper, zinc and nickel are total values, whereas the EQS is a bioavailable concentration. As a conservative approach, these values have been equated though in reality, the bioavailable concentration makes up a portion of the total and there is the possibility the results reported as failures do not exceed the set limits.

5.4.22 RC104 and WS114 were monitored in addition to the three wells listed in Table 5.1 and four surface water points for sulphate concentrations. As a result of the underlying Weald Clay, sulphate levels were elevated with a maximum concentration in groundwater of 174 mg/l and an average across the five groundwater points of 111 mg/l. In the River Adur, the maximum and average concentrations were 70 mg/l and 49 mg/l, respectively. While naturally occurring, these concentrations could pose a risk to concrete structures. Results from exploratory holes in other phases of the Northern Arc Allocation development have shown results as high as 2,940 mg/l.

Ground Gas

5.4.23 Ground gas monitoring occurred in all window samples and rotary core boreholes on the Site on up to three occasions. A summary of results where carbon dioxide exceeds 1.5%, methane exceeds 1%, oxygen drops below 15% or flow rate exceeds 10 l/hr is provided in **Table 5.6**.

Table 5.6:Summary of ground gas results

Location	Date	Gas Concentrations (%)			Flow rate	
		CO_2	CH_4	O_2	Peak	Steady
RC101	06/04/2020	<0.1	<0.1	6.1	7.7	5.7
RC105	24/04/2020	0.2	<0.1	15.4	54.9	0
RC106	24/04/2020	2.2	<0.1	6.1	0	0
RC106	06/05/2020	2.2	<0.1	13.8	0	0
WS107	06/04/2020	2.5	<0.1	10.8	0	0

5.4.24 Ground gas concentrations at the Site were shown to not be of concern.

5.5 ENVIRONMENTAL DESIGN AND MANAGEMENT

5.5.1 The mitigation measures described in the 2018 ES under Environmental Design and Management are still appropriate and will act to reduce the potential risk of encountering unidentified contamination.

5.6 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

5.6.1 With the new information that has been gained through the completion of the ground investigation an updated assessment of the 2018 ES effects has been undertaken made relevant to the design of the Proposed Scheme.

Construction Phase

Effects of Hazardous Material and Ground Contamination – Human Health

5.6.2 Chemical analysis of soil samples obtained from the Proposed Scheme do not show the presence of material harmful to human health. Concentrations of all tested species were below the appropriate screening levels, with a number of hydrocarbons below detection limits. This confirms that the site is greenfield land and a suite for agricultural compounds did not identify any above detection limits. However, it is appreciated that the single test does not necessarily mean that these compounds may not occur in pockets.

5.6.3 Levels of ground gas at the site were negligible.

5.6.4 No Made Ground was found within the additional 50m of road chainage or the proposed locations for the retaining walls or the bridge piers, therefore it is expected that no contamination is present here either.

Effects of Hazardous Material and Ground Contamination – Controlled Waters

5.6.5 Testing of groundwater samples did not indicate widespread contamination. Marginal exceedances against EQS values for copper, nickel and zinc were reported in WS108, however this borehole is located approximately 130m from the River Adur. This distance, coupled with the fact that reported values were total concentration and not bioavailable concentration, suggests a negligible risk to ground and surface waters. Furthermore, copper concentrations appear to be elevated in the region due to the failure against EQS in all four surface water monitoring points.

5.6.6 The Weald Clay is a pyrite bearing deposit. It is known to leach significant dissolved sulphate if it is excavated and left exposed in stockpiles open to rainfall or overland surface flows. In this respect, the River Adur and an unnamed tributary lie at the edges of the Proposed Scheme and these watercourses provide a receptor for any turbid waters with elevated sulphate. It is therefore imperative that the Construction Environmental Management Plan (CEMP) for the Northern Arc Allocation development and the Proposed Scheme is adhered to in terms of low bunding around the proposed temporary stockpile and keeping them away from the edges of watercourses.

Effects of Hazardous Material and Ground Contamination – New Materials and Built Structures, Utilities, and Infrastructure

5.6.7 There is a potential risk to concrete structures from the high levels of sulphate in groundwater due to the underlying Weald Clay. These results are due to natural conditions and concrete structures should be designed to withstand aggressive ground.

Operational Phase

5.6.8 Levels of contamination in soils and waters has been shown to be negligible. Exposure to contaminants as part of the Proposed Scheme would be limited to grassed verges, with the majority of users of the Site not having a clear exposure pathway due to the presence of hardstanding.

5.7 ADDITIONAL MITIGATION AND MONITORING

5.7.1 Elements of the proposed mitigation and monitoring schedule, such as the requirement for a ground investigation, have been completed since the publication of the 2018 ES. No further mitigation or monitoring is required to that which was detailed in the original report.

5.8 UPDATED RESIDUAL EFFECTS

5.8.1 The completion of the ground investigation has allowed for the quantification of risks that were conjectured in the 2018 ES. A summary of the original assessments that have benefited from the increase in baseline data are provided in Table 5.7. This is along with an updated assessment of residual effects after mitigation and significance. It should be noted that the assessment in the 2018

ES refers to the whole Northern Arc Allocation development, whereas the updated assessment is specific to the Proposed Scheme.

Table 5.7: Summary of 2018 findings with updated 2022 conclusions

Description of Effect	Receptors	2018 Initial Classification of Effect	2018 Residual Effect post-mitigation	2022 Updated Residual Effect
Construction Phase				
Effects of hazardous material and ground contamination	Construction workers	Major adverse	Negligible	**Negligible**
	Neighbouring users, occupiers and the general public in proximity of the site	Moderate adverse	Negligible	**Negligible**
	Neighbouring users, occupiers and the general public >100m from the site	Negligible	Negligible	**Negligible**
Disturbance of contaminated Made Ground* and increased water use during demolition and construction works increasing leaching potential	Secondary A aquifers	Moderate adverse	Negligible	**Negligible**
	Surface water	Minor adverse	Negligible	**Negligible**
	Perched groundwater	Minor adverse	Negligible	**Negligible**
Disturbances of contaminated Made Ground* and increased water use during	New materials and built structures, utilities and infrastructure	Moderate adverse	Negligible	**Minor adverse**

construction works increasing leaching				
Operational Phase				
Contact with residual contaminated ground where areas of soft landscaping are proposed	Proposed development end-users	Moderate adverse	Negligible	**Negligible**

*contaminated Made Ground found not to be present since the original assessment so terminology not relevant. Contaminants identified are naturally occurring.

5.9 UPDATED CUMULATIVE EFFECTS ASSESSMENT

5.9.1 No additional cumulative effects are anticipated.

5.10 SUMMARY AND CONCLUSIONS

5.10.1 An updated assessment of ground conditions has been undertaken using additional information that was not available at the time of the original 2018 ES. The completion of a ground investigation has allowed for more definitive conclusions to be drawn concerning the underlying geology and the potential for contamination in the ground beneath the Proposed Scheme.

5.10.2 The risk to human health from the effects of hazardous ground has remained negligible. Testing of soil and groundwater samples has not revealed contaminants to be above screening criteria relevant to the proposed land use. Ground gas has also been shown to not be a concern, with all window samples and rotary core boreholes subjected to up to three rounds of monitoring.

5.10.3 Monitoring of groundwater has shown that the risk to controlled waters is also negligible as long as correct adherence to the CEMP is practiced preventing the leaching and runoff of sulphate. Minor exceedances were reported in WS108, though elevated levels of nickel and copper in surface water monitoring points suggest this may be due to natural occurrence. While leachate testing was not conducted, the low concentrations of contaminants in soils indicate that excessive leaching would not be an issue.

5.10.4 The risk to built structures has increased from the 2018 assessment. High levels of naturally occurring sulphate would present a risk to concrete structures if they were not designed to tolerate aggressive ground conditions.

5.10.5 The effect on the Proposed Scheme end-users is assessed as negligible due to the low levels of contamination.

6 LANDSCAPE AND VISUAL

6.1 INTRODUCTION AND SUMMARY AND CONCLUSIONS OF THE 2018 ES AND 2019 ES ADDENDUM

6.1.1 Both the 2018 ES and the 2019 ES addendum concluded that the Northern Arc Allocation development would have significant effects on county, district and site landscape character areas (LCA) and visual receptors applicable to the Proposed Scheme:

Table 6.1: Significant effects on LCA and visual receptors

Description of Impact	Residual Effect Significance
Landscape Demolition and Construction	
LCA 54: Haywards Heath – Burgess Hill Low Weald Topsoil stripping, alteration to surface landform, presence of construction machinery, reduction in tranquillity and implementation of the Proposed Development and new land uses.	Major adverse
Area A: West End Farm Topsoil stripping, alteration to surface landform, presence of construction machinery, reduction in tranquillity and implementation of the Proposed Development and new land uses.	Moderate adverse
Area B: Stream Valleys Topsoil stripping, alteration to surface landform, presence of construction machinery, reduction in tranquillity and implementation of the Proposed Development and new land uses.	Moderate adverse
Area C: Abbotsford Topsoil stripping, alteration to surface landform, presence of construction machinery, reduction in tranquillity and implementation of the Proposed Development and new land uses.	Major adverse
Landscape Complete and Operational Year 1	

LCA 54: Haywards Heath – Burgess Hill Low Weald Change in land use, new road infrastructure and buildings, balanced with new recreational opportunities and retained vegetation structure.	Moderate adverse
Area A: West End Farm Change in land use, new road infrastructure and buildings, balanced with new recreational opportunities and retained vegetation structure.	Moderate adverse
Area C: Abbotsford Change in land use, new road infrastructure and buildings, balanced with new recreational opportunities and retained vegetation structure.	Moderate adverse
Landscape Complete and Operational Year 15	
LCA 54: Haywards Heath – Burgess Hill Low Weald Continued change in land use, new road infrastructure and buildings, balanced with new recreational opportunities and retained vegetation structure	Moderate adverse
Area A: West End Farm Change in land use, new road infrastructure and buildings, balanced with new recreational opportunities and retained vegetation structure.	Moderate adverse
Area C: Abbotsford Change in land use, new road infrastructure and buildings, balanced with new recreational opportunities and retained vegetation structure.	Moderate adverse

Visual Receptors Demolition and Construction	
8. Recreational users of PRoW (footpath) 98CR Close range views of the construction activity although hoardings would screen the ground level activity. Views of the excavation for the undergrounding of the pylon.	Major Adverse
Visual Receptors Completed and Operational Year 1	
8. Recreational users of PRoW (footpath) 98CR Views of new residential land use with buildings up to 18m in height. The effect is lessened with by the beneficial change resulting from new parkland.	Moderate Adverse
Visual Receptors Completed and Operational Year 15	
There are no significant visual effects at year 15	

6.1.2 Paragraph 9.7.84 of the 2018 ES stated that "*The significant adverse landscape effects would be at a local level, to landscape character areas covering the Site in addition to the inherent change at a Site specific scale*". Paragraph 9.7.85 stated that "*The adverse visual effects would relate to visual receptors at close range to the Site and within the for South Downs National Park (SDNP), where the elevated position of the receptors would enable views across the entire 3km of the Site, and in combination with the duration of the construction phase, represent a notable change from the settled composition of views across the Low Weald*". Paragraph 9.7.90 stated "*However, the extent of new planting outlined in the Design Guide, in combination with the retention of vegetation across the Site, would enable the Proposed Development to be visually integrated within the landscape and receptor's views. As such, there would be no significant adverse visual effects at year 15 due to the vegetation being in leaf and the Proposed Development being seen in the context of Burgess Hill's settlement pattern.*"

6.1.3 This chapter provides an update on the landscape and visual matters specific to the Proposed Scheme since the publication of the 2018 ES and 219 ES Addendum.

6.2 LEGISLATION AND PLANNING POLICY REVIEW

6.2.1 A review of the changes to the legislative framework and planning policy, in respect of landscape and visual matters, since the 2018 ES has been conducted. No changes to legislation have occurred.

6.2.2 However, since the 2018 ES and the 2019 ES Addendum, the National Planning Policy Framework has been updated, most recently in December 2024. Paragraphs considered to be relevant to landscape and visual matters include:

6.2.3 Para 77. "*The supply of large numbers of new homes can often be best achieved through planning for larger scale development, such as new settlements or significant extensions to existing villages and towns, provided they are well located and designed, and supported by the necessary infrastructure and facilities*…"

6.2.4 Para 96. "*Planning policies and decisions should aim to achieve healthy, inclusive and safe places…"*

6.2.5 Para 103. "*Access to a network of high-quality open spaces and opportunities for sport and physical activity is important for the health and well-being of communities and can deliver wider benefits for nature and support efforts to address climate change.*"

6.2.6 Para 105. "*Planning policies and decisions should protect and enhance public rights of way and access, including taking opportunities to provide better facilities for users, for example by adding links to existing rights of way networks including National Trails*."

6.2.7 Para 125. "*Planning policies and decisions should: (a) encourage multiple benefits from both urban and rural land, including through mixed use schemes and taking opportunities to achieve net environmental gains – such as developments that would enable new habitat creation or improve public access to the countryside; (b) recognise that some undeveloped land can perform many functions, such as for wildlife, recreation, flood risk mitigation, cooling/shading, carbon storage or food production*;…"….

6.2.8 Para 135. "*Planning policies and decisions should ensure that developments: (a) will function well and add to the overall quality of the area,…; (b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping; (c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities); (d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit; …; and (f) create places that are safe, inclusive and accessible and which promote health and well-being, with a high standard of amenity for existing and future users…"*

6.2.9 Para 136. "*Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users*."

6.2.10 Para 139. "*Development that is not well designed should be refused, especially where it fails to reflect local design policies and government guidance on design, taking into account any local design guidance and supplementary planning documents which use visual tools such as design guides and codes. Conversely, significant weight should be given to: (a) development which reflects local design policies and government guidance on design, taking into account any local design*

guidance and supplementary planning documents which use visual tools such as design guides and codes; and/or (b) outstanding or innovative designs which promote high levels of sustainability, or help raise the standard of design more generally in an area, so long as they fit in with the overall form and layout of their surroundings.

6.2.11 Para 187. "*Planning policies and decisions should contribute to and enhance the natural and local environment by: (a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); (b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;…*"

6.2.12 Para 188. "*Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries*."

6.2.13 Para 189. "*Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty which have the highest status of protection in relation to these issues. … development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.*"

6.2.14 Para 193. "*When determining planning applications, local planning authorities should apply the following principles: (c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and (d) ….opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate*."

6.2.15 Para 198. "*Planning policies and decisions should also ensure that new development is appropriate for its location… In doing so they should: …(b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason; and (c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.*"

6.2.16 The Mid Sussex Development Plan 2014-2031 (adopted 2018) is currently under review. The Site Allocations Plan (adopted 2022) does not form part of the review, however, site allocations are indicated on updated Adopted Policies Maps. These include Map 7: Burgess Hill (June 2022)[3] and Inset Map 7b: Burgess Hill (June 2022)[4] which indicate policies relating to the Northern Arc

[3] Map 7: Burgess Hill (June 2022) Mid Sussex District Council, available from burgesshill_a2_landscape_narrow_mainmap.pdf (midsussex.gov.uk)

[4] Map 7b: Burgess Hill (June 2022) Mid Sussex District Council, available from burgesshill_a3_landscape_narrow_science-and-technology-park.pdf (midsussex.gov.uk)

proposed development including: DP9 Strategic Allocation to the north and northwest of Burgess Hill, DP24 Leisure and Cultural Facilities and Activities, DP41 Flood Zone, DP12 Protection and Enhancement of Countryside (to the northern edge of the Northern Arc development).

6.2.17 The 2019 ES addendum noted changes to planning policy since the 2018 ES that were of particular relevance but were not considered to change the findings of the LVIA as set out in Chapter 9: Landscape and Visual of the 2018 ES.

6.2.18 On 18th October 2022, a draft revised District Plan was considered by the Council's Scrutiny Committee for Planning, Economic Growth and Net Zero[5]. The draft revised District Plan includes major updates of relevant adopted policies:

- DP1 Sustainable Economic Development, to reflect additional requirements set out in the revised NPPF (July 2021) and to update employment figures, economic forecasts and further allocations, and,
- DP38 Biodiversity, to account for the Government's current guidance on Biodiversity Net Gain.

6.2.19 In addition, the draft revised District Plan[6] includes minor updates for clarity and references of relevant adopted policies:

- DP12 Protection and Enhancement of Countryside;
- DP26 Character and Design;
- DP29 Noise, Air and Light Pollution; and,
- DP37 Trees, Woodland and Hedgerows.

6.2.20 Draft revised policies include:

- DPS1 Climate Change
- DPS2: Sustainable Design and Construction
- DPN1: Biodiversity, Geodiversity and Nature Recovery:
- DPN2: Biodiversity Net Gain
- DPC1: Protection and Enhancement of the Countryside
- DPB1: Character and Design
- DPN6: Pollution
- DPN7: Noise Impacts
- DPN8: Light Impacts and Dark Skies
- DPN9: Air Quality
- DPN4: Trees, Woodland and Hedgerows

[5] Agenda for Scrutiny Committee for Planning, Economic Growth and Net Zero on Tuesday, 18th October, 2022, 7.00 pm - Mid Sussex District Council (moderngov.co.uk)

[6] Draft revised Mid Sussex District Plan policies can be read in full at Appendix 1 Draft District Plan.pdf (moderngov.co.uk)

6.3 ASSESSMENT METHODOLOGY REVIEW

6.3.1 The methodology for assessing the landscape and visual effects of the Proposed Scheme has not changed[7].

6.3.2 No additional information sources have been consulted in the preparation of this chapter.

6.3.3 The study area identified in the 2018 ES, i.e. the landscape and visual conditions at the time of writing the assessment, was the physical footprint of the proposed development and a varying extent of the wider landscape, up to 7.5km from the Site. This remains unchanged.

6.3.4 In line with the GLVIA 3, the sensitivity of landscape and visual receptors was determined by an assessment of their value and susceptibility. No changes to this guidance are noted.

6.3.5 The methodology for determining impacts during the demolition and construction phases assumed a worst-case scenario which may occur across all phases during the indicative 2020-2033 construction periods. This included the Proposed Scheme and thus this methodology has not changed.

6.3.6 The methodology for determining impacts during the operational phase, a single assessment scenario assuming all phases are built out and occupied and assessed at two points in time (2034 (Year 1) in winter and 2048 (Year 15) in summer) remains unchanged.

6.3.7 The significance of the landscape and visual effects of the Proposed Scheme was established through the combination of the sensitivity of the receptor and the magnitude of impact.

6.3.8 In assessing the significance of effects, and in accordance with Chapter 2: EIA Methodology of the 2018 ES, the following criteria were applied:

‘Moderate’ or ‘major’ are deemed to be ‘significant’;
‘Minor’ are considered to be ‘not significant’, although they may be a matter of local concern; and
‘Negligible’ or ‘Neutral’ effects are considered to be ‘not significant’.

6.3.9 A BS5837 tree survey for Phase 1 and Phase 2 of the route was completed by Ecus Ltd in November 2021[8]. This was followed by an ecology walkover survey in 2022. which identified trees that have bat roost potential[9] . As tree surveys generally have a validity of 12 months, a refreshed BS5837 tree survey will be required to supplement the tree data provided as part of the outline planning application (OPA).

[7] The Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA 3), 2013; and Landscape Institute Advice Note 01/11 Photography and Photomontage in Landscape and Visual Impact Assessment.
[8] Ecus Ltd (Nov 2021) 18043 Western Link Bridge Road, Burgess Hill BS 5837:2012 Tree Survey V1.0 November 2021.

[9] WSP Ecology Technical Note: WBLR Phase 2 Site Walkover – Ecology 28-09-2022 CONFIDENTIAL

6.4 UPDATED BASELINE CONDITIONS

6.4.1 The tree survey 18043V1.0 (Nov 2021) updated the 2018 baseline. A refreshed BS5837 tree survey will update this further. If this identifies changes to the baseline, the assessment will require further review. Otherwise there have been no changes to baseline since the 2018 ES.

6.5 ENVIRONMENTAL DESIGN AND MANAGEMENT

6.5.1 Key changes to the Proposed Scheme from 2021 includes the installation of retaining walls on three of the bridge approaches to reduce the footprint of the highway and enable:

- the adjacent plots to be developed closer to the carriageway, and,
- an increase in the offset of the 15m development exclusion buffer around the Six Acre Shaw Ancient Woodland to the north.

6.5.2 The bridge now falls from left to right and is approximately 1m lower on the eastern end. The alignment extends 50m further beyond the extent of this section of route in order to show how it ties into the next phase. This section ends at Ch460.

6.5.3 The southern footpath is being widened to 3m, together with localised amendments to the red line site boundary to accommodate this and associated repositioning of the landscape mitigation measures. The extent and width of the proposed landscape mitigation measures are unaffected by this change.

6.5.4 The positions of lighting, road junctions and bus stops constrain the opportunities for avenue trees along this section of road. As such, the number of avenue trees has been reduced slightly, however, the design seeks to maximise the number of avenue trees which can be accommodated along this section.

6.5.5 Underground rainwater storage tanks positioning provides an opportunity to create a new public open space along the Green Super Highway route through the Northern Arc.

6.5.6 The potential widening of the nearby Green Super Highway path from 3m to a 5m width combined cyclepath and pedestrian footpath is currently being considered.

6.6 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

6.6.1 The addition of the retaining walls mentioned in paragraph 6.5.1, are anticipated to have negligible landscape and visual impacts. This is because of their relatively small size and the absence of visual receptors such as roads, footpaths and dwellings in the area. The proposed retaining walls will reduce the footprint of the bridge and its approaches in the landscape, with associated avoidance and reduction of effects on the Six Acre Shaw Ancient Woodland and the Jane Murray Way Shaw Ancient Woodland. In addition, the design of the retaining walls includes for planting of the structures to soften their appearance.

6.6.2 The change in fall of the bridge, with the eastern end 1m lower than the western end, will be in harmony with the contours of the landscape. With the widening of the southern footpath, the change in fall of the bridge is not anticipated to have any additional landscape or visual effects.

6.6.3 The underground storage tanks will be located outside the 15m construction exclusion zone of the Ancient woodlands. Being underground, these tanks are not anticipated to have any additional landscape and visual effects. (No additional landscape and visual impacts and effects as a result of the Proposed Scheme are anticipated).

6.6.4 The widening of the Green Super Highway from 3m to 5m is not anticipated to have additional landscape and visual effects. The Street Design Manual indicates that in the vicinity of trees, it will have a no dig construction which will reduce its impact on underlying soils and on root protection areas. The route will follow a ribbon of green infrastructure through the Northern Arc.

6.7 ADDITIONAL MITIGATION AND MONITORING

6.7.1 CEMP mitigation and monitoring related to the bridge construction and compound and crane site. No-dig technical solutions shall be used for temporary and permanent works and access within the 15m buffer strip and 10m buffer area beyond that.

6.7.2 The retaining walls will be planted to soften their appearance and provide aesthetic and environmental amenity and micro-habitat potential for invertebrates. No additional mitigation and monitoring measures are proposed that are over-and-above the environmental design and management measures described previously in the 2018 ES.

6.7.3 Where the green superhighway encroaches into the 15m + 10m buffer of the Ancient woodland, mitigation measures will include construction as no-dig solutions as recommended in the Street Design Manual.

6.7.4 The positioning, excavation and earthworks associated with the underground storage tanks and Green Super Highway will be outside the 15m buffer that surrounds the Ancient Woodland. The use of no-dig protection surfaces during construction works will avoid and minimise damage and compaction of underlying soils within the 25m buffer area surrounding the Ancient Woodlands.

6.7.5 It is anticipated that an Ecological Clerk of Works will provide onsite monitoring of works during demolition, site preparation and construction works. There are no additional landscape mitigation measures required as a result of the Proposed Scheme during demolition and construction.

6.7.6 The refreshed BS5837 tree survey (Nov 2021) will be used to better understand the effects of clearance and demolition. As the review and update of the 2021 tree survey has not yet been undertaken, the assessment will require further review once this has been completed.

6.8 UPDATED RESIDUAL EFFECTS AND CONCLUSIONS

6.8.1 There are no changes to or additional residual effects as a result of the Proposed Scheme.

6.9 UPDATED CUMULATIVE EFFECTS ASSESSMENT

6.9.1 There are no changes to or additional cumulative effects as a result of the Proposed Scheme.

6.10 SUMMARY AND CONCLUSIONS

6.10.1 Legislation in relation to landscape and visual impacts have remained unchanged since the submission of the 2018 ES. There have been changes in national and district planning policies since the 2018 ES was submitted but not in relation to landscape and visual impacts. The assessment methodologies are also unchanged.

6.10.2 Other than the addition of scheduling four trees at the southern end of the Proposed Scheme, there have been no changes to the baseline since submission of the 2018 ES.

6.10.3 The introduction of the retaining walls will have a negligible impact to the recreational users of 98CR, dwellings at the north-west edge of Burgess Hill, motorists using the A2300 and St Paul's Catholic College. However, no additional significant changes to the environmental design and management of the Proposed Scheme are anticipated.

6.10.4 Other than the above-mentioned need for a tree survey no additional mitigation and monitoring is proposed.

6.10.5 The 2019 ES Addendum demonstrates that the Northern Arc Allocation development changes are not significant, and that the significance of the impacts of the Proposed Scheme and conclusions presented in the 2018 ES remain unchanged.

7 CULTURAL HERITAGE

7.1 INTRODUCTION AND SUMMARY AND CONCLUSIONS OF THE 2018 ES AND 2019 ES ADDENDUM

7.1.1 Chapter 10 of the 2018 Environment Statement (ES)[10] comprised an assessment of the potential effects of the Northern Arc Allocation development on cultural heritage – i.e. archaeology and built heritage. This chapter has been informed by recent searches of data repositories and a geophysical survey undertaken in the Site boundary in 2019. Taking this into account, along with details relating to the Proposed Scheme, an updated assessment of impacts and effects on cultural heritage is provided.

7.1.2 Chapter 10 of the 2018 ES concluded that significant effects on cultural heritage in the worst-case scenario would derive from:

- Topsoil stripping and localised regrading to create level development platforms for structures, road and landscaping within Timeslice 1, 2 and 4;
- Excavation of services trenches within Timeslice 2 and 4;
- Installation of ground slabs and supporting beams within Timeslice 2 and 4;
- Bulk excavation of basements within Timeslice 2,4 and 5; and
- Demolition of buildings and grubbing out of foundations within Timeslice 2.

7.1.3 Non-significant effects would derive from:

- Excavation of services trenches within Timeslice 5 and 6;
- Installation of ground slabs and supporting beams within Timeslice 5 and 6;
- Demolition of buildings and grubbing out of foundations within Timeslice 5;
- Topsoil stripping and localised regrading to create level development platforms for structures, road and landscaping within Timeslice 2, 5 and 6;
- Installation of piles to support construction of the north eastern bridge over the River Adur and the construction of roads and footbridges within Timeslice 1, 2 and 4; and
- Topsoil stripping as part of enabling works within Timeslice 1, 2, 4, 5 and 6.

7.1.4 Due to the long construction period involved in the Northern Arc Allocation development, the 2018 ES referred to Timeslices, as outlined above. These relate to various phases of construction and were defined across the programme of works to inform the impact assessment. Each Timeslice represents a point in time when multiple works (and in several cases, occupation) is to occur across the Northern Arc Allocation development. The Timeslices are based upon the phasing of development in order to appropriate assess impacts throughout the lifecycle of development. Timeslice methodology is outlined in Chapter 2 of the 2018 ES.

7.1.5 This chapter considers cultural heritage in relation to the Proposed Scheme, which is located in Timeslice 1 of the 2018 ES, reflecting alterations to the assessment since the 2018 ES. Where the

[10] AECOM. (2018a). Northern Arc Allocation Planning Application, Burgess Hill, Environmental Statement Chapter 10: Cultural Heritage.

assessment has not changed, it is referenced as such within this chapter. This chapter should therefore be read in conjunction with Chapter 10 of the 2018 ES.

7.1.6 For simplicity, the additional following terms are utilised in this chapter:

- Study Area – radius surrounding the Site boundary;
- Northern Arc Allocation development – a 500m (for non-designated heritage assets) and 1km (for designated heritage assets) radius surrounding the Northern Arc Allocation development site.

7.2 LEGISLATION AND PLANNING POLICY REVIEW

7.2.1 The following section sets out any relevant changes to the legislative framework and planning policy with regards to cultural heritage since the 2018 ES. Whilst there have been updates, there have been no significant changes to the underpinning legislation.

National Planning Policy Framework

7.2.2 The revision of National Planning Policy Framework (NPPF) in July 2021[11] moved the Achieving sustainable development now forms part of Section 2 of the NPPF entitled 'Achieving Sustainable Development.' The policy relating to cultural heritage is outlined in Section 16 of the NPPF entitled 'Conserving and Enhancing the Historic Environment'. Paragraphs relevant to this chapter comprise 203, 207, 210-213, 203 and 205 summarised below:

- Applicants are required to provide proportionate information on the significance of designated and non-designated heritage assets affected by the proposals and an impact assessment of the proposed development on that significance. This should be in the form of a desk-based assessment and, where necessary, a field evaluation (NPPF, 207);
- Local Planning Authorities are required to take into account the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation; the wider social, cultural, economic and environmental benefits that conservation of the historic environment can bring; the desirability of new development making a positive contribution to local character and distinctiveness; and opportunities to draw on the contribution made by the historic environment to the character of a place (NPPF, 203/210);
- In determining planning applications, great weight should be given to the conservation of designated heritage assets - World Heritage Sites, Scheduled Monuments, Listed Buildings, Protected Wreck Sites, Registered Parks and Gardens, Registered Battlefields or Conservation Areas designated under the relevant legislation (NPPF, 212/213);
- In weighing applications that affect directly or indirectly the significance of a non-designated heritage asset, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset (NPPF, 216); and

[11] Ministry of Housing, Communities and Local Government, 2024. National Planning Policy Framework (NPPF).

- Local Planning Authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their significance and the impact, and to make this evidence publicly accessible and any archives deposited with a local museum or other public depository (NPPF, 218).

7.2.3 These policies are relevant to this chapter as they have informed the scope and methodology utilised and consequently ensure that the information provided meets the planning policy requirements.

National Planning Practice Guidance

7.2.4 National Planning Practice Guidance (PPG) has also been updated since 2018 with the latest revision in December 2024[12]. The overarching aim of the planning guidance, i.e. to make planning guidance more accessible and ensure it is kept up to date, has not changed and the paragraphs relevance to this cultural heritage assessment include 006 to 009, 013, 016, 018 and 020. These are summarised below:

- Paragraph 006 and 007 relates to decision-making in the historic environment and outlines the definition for heritage significance, i.e. the value of a heritage asset, and why it is important in decision-making. Understanding and assessing the significance, and setting, of a heritage asset is important to understanding the potential impact and acceptability of development proposals. These paragraphs are therefore relevant to understanding the impact of WBLR on both designated and non-designated heritage assets;
- Paragraph 008 sets out how understanding the significance of a heritage asset from an early stage can held to inform the development of proposals which avoid or minimise harm. This is relevant as it contributes to the discussion of mitigation for archaeological remains;
- Paragraph 009 outlines the level of assessment required for assessing the impact of development and this, along with the NPPF, has informed the methodology and level of information provided of this chapter;
- Paragraph 013 provides guidance on the definition of the setting of a heritage asset and how to appropriately assess; this has informed the methodology employed in this chapter; and
- Paragraph 016 relates to optimum viable use of an asset and how this should be taken into account when assessing the public benefits of a development and paragraph 020 defines what is meant by the term public benefits.
- Similar to several of the previous paragraphs, paragraph 018 outlines how harm to a heritage asset can be assessed and this has informed the scope and methodology employed in this chapter.

[12] Ministry of Housing, Communities and Local Government, 2024. Planning Practice Guidance – Historic Environment.

Regional and Local Planning Policy and Guidance

7.2.5 The regional and local planning policies outlined in the 2018 ES are unchanged and remain relevant to this chapter.

7.2.6 The Mid Sussex District Plan (adopted 2018) is currently under review. A draft District Plan 2021-2039 has been published for public consultation. Draft revision policies include:

- DPN4: Trees, Woodland and Hedgerows;
- DPB2: Listed Buildings and Other Heritage Assets; and
- DPB3: Conservation Areas.

7.3 ASSESSMENT METHODOLOGY REVIEW

Guidance

7.3.1 The 2018 ES refers to Historic England's Good Practice Advice (GPA) in Planning Notes[13]. These address plan-making and decision-taking and other issues which are important in good decision-making when proposals affect heritage assets.

7.3.2 Changes to these documents include an update to the 2015 GPA3, 'The Setting of Heritage Assets', with a second edition published in 2017[14]. Although the explanation provided in the 2018 ES relating to this document remains relevant, the GPA document has been formatted differently and split into two parts. GPA3 second edition Part 1 is entitled 'Settings and Views' and Part 2 provides a staged approach to proportionate decision-taking.

7.3.3 Additional best practice guidance notes and standards relevant to the historic environment, and consulted in the production of this chapter include:

- Department for Digital, Culture, Media and Sport Principles of Selection for Scheduled Monuments (2013)[15] and Listed Buildings (2018)[16];
- Chartered Institute for Archaeologists (CIfA) Code of Conduct (2019)[17] and Standards and Guidance documents (2020)[18];

[13] Historic England, 2021. The Planning System. Available online at: https://historicengland.org.uk/advice/planning/planning-system/
[14] Historic England, 2017a. Historic Environment Good Practice Advice in Planning Note 3 – The Setting of Heritage Assets. Available online at: https://historicengland.org.uk/advice/planning/planning-system.
[15] Department for Digital, Culture, Media and Sport, 2013. Scheduled Monuments & nationally important but non-scheduled monuments. Available online at: https://www.gov.uk/government/publications/scheduled-monuments-policy-statement.
[16] Department for Digital, Culture, Media and Sport, 2018. Principles of Selection for Listed Buildings. Available online at: https://www.gov.uk/government/publications/principles-of-selection-for-listing-buildings.
[17] Chartered Institute for Archaeologists (CIfA), 2019. Code of Conduct. Available online at: https://www.archaeologists.net/codes/cifa
[18] Chartered Institute for Archaeologists (CIfA), 2020. Standard and Guidance for historic environment desk-based assessment. Available online at: https://www.archaeologists.net/codes/cifa.

- Historic England Historic Environment Advice Note 12 Statements of Heritage Significance: Analysing Significance in Heritage Assets (2019)[19];
- Historic England's Understanding Place – Historic Area Assessments (2017b)[20];
- Historic England's Historic Environment Good Practice Advice in Planning Note 121 – The Historic Environment in Local Plans (2015a)[22];
- Design Manual for Roads and Bridges (DMRB) – Sustainability and Environment sets out how assessments should be completed. LA104 Environmental Assessment and Monitoring[23] and LA106 Cultural Heritage Assessment is of particular relevance for this chapter (2020a-b)[24]; and
- The South-East Research Framework (SERF)[25].

Assessment Methodology

Methodology for Determining Baseline Conditions and Sensitive Receptors

7.3.4 The assessment methodology outlined in Chapter 10 of the 2018 ES was utilised for the purposes of this assessment.

Study Area

7.3.5 A 500m study area from the Site boundary was defined for the assessment of non-designated heritage assets. This was extended to 1km for designated heritage assets.

Baseline Aims and Objectives

7.3.6 The aim of the baseline provided in this chapter does not differ from that provided in Chapter 10 of the 2018 ES. Both intend to establish the existing conditions of cultural heritage assets within the Site and its adjacent study area in order to identify sensitive receptors.

[19] Historic England, 2019. Statements of Heritage Significance: Analysing Significance in Heritage Assets. Available at: https://historicengland.org.uk/images-books/publications/statements-heritage-significance-advice-note-12/
[20] Historic England. (2017b). Understanding Place: Historic Area Assessments. Available online at: https://historicengland.org.uk/images-books/publications/understanding-place-historic-area-assessments.
[21] Historic England, 2015a. Historic Environment Good Practice Advice in Planning Note 1 – The Historic Environment in Local Plans. Available online at: https://historicengland.org.uk/advice/planning/planning-system/.
[22] Historic England, 2015a. Historic Environment Good Practice Advice in Planning Note 1 – The Historic Environment in Local Plans. Available online at: https://historicengland.org.uk/advice/planning/planning-system/.
[23] Design Manual for Roads and Bridges (DMRB), 2020b. LA104 Environment Assessment and Monitoring.
[24] Design Manual for Roads and Bridges (DMRB), 2020b. LA106 Cultural Heritage Assessment. Available at: https://www.standardsforhighways.co.uk/dmrb/search?discipline=SUSTAINABILITY_AND_ENVIRONMENT
[25] Kent County Council, 2021. South East Research Framework. Available online at: https://www.kent.gov.uk/leisure-and-community/history-and-heritage/south-east-research-framework.

7.3.7 The baseline involves the following resources:

- Archaeology - buried and visible monuments, features and findspots of heritage importance including Scheduled Monuments;
- Built heritage - standing buildings and structures of heritage importance, including listed buildings and conservation areas; and
- Historic landscapes.

Data Sources

7.3.8 Chapter 10 of the 2018 ES informed this baseline.

7.3.9 In November 2022, a revised data search of West Sussex Historic Environment Record (WSHER)[26] and the National Heritage List for England (NHLE) was undertaken for the study area. This was undertaken to determine if there had been any additional entries/discoveries in the study area that may alter the assessment of the 2018 ES. LiDAR data, aerial photographs and historic mapping was revisited to check accuracy and inform the baseline for the study area. Aerial photographs and historic mapping (Tithe and Ordnance Survey (OS) mapping) was utilised where available online. This data has not been reproduced as part of this chapter.

7.3.10 In addition to the 2018 ES, a Heritage Statement was produced by The Environmental Partnership (TEP) in March 2020[27] to accompany the Reserved Matters Planning Application (App ref. DM/20/0254) for Phase 1 of the WBLR. The results of this assessment have also informed the baseline provided in this chapter.

7.3.11 A geophysical survey was also undertaken by Magnitude Surveys in 2019, which encompassed part of land within the Site boundary. The results are discussed in further detail in Section 7.4.15-7.4.16

Methodology for Determining Demolition and Construction Effects

7.3.12 The methodology used for determining demolition and construction effects on cultural heritage is assessed in accordance with the methodology and criteria described in paragraphs 10.4.10 to 10.4.11 of the 2018 ES. Timeslices relevant to the Proposed Scheme comprise Timeslice 1.

7.3.13 The methodology used is also undertaken in accordance with LA106 Cultural heritage assessment[28] as well as the guidance listed in this chapter. This document sets out the requirements for assessing and reporting on the effects of cultural heritage assets as part of the assessment process of

[26] West Sussex County Council, 2012). Planning. Available online at: https://www.westsussex.gov.uk/planning/.
[27] The Environment Partnership. Western Bridge and Link Road – Phase 1, Burgess Hill, Heritage Statement. Document ref. 7882.01.001.
[28] Design Manual for Roads and Bridges (DMRB), 2020a. Sustainability & Environment Appraisal – LA106 Cultural Heritage Assessment.

construction, operation and maintenance projects. It has therefore informed the scope and methodology assessment for determining demolition and construction effects.

Methodology for Determining Operational Effects

7.3.14 The methodology used for determining operational effects on cultural heritage is assessed in accordance with the methodology and criteria described in paragraphs 10.4.13 to 10.4.14 of the 2018 ES.

7.3.15 The methodology used is also undertaken in accordance with LA106 Cultural Heritage Assessment[29] as well as the guidance listed in this chapter. This document has informed the scope and methodology assessment for determining operational effects.

Value of Heritage Assets

7.3.16 To determine the value (significance) of heritage assets and subsequently the magnitude of impact and the effect arising as a result of the Proposed Scheme, the assessment was undertaken in accordance with the methodology and criteria described in paragraph 10.4.16 to 10.4.22 of the 2018 ES.

Residual Effects

7.3.17 In determining the assessment of residual effects, the assessment was undertaken in accordance with paragraph 10.4.23 of the 2018 ES.

Limitations and Assumptions

7.3.18 This chapter is compiled using secondary information derived from a variety of sources, only some of which will have been directly examined. The assumption is made that this data as well as that derived from other secondary sources, is reasonably accurate. In addition, the records held by the WSHER will represent a record of a wide range of information derived from historical sources and previous archaeological discoveries. It does not preclude the subsequent discovery of further elements of the historic environment that are, at present, unknown.

7.3.19 Archival material relating to the Site and study area was consulted using online sources. Whilst there may be other material held in private collections, local repositories and the National Archives, it was not possible to view these as part of this chapter.

7.3.20 Online aerial photography was used as part of this chapter.

[29] Design Manual for Roads and Bridges (DMRB), 2020b. LA106 Cultural Heritage Assessment. Available at: https://www.standardsforhighways.co.uk/dmrb/search?discipline=SUSTAINABILITY_AND_ENVIRONMENT

7.3.21 No site visit has been undertaken as part of this assessment.

7.4 UPDATED BASELINE CONDITIONS

7.4.1 A full historic and archaeological background is presented within the 'Northern Arc Allocation Planning Application Cultural Heritage Desk-Based Assessment'[30]. This forms Appendix 10.1 of the 2018 ES.

7.4.2 An updated baseline focusing on heritage assets relevant to the Proposed Scheme is outlined below. Accompanying gazetteers are provided as Table 7.1 to 7.3.

7.4.3 Figures provided in Appendix B in support of the description of baseline conditions comprise:

- Figure 7.1: Designated Heritage Assets within the 1km study area;
- Figure 7.2: Non-Designated Heritage Assets within the 500m study area;
- Figure 7.3: Previous Archaeological Investigations of Interest; and
- Figure 7.4: Historic Landscape Characterisation (HLC) within the Site boundary.

Whilst all data records, both designated and non-designated, located within the study area have been included to provide an updated baseline, those cultural heritage assets which were not identified within the 2018 ES and are additional receptors to the Proposed Scheme are marked by a * under description in Table 7.1 to 7.2 below. Additional previous archaeological investigations undertaken since the 2018 ES which have informed understanding about the archaeological potential of the Proposed Scheme are also marked by a * in Table 7.3.

Table 7.1: Listed buildings.

HE ref.	Description	Designation	Easting	Northing
1025667	The Sportsman Inn	Grade II listed building*	528507	120153
1025737	Bridge Farm	Grade II listed building	530165	121195
1193705	Paynes Place	Grade II listed building	529693	121310
1285466	Grasmere	Grade II listed building	529598	119390
1354756	The Woolpack Public House	Grade II listed building	530181	119903

Table 7.2: Non-Designated heritage assets.

[30] AECOM, 2018b. Northern Arc Allocation Planning Application Cultural Heritage Desk-Based Assessment. Job ref. 60578790

NDHA ref.	Period	Description	WSHER ref.	Easting	Northing
NDHA1	Multi-period	Goddards Green Solar, Hurstpierpoint and Sayers Common - Archaeological Investigations: evidence of prehistoric, Roman, medieval and post-medieval activity.	MWS13504	529021	121168
NDHA2	Multi-period	West End Farm, Burgess Hill - Watching Brief: finds comprising flintwork and pottery of prehistoric, medieval and post-medieval origin	MWS6705	529700	120300
NDHA3	Post-medieval	Flood's Barn Historic Outfarm, Hurstpierpoint and Sayers Common	MWS10584	529235	120367
NDHA4	Post-medieval	Site of Lower Barn Historic Outfarm, Hurstpierpoint and Sayers Common	MWS12185	529011	120531
NDHA5	Post-medieval	Site of Historic Outfarm South East of Pain's Place, Ansty and Staplefield	MWS13146	529935	120883
NDHA6	Post-medieval	Gatehouse Farm Historic Farmstead, Hurstpierpoint and Sayers Common	MWS10745	529087	119937
NDHA7	Post-medieval	Bridge	No WSHER ref. as identified as part of the 2018 ES from historic maps.	529566	120634

Table 7.3: Archaeological events.

Period	Description	WSHER ref.	Easting	Northing
Desk-Based Assessment	Land at Northern Arc Burges Hill - Desk Based Assessment	EWS1588	530398	120724

Desk-Based Assessment	Goddard's Green, Hurstpierpoint and Sayers Common - Desk Based Assessment	EWS1778	528775	120339
Desk-Based Assessment	St. Paul's Catholic College Playing Fields, Cuckfield Rural	EWS1099	529818	120391
Geophysical Survey	Western Bridge and Link Road, Burgess Hill - Geophysical Survey*	EWS2010 MWS15087	529405	120386
Watching Brief	Goddards Green Water Treatment Works, Hurstpierpoint and Sayers Common - Watching Brief	EWS1972	528920	120679
Evaluation	Western Bridge and Link Road, Burgess Hill – Evaluation*	EWS2034 MWS15146	529341	120084
Geophysical Survey and Phase 3 Evaluation	Land at Goddard's Green, Hurstpierpoint and Sayers Common	EWS2099	528771	120350

Designated Heritage Assets

7.4.4 No designated heritage assets are located within the Site boundary or within the 500m study area.

7.4.5 Five Grade II listed buildings are located within the extended 1km study area. As outlined above, the only additional receptor not identified within the 2018 ES comprises The Sportsman Inn (NHLE: 1025667). All designated heritage assets were reassessed in line with sector guidance as part of the Proposed Scheme and a summary of their setting is provided below:

- Paynes Place: an L-shaped house dating from the 16th and 17th century, 640m to the north-east of the Site boundary (NHLE: 1193705). The setting of this listed building derives from its immediate surroundings including its gardens and outbuildings and the wider agricultural context although this has been subject to a degree of change with the presence of modern industrial buildings and activity to the north. Historically this building formed part of a larger building built in the sixteenth century although subsequent changes and alterations have resulted in the building's present character and appearance today;
- Bridge Farm: a restored seventeenth century or earlier building, 770m to the north-east of the Site boundary (NHLE: 1025737). The setting of this listed building is formed by its immediate surroundings including extensive grounds which are surrounded by mature trees and vegetation restricting visibility both to and from this asset. Its setting also incorporates several agricultural buildings in the immediate vicinity with which the building holds a historic relationship;
- The Woolpack Public House: a former 17th century house extended in the 18th and 20th centuries, now used as a public house 900m to the south-east of the Site boundary (NHLE: 1354756). This listed building is located in a modern development to the north-west of the historic core of Burgess Hill. Historically, its setting was derived from its rural location on the

edge of St. John's Common; this has since been eroded by late twentieth century settlement expansion in the area. It now encloses the asset to the north, east and west;

- Grasmere: a 17th century or earlier building, 1km to the south-east of the Site boundary (NHLE: 1285466). The setting of this listed building is formed by its immediate surroundings including the remains of the former farmyard. The growth and expansion of settlement has resulted in the presence of modern development to the north, south and west of this asset; and
- The Sportsman Inn: an early 19th century public house, 890m to the south-west of the Site boundary (NHLE: 1025667). The setting of this listed building is formed by its immediate grounds including gardens and a car park to the rear and its position set back from the road junction. Its immediate environment to the north and northeast has been subject to later residential and industrial/commercial development.

Archaeological and Historical Overview

Prehistoric and Romano-British

7.4.6 Archaeological investigations undertaken by Cotswold Archaeology in 2017, 530m north-west of the Site boundary, recorded evidence of prehistoric (late Iron Age) and Romano-British activity interpreted to represent an area of domestic and/or industrial activity (Figure 7.2, **NDHA1**). Although located outside of the 500m study area, these remains have been included within this baseline as they represent a possible Romano-British farmstead/settlement of which there are few examples in this area[31].

7.4.7 Within the 500m study area, lithic scatters were recorded during an archaeological watching brief 280m south-east of the Site boundary (Figure 7.2, **NDHA2**; Figure 7.3, **EWS1099**). These were of Mesolithic and later Neolithic/Bronze Age date.

Early medieval and Medieval

7.4.8 Evidence of early medieval and medieval activity is sparse and limited to the discovery of medieval pottery fragments. These were recorded during the archaeological watching brief 280m south-east of the Site boundary (Figure 7.2, **NDHA2**).

7.4.9 The archaeological investigations undertaken by Cotswold Archaeology in 2017, 530m north-west of the Site boundary recorded evidence of industrial activity (Figure 7.2, **NDHA1**). Environmental

[31] Cotswold Archaeology, 2017. Goddards' Green Solar, Burgess Hill, West Sussex. Archaeological Strip, Map and Sample Excavation. Report ref. 17047.

samples recorded during these investigations, alongside documentary evidence, has led to the interpretation that this area may have historically been associated with lye production.

7.4.10 The Sussex HLC has defined the area within the Site boundary to comprise an agricultural fieldscape that emerged sometime in the medieval period. No evidence of medieval settlement or dispersed farmsteads has been recorded within the Site boundary.

Post-medieval

7.4.11 Post-medieval evidence within the Site boundary comprises the remains of a post-medieval footbridge crossing the River Adur recorded from historic mapping (**NDHA7**).

7.4.12 Five post-medieval heritage assets are located within the 500m study area. All were identified as part of the 2018 ES and a summary is provided below:

- NDHA2: artefacts of post-medieval date recorded during the archaeological watching brief (Figure 7.3, EWS1099). No further details are known about these finds;
- NDHA3: former nineteenth century L-plan regular courtyard outfarm or field barn at Flood's Barn. No above ground remains appear to be extent;
- NDHA4: former nineteenth century double sided loose courtyard outfarm or field barn. No above ground remains survive as the outfarm has been removed/demolished;
- NDHA5: former nineteenth century L-plan regular courtyard outfarm or field barn. No above ground remains survive as the outfarm has been removed/demolished; and
- NDHA6: a former nineteenth century L-plan courtyard farmstead with additional detached elements to the main plan. Although the farm has been lost, the farmhouse survives.

Archaeological Events

7.4.13 A summary of the nearby archaeological events relevant to the Site but not referred to in the archaeological and historical overview section above are outlined below.

7.4.14 The geophysical survey and evaluation c. 300 m west of the Site recorded no archaeological finds or features (WSHER ref. EWS2099).

<u>Watching Brief, Goddards Green Water Treatment Works (2017 – 2018)</u>

7.4.15 Undertaken by Archaeology South-East on a water treatment works 330m north-west of the Site boundary, no archaeological finds, features or deposits were recorded (WSHER ref. EWS19712).

<u>Geophysical Survey, Magnitude Surveys (2019)</u>

7.4.16 Of particular relevance to the Site is a geophysical survey undertaken along the route of the Proposed Scheme (WSHER ref. EWS2010])[32]. Undertaken in November 2019 by Magnitude Surveys, no anomalies of significant archaeology were identified. A service line present in the north and south of the Site impacted upon the survey by causing modern interference. The survey was split into six areas; Survey Areas 1 to 3 were located to the south of the A2300; Survey Areas 4 to 6 located to the north and encompass part of the Site boundary.

7.4.17 Magnetic results comprised:

- Survey Area 2: anomalies indicative of modern/industrial activity which are thought to possibly represent dumped or disturbed fire material such as bricks or tiles;
- Survey Area 5: three parallel linear anomalies, the character and appearance of which is indicative of ditch-type features. The longest linear anomaly is 22m in length, with the shortest, a central anomaly, 13m in length. Crossing the full width of the survey area, they were aligned northwest to southeast and situated broadly parallel with the River Adur to the north. Although a confident and definite interpretation could not be reached due to the narrow context of this survey area, they are thought likely to represent a possible shifting of a former field boundary to the south of the River Adur. The anomalies reflect three possible locations for this boundary; and
- Survey Area 6: a broad natural anomaly which may reflect a former route of the River Adur streambed is present (Magnitude Surveys 2019, pages 9 to 11).

Archaeological Evaluation, Cotswold Archaeology (2020)

7.4.18 A trial trench evaluation was undertaken in the southern section of the Proposed Scheme by Cotswold Archaeology in 2020 (WSHER ref. EWS2034)[33]. The trenching was undertaken to test the geophysical anomalies recorded in the 2019 Magnitude Survey (Figure 7.3) but did not extend into the Site. Six of the seven planned trenches were excavated and no features, deposits or artefacts of archaeological interest, predating the modern period were observed. Modern remains recorded comprised a pit which cut through the topsoil and contained backfilled material. The results of the evaluation confirmed the results of the geophysical survey which indicated a low potential for archaeology.

LiDAR

An examination of LiDAR data did not reveal any archaeological remains within the Site boundary.

[32] Magnitude Surveys, 2019. Geophysical Survey Report of Northern Arc – Eastern Bridge and Link Road. Survey REF. MSTQ571.
[33] Cotswold Archaeology, 2020. Western Bridge and Link Road Phase 1, Burgess Hill, West Sussex. Archaeological Evaluation. Report ref. AN0205_1.

Historic Map Evidence

7.4.19 A detailed map regression is provided in Appendix 10.1 of the 2018 ES. Below is a summary in relation to Site.

7.4.20 Whilst historic mapping dating from the 17th century records the surrounding settlements, no clear depiction of the Site is provided. Cary's map of 1794 records the presence of the surrounding transport infrastructure and the Site appears to have comprised an area of undeveloped land, most likely utilised for agricultural activity during this period.

7.4.21 The one inch first series OS map of 1813 confirms that the Site was utilised for agricultural activity during this period.

7.4.22 The Site encompasses land within two historic parishes – Clayton and Hurstpierpoint. The Clayton Tithe Map of 1838 encompasses the very northeastern extent of the Site, which is recorded as agricultural arable land. The Hurstpierpoint Tithe Map of 1841 records the remainder of the Site as several agricultural fields also in arable use.

7.4.23 OS mapping from the late 19th century demonstrates the Site continued to comprise an agricultural landscape with pockets of woodland in the vicinity. The present layout of field boundaries within the Site is illustrated on these maps. The bridge in the northern extent is recorded on OS mapping from this period (**NDHA7**).

7.4.24 A review of subsequent OS maps indicates that the Site was subject to limited alteration from the late 19th century onwards and has not been subject to modern development. Despite the expansion of settlement, and construction of the A2300 and A273 in the late 20th century impacting upon the surrounding field systems, the Site remained largely unaffected and in agricultural use.

Aerial Photographic Evidence

7.4.25 A review of available aerial imagery did not reveal any archaeology or built heritage within the Site.

Historic Landscape Characterisation

7.4.26 As illustrated on Figure 7.4, the Sussex HLC records the Site as a medieval fieldscape comprising the following two historic landscape types:

- Cohesive Assarts (HLC ref. HWS5775 and HWS7491); and
- Informal Fieldscapes - irregular piecemeal enclosure of meadows along the River Adur (HLC ref. HWS7478; Harris 2005).

7.4.27 The Site lies within a landscape which has been subject to a level of change and thus elements of the former historic landscape, such as field systems and historic hedgerows, have been lost affecting its legibility.

Future Baseline

7.4.28 This section considers changes to the baseline conditions, described above, which might occur during the time period over which the Proposed Scheme will be in place. It considers changes that might occur in the absence of the Proposed Scheme being constructed.

7.4.29 Changes to the archaeological baseline which might occur during the lifespan or in the absence of the Proposed Scheme are virtually identical. Aside from issues associated with preservation, the future baseline would evolve according to new discoveries and the removal of archaeological assets through unrelated developments in the area. These would occur regardless of the presence of the Proposed Scheme.

7.4.30 The archaeological baseline described above is site specific and would not be substantially or materially affected by the likely future baseline conditions of planned developments external to the Proposed Scheme. As such, likely future baseline conditions are considered to be synonymous with the existing baseline conditions.

It is unlikely that a significant number of built heritage assets will be added to the baseline in the future. The built heritage baseline is unlikely to undergo significant change.

Summary of Receptors and Associated Value

7.4.31 The value (significance) outlined below for the receptors identified utilised the methodology employed in Chapter 10 of the 2018 ES. When determining the criteria, Table 10-2 in Chapter 10 of the 2018 ES was utilised.

Designated Heritage Assets

7.4.32 Due to distance from and absence of clear intervisibility or association, none of the designated heritage assets located within the wider 1km study area have been identified as a receptor for the Proposed Scheme. They have been excluded from any further assessment.

Non-Designated Heritage Assets

7.4.33 The only non-designated heritage asset which is considered to have the potential to be affected by the Proposed Scheme is the demolished remains of the post-medieval footbridge crossing the River Adur (**NDHA7**). Although the heritage significance of the demolished remains is dependent on the level of preservation, which is currently unknown, it is not considered to exceed that of a non-designated heritage asset of low heritage significance.

Archaeological Potential

Northern Arc Allocation Planning Application

7.4.34 Chapter 10 of the 2018 ES summaries the archaeological potential for the Northern Arc Allocation development as follows:

- Early Prehistoric: low given the general scarcity of such sites within the Low Weald;
- Late Prehistoric: low in the majority of the Northern Arc Allocation development site but moderate in areas close to the River Adur and its tributaries;

- Romano-British: low in the majority of the Northern Arc Allocation development site increasing to moderate within and in proximity to the Roman Road Archaeological Notification Area;
- Early medieval: low given the general scarcity of such sites within the Low Weald;
- Medieval: moderate given the medieval origins to much of the field systems within the Northern Arc Allocation development study area along with the presence of the remains of medieval industrial activity; and
- Post-medieval: moderate to high based on the identification of several assets dating to the post-medieval through HER and map analysis including several scattered farmsteads, industrial sites such as mills, clay extraction pits, and kilns.

The Site

7.4.35 The historic environment baseline would suggest that the Site has a low potential for early prehistoric remains. Any remains are likely to comprise findspots and would comprise non-designated heritage assets of low (local) heritage significance.

7.4.36 The 2018 ES identified a moderate potential for later prehistoric remains in areas close to the River Adur and its tributaries. Although the baseline and recent archaeological investigations in the Site and 500m study area did not record any evidence of prehistoric activity, the potential for any such remains cannot be discounted. Any such remains are likely to comprise isolated findspots and would comprise non-designated heritage assets of low (local) heritage significance.

7.4.37 Based on available data, there is a low potential for remains of Romano-British date to be present within the Site. Any such finds are likely to comprise findspots or relate to agricultural activity and would comprise non-designated heritage assets of low (local) heritage significance.

7.4.38 There is considered to be a low potential for remains of early medieval date to be present within the Site. As early medieval remains are nationally rare and would contribute to objectives set out in the regional research framework, any remains would comprise non-designated heritage assets of medium heritage significance.

7.4.39 The recent geophysical survey undertaken by Magnitude Surveys in 2019 did not reveal any anomalies consistent with ridge and furrow earthworks in the Site. Such features are also not visible on LiDAR imagery or aerial photography. Therefore, there is considered to be a low potential for medieval remains within the Site. Any medieval remains relating to agricultural activity would comprise non-designated heritage assets of low (local) heritage significance.

7.4.40 Whilst the geophysical survey did identify an anomaly interpreted as a shifting former field boundary in the northern extent of the Site, an exact date for this cannot be confirmed. If of medieval origin, it would comprise a non-designated heritage asset of low (local) significance.

7.4.41 The Site has a moderate to high potential for post-medieval and modern remains relating to agricultural activity. Any such remains would comprise non-designated heritage assets of low (local) significance.

Historic Landscape Characterisation

7.4.42 The HLC within the Site is considered to be of low heritage significance.

7.5 ENVIRONMENTAL DESIGN AND MANAGEMENT

7.5.1 Section 10.6 of the 2018 ES sets out the environmental design and management measures within respect to the Northern Arc Allocation development.

7.5.2 No significant changes to the Environmental Design and Management are required for the Proposed Scheme.

7.5.3 The embankment on either side of the River Adur will be designed in accordance with the overall Environmental Design and Management for the Northern Arc Allocation development.

7.5.4 The design of the bridge facilitating movement across the River Adur as part of the Proposed Scheme is sympathetic and appropriate to the surrounding landscaping, blending in and utilising the local topography to reduce the level of impact and visibility.

7.6 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

Construction

Archaeology

7.6.1 The preparation and construction works outlined in the 2018 ES in relation to Timeslice 1 remain relevant to this assessment. These comprise site enabling works, construction works with the footprint of the Proposed Scheme and associated services and piling for the bridge over the River Adur.

7.6.2 The magnitude of impacts provided in the 2018 ES have been reviewed and updated in line with the Proposed Scheme. The results provided below differ to those provided in the 2018 ES and therefore a full assessment of effects during construction has been provided.

7.6.3 Both preparation and construction works associated with the Proposed Scheme have the potential to cause a direct impact upon any known and currently unknown buried archaeological remains within the Site. The impacts would result in physical, permanent and irreversible harm to any remains affected and are likely to result in complete or partial loss of an archaeological feature or deposits.

7.6.4 The construction of the Proposed Scheme would result in the removal of demolished remains associated with the post-medieval footbridge crossing the River Adur (**NDHA7**). The predicted magnitude would be high on remains which are considered to be (at most) of low (local) significance, thus resulting in a moderate adverse significance of effect. This is considered significant under the 'EIA Regulations'.

7.6.5 The predicted magnitude of impact on any currently unknown buried archaeological remains where construction activities would remove or extensively truncate would be high adverse. This represents the worst-case scenario where; the impacts would result in a more limited damage to the asset (i.e. an asset would be affected in a limited way); and the predicted magnitude of impact would be reduced. Table 7.4 outlines the effects of the construction and predicted magnitude of impacts.

Table 7.4: Construction effects (worst-case scenario) upon cultural heritage resource.

Receptor name	Likelihood for survival	Value	Effect	Magnitude of Impact	Significance of effect
Potential early prehistoric archaeological remains	Low	Low (Local)	Permanent loss of buried archaeological resource	High Adverse	Moderate
Potential later prehistoric archaeological remains	Moderate	Low (Local)	Permanent loss of buried archaeological resource	High Adverse	Moderate
Potential Romano-British archaeological remains	Low	Low (Local)	Permanent loss of buried archaeological resource	High Adverse	Moderate
Potential early medieval archaeological remains	Low	Medium (Regional)	Permanent loss of buried archaeological resource	High Adverse	Major
Potential medieval archaeological remains	Low	Low (Local)	Permanent loss of buried archaeological resource	High Adverse	Moderate
Potential post-medieval and modern archaeological remains	Moderate to High	Low (Local)	Permanent loss of buried archaeological resource.	High Adverse	Moderate
Demolished remains of post-medieval bridge (NDHA7)	High	Low (Local)	Permanent loss of buried archaeological resource	High Adverse	Moderate

Historic Landscape Characterisation

7.6.6 The construction of the Proposed Scheme would result in impacts upon the HLC of the Site through a change in land use from agricultural to transport. The Proposed Scheme would also result in a loss of field boundaries, hedgerows and fields, equating to a local impact. This predicted magnitude would be medium on a heritage asset of low heritage significance, thus resulting in a minor adverse significance of effect. This is not considered significant under the 'EIA Regulations'.

Operation

7.6.7 The magnitude of impacts provided in the 2018 ES have been reviewed and updated in line with the Proposed Scheme. The results provided below differ to those provided in the 2018 ES and therefore a full assessment of effects during operation has been provided.

Archaeology

7.6.8 No additional impacts would occur on archaeology during the operational phase.

Historic Landscape Characterisation

7.6.9 During the operational phase of the Proposed Scheme, the main potential effects relate to its introduction into the landscape which has the potential to impact upon the HLC within the local area. The potential impact to settings is considered to derive from the following factors:

- position in relation to views;
- conspicuousness;
- change to skyline;
- introduction of additional noise, activity and light;
- introduction of increased movement through the area;
- change to land use; and
- change to general character.

7.6.10 The introduction of the Proposed Scheme will result in a change to the HLC and ability to appreciate the former character/function of this area. The intrusion caused by visual, noise and activity would also be permanent and a distraction from the surviving fieldscape in the vicinity. Although the presence of transport infrastructure in this area is not considered alien, the impact is considered to be of medium magnitude upon a heritage asset of low heritage significance resulting in a minor adverse significance of effect. This is not considered significant under the 'EIA Regulations'.

7.7 ADDITIONAL MITIGATION AND MONITORING

Archaeology

7.7.1 The need for any additional archaeological mitigation measures that are over-and-above those described previously in the 2018 ES (Section 10.8) are not considered necessary.

7.7.2 Considering the results of the recent geophysical survey, it is recommended that consultation be undertaken with the Local Planning Authority (LPA) Archaeologist to determine whether any further work is required, and if so the scope and methodology, for the Proposed Scheme.

7.7.3 If an archaeological evaluation is requested by the LPA Archaeologist to address both known and unknown archaeological remains, this would result in a slight reduction in the significance of effect. However, the loss of archaeological remains can never be fully mitigated as remains are a finite resource even through preservation by record.

7.7.4 It is recommended that a specific heritage management plan included in a Construction Environmental Management Plan (CEMP). The CEMP will outline the location of the site compound, stockpile location and storage areas to protect any currently unknown buried archaeological remains and will include tool-box talks and standard mitigation as described below:

- Tool-box talks will be regularly undertaken during the construction phase. This will ensure all personnel are aware of the response required in the event of unanticipated finds of archaeological/historical value and areas of exclusion; and
- Standard mitigation: the contractor will consult with the relevant local authority should any archaeological or cultural heritage finds or sites be discovered or revealed during construction. This will enable appropriate measures to be implemented to mitigate potential impacts.

Historic Landscape Characterisation

7.7.5 The 2018 ES outlined how the Northern Arc Allocation development has sought to retain as much of the valued elements of the historic landscape as possible, with elements preserved including ancient woodlands and historic field boundaries through the design of the scheme.

7.8 UPDATED RESIDUAL EFFECTS AND CONCLUSIONS

Residual Effects

7.8.1 Given that the magnitude of impacts identified in this chapter relating specifically to the Proposed Scheme differs to that in the 2018 ES, updated residual effects are provided below.

7.8.2 There is a low potential for prehistoric, Romano-British and medieval remains to be present within the Site. This chapter has concluded a minor adverse residual significance of effect assessed on a worst-case scenario.

7.8.3 Although an adverse moderate residual significance of effect has been concluded for any early medieval buried archaeological remains on a worst-case scenario basis, the potential for these to be present within the Site is low.

7.8.4 There is a moderate to high potential for post-medieval and modern remains within the Site. Where encountered during construction, these archaeological remains would suffer an impact of high magnitude (worst-case scenario) resulting in a minor adverse significance of effect.

7.8.5 If encountered, any demolished remains relating to the post-medieval bridge in the northern extent of the Site (NDHA7) would have a negligible adverse residual significance of effect.

7.8.6 The predicted significance of effect upon the HLC would remain/continue to be a minor adverse residual impact.

7.8.7 This chapter has not identified any residual effect to be significant in terms of the ‘EIA Regulations’.

Conclusions

7.8.8 This chapter revisited the conclusions presented in Chapter 10 of the 2018 ES to determine any changes to the assessment for cultural heritage as a result of the Proposed Scheme.

7.8.9 With regard to archaeology, this chapter has been informed by an updated search of data repositories and a recent geophysical survey undertaken in 2019 encompassing part of the Site.

7.8.10 The Site is considered to have a low potential for archaeological remains of early prehistoric, Romano-British, early medieval and medieval date. There is considered to be a moderate potential for later prehistoric and a moderate to high potential for evidence of post-medieval and modern

activity of low (local) heritage significance. The potential archaeological remains would suffer an impact of high magnitude and as such a major to moderate significance of effect. Although considered significant in terms of the 'EIA Regulations', the effects would be reduced through a programme of mitigation. Following mitigation, the residual effects would not be considered significant under the 'EIA Regulations'.

7.8.11 The geophysical survey did not record any anomalies of considerable heritage significance within the Site. The anomaly in the north of the Site was interpreted as a former shifting field boundary. An exact date for this feature has yet to be ascertained although if of medieval or later origin would comprise a non-designated heritage asset of low (local) heritage significance. It would be removed as part of the Proposed Scheme and subject to an impact of high magnitude resulting in a moderate significance of effect. This effect is significant in terms of 'the EIA Regulations'. If further archaeological investigation on this heritage asset is considered necessary, the effect would be reduced. Following mitigation, the residual effects would not be considered significant under the 'EIA Regulations'.

7.8.12 This chapter has concluded that there would be a high adverse impact upon any demolished remains relating to a post-medieval bridge crossing the River Adur in the northern extent of the Site. This would result in a moderate significance of effect on remains which are considered (at most) to be of low (local) heritage significance. This would result in a moderate significance of effect. Although deemed significant under the 'EIA Regulations', this would be reduced a minor significance of effect (not significant) following a programme of archaeological mitigation.

7.8.13 The HLC type within the Site is considered to be of low heritage significance. The construction and operation of the Proposed Scheme would result in a medium impact resulting in a minor adverse significance of effect. This is not considered significant under the 'EIA Regulations'.

7.9 UPDATED CUMULATIVE EFFECTS ASSESSMENT

7.9.1 There are no changes to or additional cumulative effects as a result of the proposed scheme.

8 NOISE AND VIBRATION

8.1 INTRODUCTION AND SUMMARY AND CONCLUSIONS OF THE 2018 ES AND 2019 ES ADDENDUM

Introduction

8.1.1 This chapter assesses the effect of the Proposed Scheme on noise and vibration. Highways schemes can have significant noise and vibration effects. This assessment covers noise and vibration effects during both the construction and operation of the Proposed Scheme.

Summary and Conclusions of the 2018 ES

8.1.2 The 2018 ES and the 2019 ES Addendum included an assessment of noise and vibration during the construction phase. Noise and vibration were largely assessed in a methodology based on the standard BS 5228 Code of practice for noise and vibration control on construction and open sites[34]. However, some elements such as the definition of the lowest-observed-adverse-effect-level (LOAEL) and the significant-observed-adverse-effect-level (SOAEL) were defined in accordance with the professional judgement of the authors of the chapter. This is as per the methodology described in paragraphs 12.4.15 to 12.4.33 of the 2018 ES. Vibration was not deemed to give rise to significant adverse effects, with only some transient effects when piling would be used close to sensitive receptors. A framework of construction noise mitigation measures was detailed in the Outline Construction Environmental Management Plan (CEMP).

8.1.3 The noise effects due to increases in road traffic as a result of construction traffic were assessed to be negligible.

8.1.4 Road links included in the operational road traffic assessment were envisaged to experience a minor adverse (not significant) effect due to changes in road traffic noise as a result of the 2018 ES Northern Arc Allocation development.

8.2 LEGISLATION AND PLANNING POLICY REVIEW

Legislation

8.2.1 No changes to legislation have occurred since the 2018 ES and 2019 ES Addendum were issued.

Policy

8.2.2 The current version of the National Planning Policy Framework (NPPF) [35] was published in December 2024, but it remains largely the same as when the 2018 ES and 2019 ES Addendum were produced.

[34] British Standards Institution (BSI), *BS 5228 Code of practice for noise and vibration control on construction and open sites. Part 1 Noise and Part 2 Vibration.* 2014+A1:2019.
[35] Ministry of Housing, Communities & Local Government, *National Planning Policy Framework,* July 2021.

Guidance

8.2.3 The Planning Practice Guidance on Noise[36] supplements the NPPF and provides guidance on the interpretation of some policy elements. It was updated in July 2019 but it remains largely the same as when the 2018 ES and 2019 ES Addendum were produced.

Construction

8.2.4 As stated above, BS 5228-1 and BS 5228-2 constitute the primary code of practice for noise and vibration control on construction and open sites. Additionally, further guidance is provided in the Design Manual for Roads and Bridges (DMRB), primarily in the document LA 111 Noise and vibration, published since the production of the 2018 ES and 2019 ES Addendum. However, it is considered that BS 5228 continues to be relevant on its own for the assessment of construction effects arising from the Proposed Scheme.

Operation

8.2.5 Since the 2018 ES, the DMRB HD 213/11 has been superseded. DMRB constitutes the primary guidance for the noise and vibration effects of highway schemes during operation. The following current DMRB documents constitutes the environmental impact assessment guidance for highway schemes in terms of noise and vibration:

- LA 111 Noise and vibration;
- LA 112 Population and human health; and
- LD 119 Roadside environmental mitigation and enhancement.

8.2.6 Unlike DMRB HD 213/11, the new DMRB LA 111 defines values for the LOAEL and the SOAEL, which has been incorporated here in this chapter to the assessment of the Proposed Scheme.

8.3 ASSESSMENT METHODOLOGY REVIEW

8.3.1 The methodology (as was also the case in the 2018 ES and 2019 ES Addendum) defines the levels for the following two parameters present in the Noise Policy Statement for England (NPSE)[37]:

- LOAEL: this is the level above which adverse effects on health and quality of life can be detected; and
- SOAEL: this is the level above which significant adverse effects on health and quality of life occur.

8.3.2 The LOAEL and the SOAEL are then taken as a reference to define the potential magnitude of impact as the difference between a noise and vibration level and the LOAEL and SOAEL. The magnitude of impact is taken as a preliminary indication of the potential significance of effect. After taking into consideration local circumstances the final significance of effect is defined.

[36] Ministry of Housing, Communities & Local Government, *Planning Practice Guidance Noise,* July 2019.
[37] Department for Environment, Food & Rural Affairs (Defra), *Noise Policy Statement for England,* March 2010.

Construction noise and vibration (including construction traffic)

8.3.3 No changes are proposed to the methodology in the 2018 ES for the assessment of effects during the construction phase, which is largely based on the British Standard BS 5228. BS 5228 is the approved code of practice under Section 71 of the CoPA 1974 in accordance with The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order, 2015

Operation

8.3.4 Table 8.1 shows the LOAEL and SOAEL for the daytime and night-time periods for operational noise effects as defined in DMRB LA 111. This replaces the operational road traffic LOAEL and SOAEL defined in the 2018 ES.

8.3.5 Daytime noise levels are given as dB $L_{A10,18hr}$ which is the average of the hourly noise levels exceeded 10% of the time between 6am and midnight of a weekday. Daytime noise levels are given as façade levels. This means that the noise levels include both the incident noise coming from a road, as well as the reflected noise on the façade of a building.

8.3.6 Night-time noise levels are given as dB $L_{night,outside}$ which is the equivalent noise level between 11pm and 7am of a weekday. Night-time noise levels are given as free-field levels. This means that the noise levels include the incident noise coming from a road, but not the noise reflected on the façade of a building. For road traffic noise, there is typically a difference of +2.5 dB between façade and free-field noise levels.

Table 8.1: DMRB LA 111 Operation noise LOAEL and SOAEL for all receptors

Time period	LOAEL	SOAEL
Day (06:00-00:00)	55dB $L_{A10,18hr}$ façade	68dB $L_{A10,18hr}$ façade
Night (23:00-07:00)	40dB $L_{night,outside}$ (free-field)	55dB $L_{night,outside}$ (free-field)

8.3.7 Table 8.2 shows the magnitude of impact for operational noise. Short term is the noise change in the opening year between a scenario with the Proposed Scheme in place (the Do-Something) and another scenario without the Proposed Scheme (the Do-Minimum). Long term is the noise change between the scenario with the Proposed Scheme in the 15th worst year after opening and the scenario without the Proposed Scheme in the opening year.

Table 8.2: DMRB LA 111 Magnitude of impact for operational noise

Magnitude of impact	Short term noise change (dB $L_{A10,18hr}$ or L_{night})	Long term noise change (dB $L_{A10,18hr}$ or L_{night})
Major	Greater than or equal to 5.0	Greater than or equal to 10.0
Moderate	3.0 to 4.9	5.0 to 9.9
Minor	1.0 to 2.9	3.0 to 4.9
Negligible	Less than 1.0	Less than 3.0

Sensitive Receptors

8.3.8 Noise sensitive receptors have been defined as per DMRB LA 111 as receptors which are potentially sensitive to noise. These include dwellings, hospitals, health care facilities, education facilities, community facilities, Environmental Noise Directive (END) quiet areas or potential END quiet areas, international and national or statutorily designated sites, public rights of way (PRoW) and cultural heritage assets.

Significance Criteria

8.3.9 Table 8.3 shows the initial output for the assessment of operational noise significance in accordance with DMRB LA 111. The final operational noise significance is determined from the initial significance and each of the following local circumstances:

- Noise level change (is the magnitude of change close to the minor/moderate boundary);
- Differing magnitude of impact in the long term to magnitude of impact in the short term;
- Absolute noise level with reference to LOAEL and SOAEL (by design this includes sensitivity of receptor);
- Location of noise sensitive parts of a receptor;
- Acoustic context; and
- Likely perception of change by residents.

Table 8.3: DMRB LA 111 Initial assessment of operational noise significance

Significance	Short-term magnitude of impact
Significant	Major
Significant	Moderate
Not significant	Minor
Not significant	Negligible

8.4 UPDATED BASELINE CONDITIONS

8.4.1 The study area for each noise and vibration sub-topic has been defined in line with the study areas proposed in the DMRB LA 111 as summarised in Table 8.4.

Table 8.4: Typical study areas for noise and vibration elements in DMRB

Topic	Study area	Reference
Construction site noise	300m from the closest construction activity	DMRB LA 111 Rev. 2 requirement 3.5 Note 1
Construction site vibration	100m from the closest construction activity with the potential to generate vibration	DMRB LA 111 Rev. 2 requirement 3.29 Note 1
Construction HGV traffic	50m from the kerb line of public roads with the potential	DMRB LA 111 Rev. 2 requirement 3.8

	for an increase in baseline noise level (BNL) 38 of at least 1 dB(A)	
Construction diverted traffic	25m width from the kerb line of the diversion route	DMRB LA 111 Rev. 2 requirement 3.7
Operational noise (nuisance)	Area within 600m of new road links or road links physically changed or bypassed by the Proposed Scheme Area within 50m of other road links with potential to experience a short term BNL change of more than 1.0dB(A) as a result of the Proposed Scheme	DMRB LA 111 Rev. 2 advice 3.44 Note 1
Operational noise (health effects)	Population in an area classified as a Noise Important Area (NIA) 39 or in an area with equivalent conditions to a NIA	DMRB LA 112 Rev. 1 requirement 3.23

8.4.2 The closest noise and vibration human sensitive receptors are St Paul's Catholic College located approximately 230m to the south-east and residential dwellings to the south approximately 600m away as shown in Figure 8.1. The 2018 ES described the study area as dominated by road traffic noise, likely arising from the A2300 and the A273. No Defra Noise Important Areas are within the study area. It is assumed that the acoustic character of the area has remained unchanged since the 2018 ES and still dominated by road traffic noise.

[38] The baseline noise level (BNL) is defined in the technical memorandum Calculation of Road Traffic Noise (CRTN) 1988 (Department of Transport, *Calculation of Road Traffic Noise,* 1988) as the noise level at a reference distance of 10m away from the nearside carriageway edge only taking into account traffic flow, percentage of HGVs, traffic speed, road gradient and road surface and disregarding any other propagation or layout effects such as distance, height, screening or reflections.

[39] Noise Important Areas (NIAs) are defined in the Noise Action Plans under the Environmental Noise (England) Regulations 2006 (as amended). They are identified from the results of the strategic noise mapping where the top 1% of the population affected by the highest noise level are located. However, under the noise action plans, there is no requirement to investigate those dwellings where the $L_{A10,18h}$ is below 65dB according to the results of the strategic noise mapping. Therefore, the authors consider that an area with equivalent conditions as an NIA would be an area where noise levels are at least 65dB $L_{A10,18h}$.

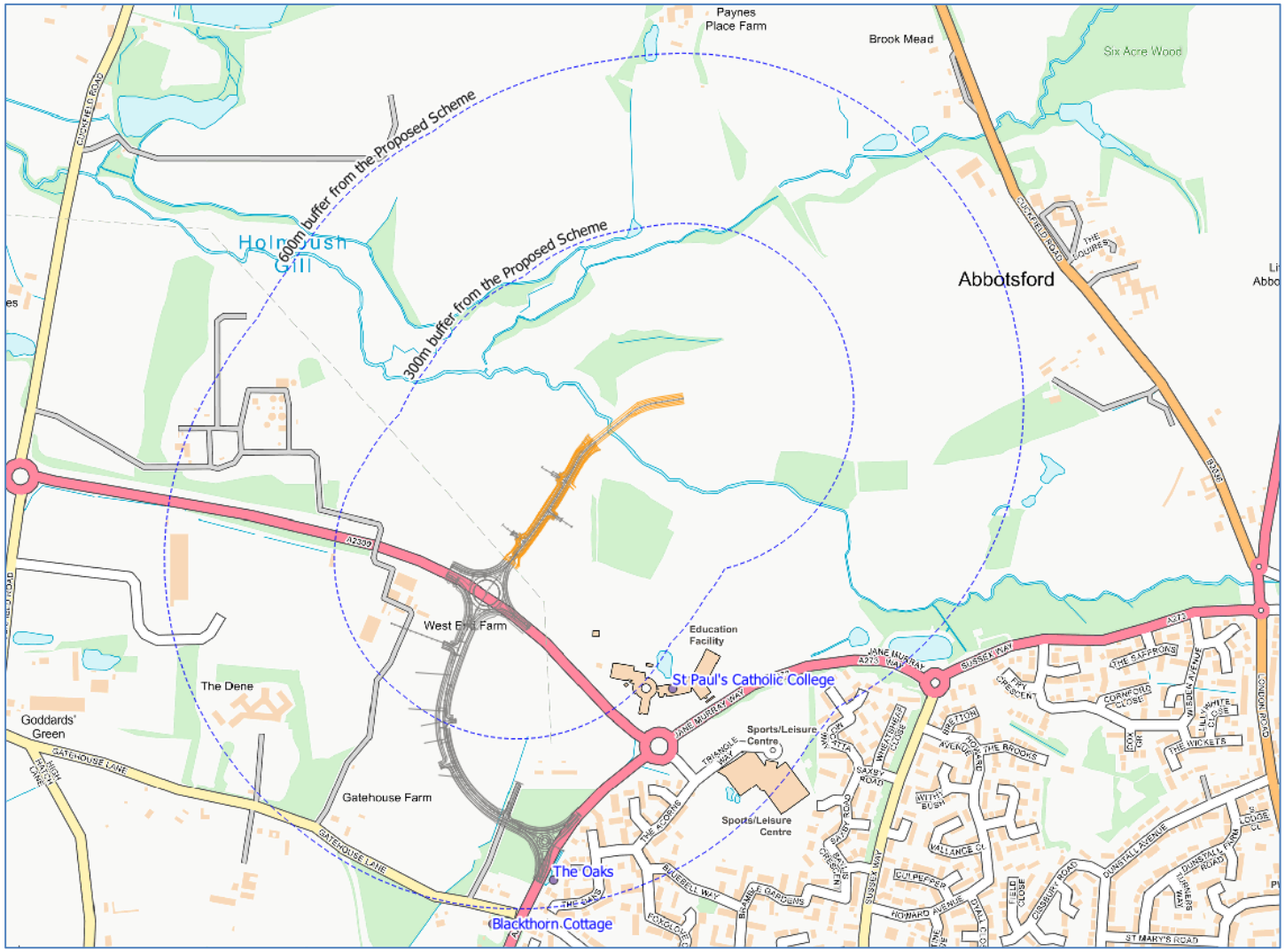


Figure 8.1: Noise study area for construction and operation

8.4.3 A GL Hearn qualified acoustician carried out a noise survey on 27 October 2022 to determine the acoustic environment pre-construction. The survey was carried out at the locations shown in Figure 8.2. Weather conditions during the survey were mildly damp but with no rainfall, with wind speed below 5m/s, which were considered suitable in order to undertake reliable measurements.

Figure 8.2: Noise measurement location

Image courtesy of Google.

8.4.4 The sound level meter was set up to measure in 100 millisecond intervals. The microphone was mounted on a tripod located at least 1.5 metres above ground level and at least 1 metre from any other reflective surface, see Figure 8.3 below. The sound pressure levels measured in these positions are considered to be free-field levels.

8.4.5 Table 8.5 shows the details of the equipment used for the noise survey.

Table 8.5: Equipment used in the noise survey

Position	Item	Manufacturer	Model	Serial Number
1	Sound level meter	Rion	NL-52	1129
1	Calibrator	Rion	NC-75	35281140

Figure 8.3: Photographs of monitoring Position 1

8.4.6 The noise environment in the vicinity of the Proposed Scheme is dominated by road traffic noise. Occasionally passenger aircraft can be heard, likely travelling to/from Gatwick airport. Less audible sound sources came from birdsong, trees rustling and intermittent construction noise from Phase 1 of WBLR. Table 8.6 below shows the noise levels measured during the survey. The measurement position was affected by the passing of 4 low-flying military helicopters within a 2-minute timeframe, which resulted in an L_{Amax} of 86 dB.

Table 8.6: Noise survey results

Position	dB $L_{A10,T}$	dB $L_{A10,18h}$*	dB $L_{Aeq,T}$	dB L_{Amax}
1	60	59	57	86

* Calculated as per the CRTN Shortened measurement method.

8.4.7 The noise levels in Table 8.6 confirm the appropriateness of the magnitude of construction noise impacts proposed in Table 12-5 of the 2018 ES.

8.5 ENVIRONMENTAL DESIGN AND MANAGEMENT

8.5.1 No significant changes to the Environmental Design and Management presented in the 2018 ES and the 2019 ES Addendum are proposed for the Proposed Scheme.

8.6 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

Construction

Construction site noise

8.6.1 There is only one sensitive receptor within the study area for construction noise, St Paul's Catholic College, located approximately 230m from the construction works (see Figure 8.1 above). This assessment takes typical values for construction activities in BS 5228-1 divided in two main construction stages:

- Earthworks: which consists primarily of earth moving tasks; and
- Road surfacing and bridge construction: which includes the use of vibratory rollers and dumpers. This is as well as noise levels equivalent to those that may occur during the construction of the bridge, such as piling.

8.6.2 Table 8.7 shows the typical construction levels predicted at St Paul's Catholic College during construction. No adverse effects during construction are expected at St Paul's Catholic College since construction noise levels are expected to be in the same area as road traffic noise levels from nearby roads. Construction noise levels are not expected to exceed the values in Table 12-5 of the 2018 ES. The magnitude of impact of construction noise at the closest receptor at St Paul's Catholic College is classified as very low and therefore not significant.

Table 8.7: Construction effects at St Paul's Catholic College

Construction Stage	Potential Construction Noise Level (dB $L_{Aeq,T}$)	Potential Effect
Earthworks	52 dB $L_{Aeq,T}$	Neutral
Road surfacing and bridge construction	57 dB $L_{Aeq,T}$	Neutral

Construction site vibration

8.6.3 There are no sensitive receptors within the study area for construction site vibration. The conclusions from the 2018 ES and 2019 ES Addendum, with no significant adverse effects due to vibration identified, remain the same.

Construction HGV traffic and diverted traffic

8.6.4 No areas where construction HGV traffic could increase the existing noise levels, by at least 1dB, have been identified. The noise effects due to an increase in road traffic, as a result of construction traffic, remain the same as in the 2018 ES, which were assessed to be negligible. No adverse effects are expected to arise from diverted traffic during construction either.

Operational noise

Short-term

8.6.5 The short-term Do-Something compares the scenario with the Proposed Scheme in place in the opening year (Do-Something 2024) with the scenario without the Proposed Scheme in the same opening year (Do-Minimum 2024). At the opening year, the Proposed Scheme (i.e. Phase 2 of the Northern Arc Allocation development) will remain a cul-de-sac. Therefore, the changes in the study area are dominated for the changes caused by Phase 1 of the Northern Arc Allocation development. Figure 8.4 shows that no changes in noise levels occur in the Proposed Scheme. There is however an increase in noise levels at the area along Phase 1 of the Northern Arc Allocation development and a decrease in noise levels between the Phase 1 roundabout and the roundabout south of St Paul's Catholic College.

8.6.6 Table 8.8 shows the changes in noise levels at the properties within the study area. Only two properties, located at The Oaks residential estate (see Figure 8.4), present increases in noise levels

exceeding 1 dB $L_{A10,18h}$. These increases are minor adverse and, as per the criteria in Table 8.3 above, these impacts are not significant. The rest of the properties in the study area are predicted to range between no change and minor to large beneficial effects in the short term.

Table 8.8: Magnitude of impact in the short term

Change in noise level ($L_{A10,18h}$, $L_{night,outside}$)		Number of dwellings	
		Daytime	**Night-time**
Increase in noise levels	> 10 dB	0	0
	5 to 10 dB	0	0
	3 to 5 dB	0	0
	1 to 3 dB	2	1
No change	-1 to 1 dB	13	14
Decrease in noise levels	-3 to -1 dB	12	13
	-5 to -3 dB	15	16
	-10 to -5 dB	19	17
	< -10 dB	0	0

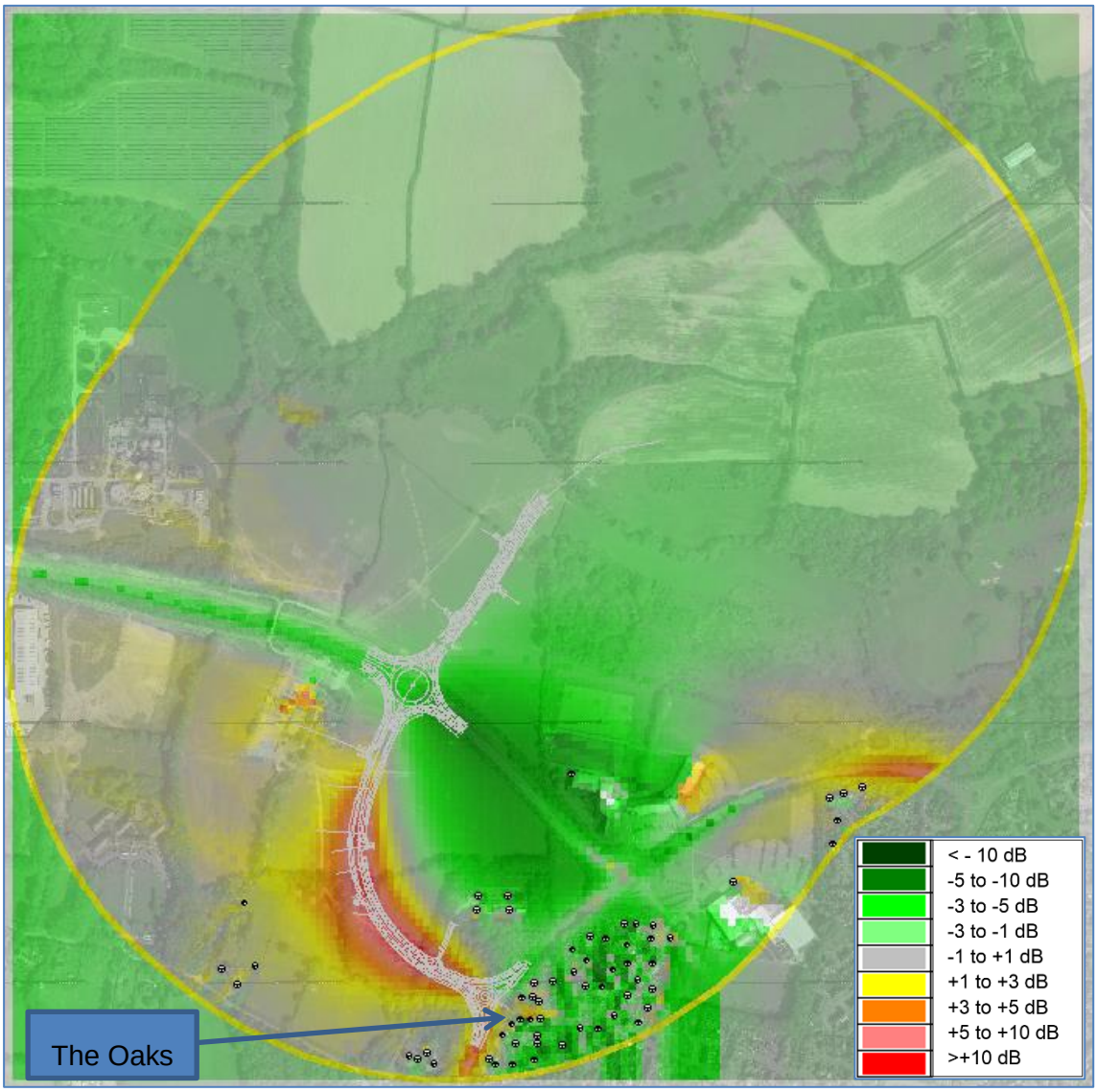


Figure 8.4: Changes in noise levels in the short term in dB $L_{A10,18h}$

Long-term Do-Something

8.6.7 The long-term Do-Something compares the scenario with the Proposed Scheme in place in the future assessment year (Do-Something 2033) with the scenario without the Proposed Scheme in the opening year (Do-Minimum 2024). The Do-Something 2033 scenario, not only includes the effects of the Proposed Scheme but also the cumulative effects with Phase 3 of the Northern Arc Allocation development. During Phase 3, a new road will be built linking the Proposed Scheme to Cuckfield Road to the east. This will allow the circulation of traffic between Phase 1 of the Northern Arc Allocation development on the A2300 and Cuckfield Road. Figure 8.5 shows that the new link causes increases in noise levels on the land included in the Northern Arc Allocation development, either side of the Proposed Scheme. However, the increase in noise levels occur over 300m from the existing receptors.

8.6.8 Table 8.9 shows that no receptors within the study area will be subject to noise increase above 3 dB in the long term and therefore, in line with the criteria in Table 8.2 above, any noise increases will be

negligible. This is also the cases for three properties at The Oaks residential estate, which show a negligible increase between 1 and 3 dB in the daytime. The rest of the properties will see the magnitude of impact to range between no change and moderate decrease in noise levels. Overall, the Proposed Scheme will give rise to non-significant effects in the long-term Do-Something. This is the same conclusion as the 2018 ES and the 2019 ES Addendum.

Table 8.9: Magnitude of impact in the long term

Change in noise level (dB $L_{A10,18h}$, dB $L_{night,outside}$)		Number of dwellings	
		Daytime	**Night-time**
Increase in noise levels	> 10 dB	0	0
	5 to 10 dB	0	0
	3 to 5 dB	0	0
	1 to 3 dB	3	1
No change	-1 to 1 dB	9	13
Decrease in noise levels	-3 to -1 dB	14	14
	-5 to -3 dB	9	11
	-10 to -5 dB	26	22
	< -10 dB	0	0

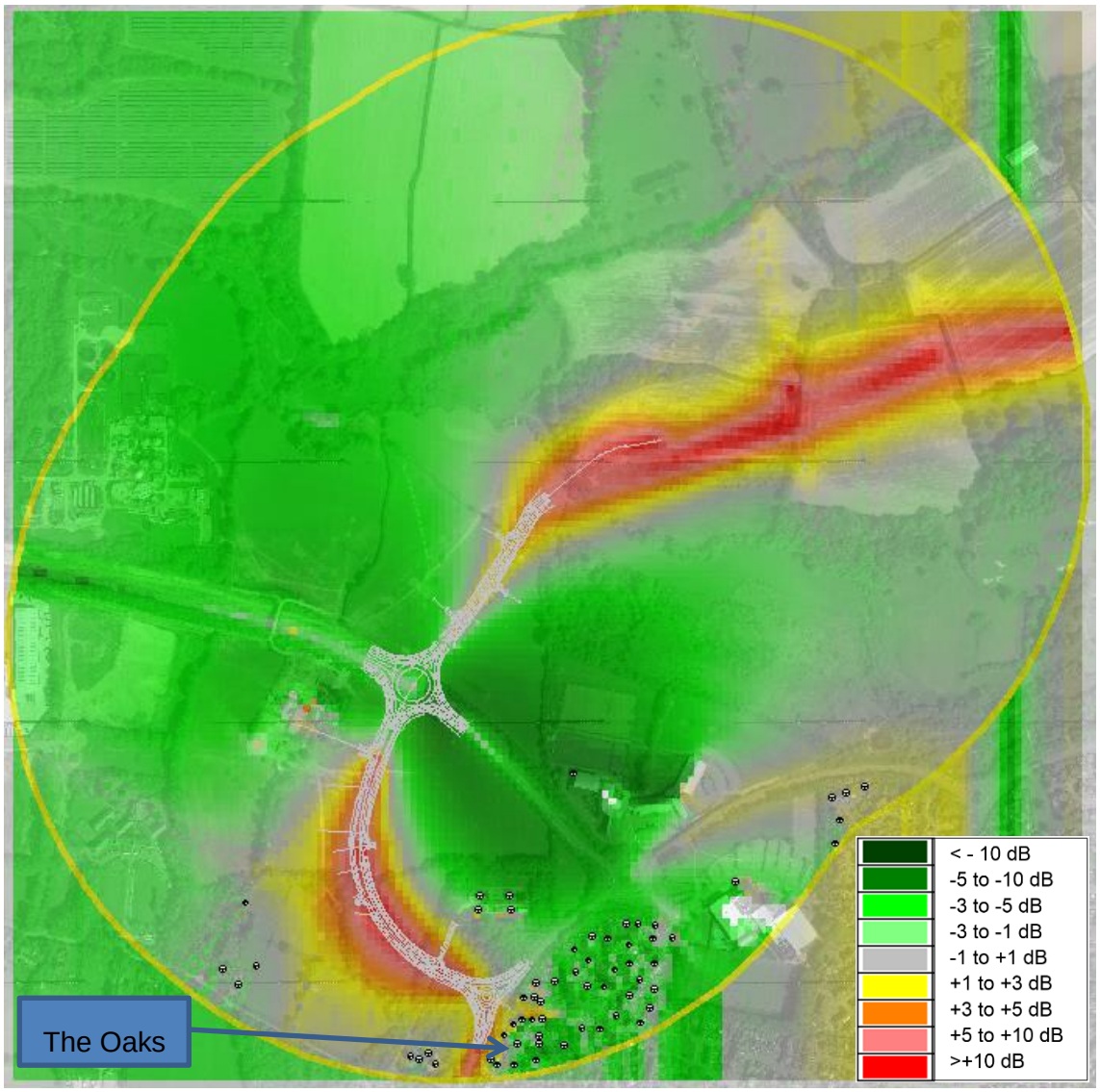


Figure 8.5: Changes in noise levels in the long term in dB $L_{A10,18h}$

8.7 ADDITIONAL MITIGATION AND MONITORING

8.7.1 There are no additional mitigation and monitoring measures proposed over-and-above the environmental design and management measures described previously in the 2018 ES.

8.8 UPDATED RESIDUAL EFFECTS AND CONCLUSIONS

8.8.1 There is only one sensitive receptor within the study area for construction noise, this is St Paul's Catholic College located approximately 230m from the construction works. No adverse effects during construction are expected at St Paul's Catholic College since construction noise levels are expected to be in the same area as road traffic noise levels from the main roads. The magnitude of

impact of construction noise at the closest receptor at St Paul's Catholic College is classified as very low and therefore not significant.

8.8.2 No sensitive receptors are within the study area for construction site vibration. The findings of the 2018 ES and 2019 ES Addendum, with no significant adverse effects due to vibration identified, remain the same.

8.8.3 No areas where construction HGV traffic could increase the existing noise levels by at least 1dB during construction have been identified. The noise effects due to increase in road traffic as a result of construction traffic remain the same as in the 2018 ES, which were assessed to be negligible. No adverse effects are expected to arise from diverted traffic during construction either.

8.8.4 The assessment of noise effects due to operational traffic has been updated in line with the methodology in the recently published DMRB LA 111. The conclusions remain the same as per the 2018 ES and the 2019 ES Addendum in that no significant effects due to operational road traffic noise are envisaged.

Table 8.10: Updated Residual Effects

Impact	Magnitude of impact	Significance of effect
Construction noise	Very Low	Neutral
Construction vibration	Negligible	Neutral
Construction traffic noise	Negligible	Neutral
Operational noise	Negligible adverse to moderate beneficial (as cumulative effects of Phase 1 of the Northern Arc Allocation, the Proposed Scheme and Phase 3 of the Northern Arc Allocation)	Neutral

8.9 UPDATED CUMULATIVE EFFECTS ASSESSMENT

8.9.1 There are no changes to or additional cumulative effects as a result of the Proposed Scheme.

9 AIR QUALITY

9.1 INTRODUCTION AND SUMMARY AND CONCLUSIONS OF THE 2018 ES AND 2019 ES ADDENDUM

Introduction

9.1.1 This chapter assesses the effects of the Proposed Scheme on air quality. Highways schemes can have significant air quality effects on human health and designated habitats.

Summary and Conclusions of the 2018 ES

9.1.2 The 2018 ES and the 2019 ES Addendum included an assessment of dust emissions during the construction phase. The 'dust risk assessment' was undertaken in accordance with the Institute of Air Quality Management (IAQM) 'Guidance on the assessment of dust from demolition and construction' version 1.1 of June 2016. The area covered by the 2018 ES and the 2019 ES Addendum included all the area of future housing development, far beyond the limits of the Proposed Scheme. This area was identified as being 'high risk' of producing dust soiling effects in the vicinity during construction. Once all mitigation measures would have been effectively implemented and monitored, at the level recommended by the dust risk assessment, no significant dust effects resulting from the demolition and construction activities were anticipated.

9.1.3 The peak period of construction phase Heavy Goods Vehicles (HGV) movement was expected to occur in the first and second quarter of 2025. This was when the final construction works and first occupation of Phase 1 of the Northern Arc Allocation development, would overlap with the demolition and construction work taking place at Phase 2 of the Northern Arc Allocation development. In terms of the additional number of vehicles movements during these times, it was considered that there was the potential for up to approximately 58 two-way HGVs movements per day. This number of vehicle movements was considered temporary and not to be high enough to have the potential to cause a significant adverse effect on any local air quality sensitive receptors.

9.1.4 The 2018 ES and the 2019 ES Addendum concluded that the overall predicted effect from road traffic emissions on sensitive receptors during the operational phase of the Northern Arc Allocation development would be not significant. The assessment was undertaken in accordance with the EPUK & IAQM guidance[40].

9.2 LEGISLATION AND PLANNING POLICY REVIEW

Legislation

[40] Environmental Protection UK (EPUK) and Institute of Air Quality Management (IAQM) guidance on 'Land-Use Planning & Development Control: Planning for Air Quality. v. 1.2' of January 2017.

9.2.1 The National Air Quality Objectives (NAQOs) are set out in the Air Quality Strategy[41] backed by the Air Quality Standards Regulations (2010)[42] and the Air Quality Standards (England) Regulations (2015)[43]. The NAQOs relevant to the assessment are presented in **Table 9.1**. These objectives remain the same as those considered in the 2018 ES and the 2019 ES Addendum.

Table 9.1: National Air Quality Objectives (NAQO)

Pollutant	Measured As	Objective
Nitrogen dioxide (NO_2) (a)	Annual Mean	40µg/m^3
	1-hour Mean	200µg/m^3 not to be exceeded more than 18 times a year
Particles (PM10) (Gravimetric) (a)	Annual Mean	40µg/m^3
	24-hour Mean	50µg/m^3 not be exceeded more than 35 times a year
Fine Particles ($PM_{2.5}$) (a)	Annual Mean	20µg/m^3 (World Health Organisation (WHO) guideline 10µg/m^3)
Oxides of nitrogen (NO_x) (b)	Annual Mean	40µg/m^3

Note: (a) - only applies to human receptors

(b) - only applies to ecological receptors

9.2.2 These air quality objectives are aimed at the protection of human health and ecological receptors. The annual mean NAQOs for human health apply at locations where the public may be regularly exposed, such as building facades of residential properties, schools, hospitals and care homes. The 1-hour and 24-hour mean NAQOs apply at locations where it is reasonable to expect members of the public to spend at least these periods of time, such as busy shopping streets and school playgrounds for the 1-hour mean, and hotels or residential gardens for the 24-hour mean. For full details, see Box 1.1 of Local Air Quality Management Technical Guidance 22 (LAQM.TG (22))[44].

[41] Department for Environment, Food and Rural Affairs in partnership with the Scottish Executive, Welsh Assembly Government and Department of the Environment Northern Ireland (2007) 'The Air Quality Strategy for England, Scotland, Wales and Northern Ireland'.
[42] UK Government 'UK Air Quality Standards Regulations 2010'.
[43] UK Government 'The Air Quality (England) Regulations 2015.
[44] Department for Environment, Food and Rural Affairs (2022). Technical Guidance LAQM.TG(22) Online Viewer. Available online at: https://laqm.defra.gov.uk/technical-guidance/.

Policy

9.2.3 No changes in policy have occurred since the production of the 2019 ES Addendum.

Guidance

9.2.4 The guidance documents remain the same as the ones used for the 2018 ES and the 2019 ES Addendum except for the publication of the Air quality and Emissions Mitigation Guidance for Sussex (2021) and the update of the National Planning Practice Guidance on Air Quality. The Design Manual for Roads and Bridges (DMRB) LA 105 published in 2019 has been used as a reference however the methodology for operational effects remains the EPUK & IAQM guidance used in the 2018 ES and the 2019 ES Addendum. A summary of the relevant updated guidance follows:

- Design Manual for Roads and Bridges LA105 Air Quality[45]: this document published by Highways England provides a set of criteria used to determine when an air quality assessment can be scoped out based on changes in traffic data and also indicates the distance within which pollution concentration from a road is likely to be significant;
- Air quality and Emissions Mitigation Guidance for Sussex (2020): this guidance deals with the pollutants from transport which are regulated under the LAQM regime, and the assessment and control of dust during demolition and construction. The 2020 version does not present relevant changes in relation to 2019 version of the document considered in the 2019 ES Addendum. This guidance has been updated since the 2018 ES. An updated Damage Cost Calculation has been provided. The updated 'Damage Cost Calculation' for the Proposed Scheme is presented in a specific section of this chapter.

9.3 ASSESSMENT METHODOLOGY REVIEW

9.3.1 The assessment methodology is largely the same as the 2018 ES and the 2019 ES Addendum for both construction and operational effects. The only exception of the baseline year which has been updated from 2017 to 2019.

9.3.2 Baseline concentrations are derived from MSDC LAQM reports and the Department for Environment, Food and Rural Affairs (Defra) modelled background air quality for the area. This has been updated to year 2019 unlike year 2017 used in the 2018 ES and the 2019 ES Addendum. Thus, the assessment scenarios are as follows:

- Model Verification and Baseline (2019);
- Completion year assessment (2025) 'Do Minimum' (DM);
- Completion year assessment (2025) 'Do Something' (DS);
- Opening Phase 3 (2033) DM; and
- Opening Phase 3 (2033) DS.

[45] Highways England, 2019. Design Manual for Roads and Bridges - LA 105 Revision 0

9.3.3 LAQM.TG (22) recommends using a combination of automatic and diffusion tube monitoring data to verify predictions of NO_x concentrations. MSDC currently monitors annual mean NO_2 concentrations using passive diffusion tubes at 30 locations across its administrative boundary.

9.3.4 The results from two local diffusion tubes were used to verify the model. The model verification concluded that modelled predictions of the road traffic contribution to concentrations of overall NO_x are under-predicting at the majority of the monitoring locations by a factor of 2.0461. An adjustment factor of 2.0461 has therefore been applied to modelled road contributions, which is similar as the adjustment factor used in the 2018 ES, derived from monitoring carried out by Aecom in 2017.

9.3.5 In the absence of applicable monitoring data to verify PM_{10} results, modelled road contributions of PM_{10} concentrations are adjusted by the same verification factor as used for NO_x, following guidance in LAQM TG (22) and as carried out in the 2018 ES and 2019 ES Addendum.

Significance Criteria

Impact Significance

9.3.6 The magnitude of impacts on individual receptors on annual mean concentrations of NO_2 and PM_{10} has been defined as per the IAQM and Environmental Protection UK (EPUK) Guidance, 2017[46], the same methodology and criteria used in the 2018 ES and 2019 ES Addendum. These definitions are applied to the results of this assessment.

9.4 UPDATED BASELINE CONDITIONS

9.4.1 The 2018 ES and the 2019 ES Addendum made use of the monitoring results of diffusion tubes for NO_2 installed by Aecom in 2017. It also identified the closest monitoring tubes installed by MSDC identified as MSAQ21 and MSAQ22.

9.4.2 The most recent Air Quality Annual Status Report (ASR) produced by MSDC was published in June 2020. It reports the monitoring data of 2019. The closest diffusion tubes to the Proposed Scheme are the MSAQ21, already mentioned in the 2018 ES and the 2019 ES Addendum, and the MSAQ32 recently added in 2019, which is the closest to the Proposed Scheme, at a roadside location. These two diffusion tubes are the only ones within 2km of the Site. The baseline has been updated to 2019. This includes the Defra Background Maps, which refers to the 2018 background maps with 2019 as a base year.

9.4.3 MSDC has declared one Air Quality Management Area (AQMA) at the following location, for exceedance of NO_2 annual mean NAQO:

- Mid Sussex AQMA 1: Incorporating land at the junction of Stonepound Crossroads, with Hurst Road, Keymer Road, Brighton Road and London Road, located approximately 4.8km south-east of the Site.

[46] *IAQM (January 2017) Guidance on land-use planning and development control: Planning for air quality v1.2*

9.4.4 The AQMA was declared in 2012 and was already discussed in the 2018 ES and the 2019 ES Addendum. No exceedances of the NAQO at the AQMA were recorded in 2019.

Diffusion Tube Monitoring

9.4.5 MSDC currently monitors annual mean NO_2 concentrations using passive diffusion tubes at 30 locations within its administrative boundary. **Table 9.2** presents the NO_2 monitoring of the four closest roadside diffusion tubes to the Site between 2016 and 2019.

Table 9.2: MSDC NO_2 Diffusion Tubes Within 3km of the Proposed Scheme

Monitoring Site	Grid Location	Site Type	Annual Mean NO_2 Concentration (µg/m3)				
			2016	2017	2018	2019	2020
MSAQ32	530791,120295	Roadside	-	-	-	13.7	11.2
MSAQ21	530792,119821	Roadside	32.1	29.5	29.0	27.6	21.0
MSAQ34	531144,118862	Roadside	-	-	-	24.4	19.0
MSAQ22	532160,120069	Roadside	28.4	27.9	27.0	26.0	20.1

Source: MSDC ASR 2021

9.4.6 **Table 9.2** indicated the annual mean NO_2 objective of 40µg/m^3 was not exceeded at any of the 4 monitoring sites within 3.0km of the Site in all years between 2016 and 2020. The latest available monitoring results show a sudden decrease in NO_2 concentrations between 2019 and 2020 as a result of a sudden reduction in economic activity and the implementation of lockdowns due to the COVID-19 outbreak. Without any further additional information at the time of writing a “normal” year is still considered to be in line with the 2019 monitoring results.

Defra Background Maps

9.4.7 Defra provides modelled background concentrations for each 1 x 1 km grid across all local authority areas from a base year of 2018 up to 2030. **Table 9.3** presents the average estimated background concentrations within the study area used in the assessment. Background concentrations are presented for the baseline year (2019), the construction and opening year (2025) and a future year 2033 once Phase 3 of the Northern Arc Allocation development is expected to be completed (modelled with 2030 concentrations, the last available.).

Table 9.3: Defra modelled background annual mean NO_x, NO_2 and PM_{10} concentrations

Grid Square	Year	NOx (µg/m^3)	NO_2 (µg/m^3)	PM_{10} (µg/m^3)
	2019	12.9	9.9	14.5

529500, 120500	2025	10.0	7.8	13.4
	2030	9.0	7.0	13.5

Receptors

Human receptors

9.4.8 The nearest human receptors are to the east and south-east of the Proposed Scheme and are an educational facility and residential properties. The nearest receptor being St Paul's Catholic College approximately 230m from the Proposed Scheme (see **Figure 9.9.1**).

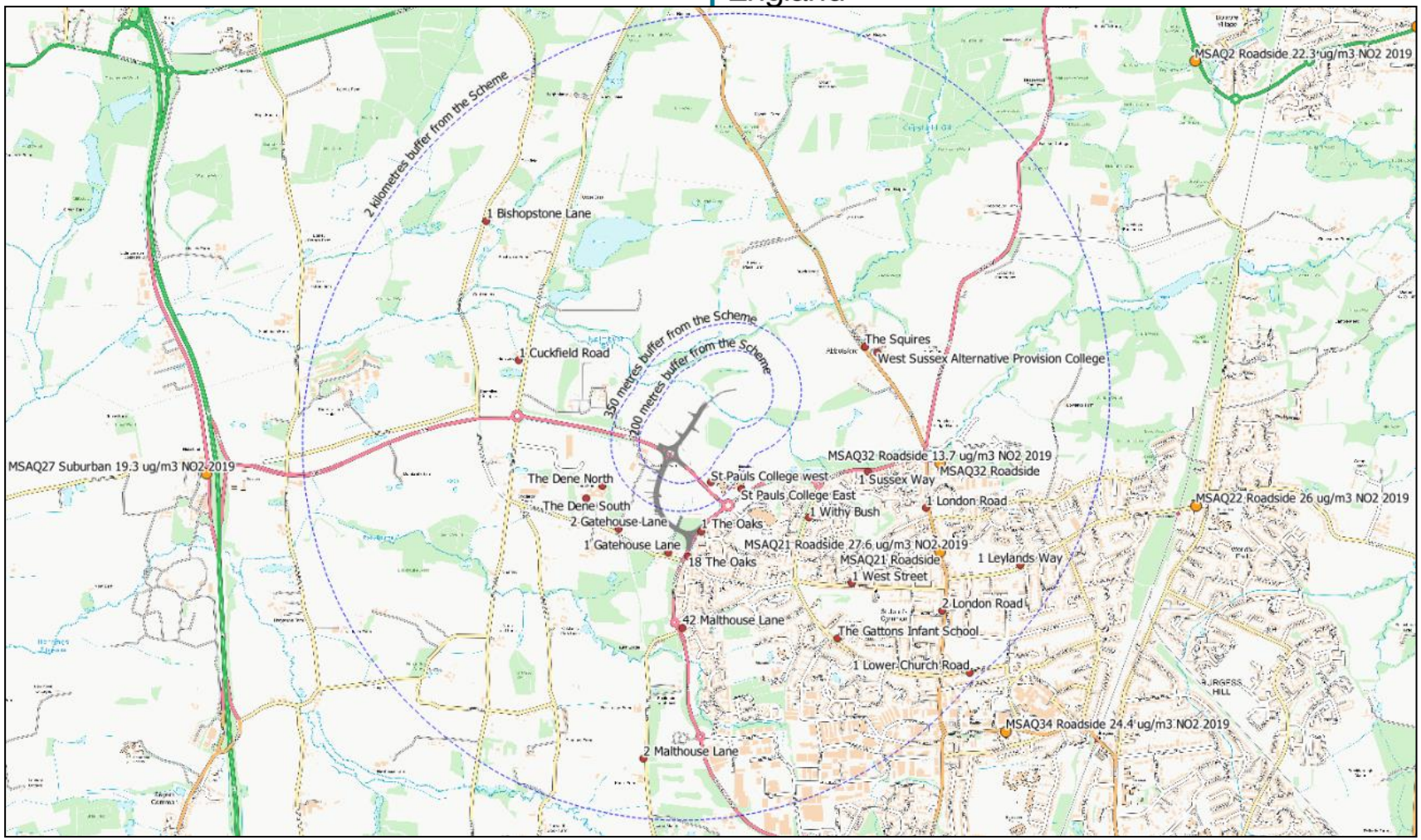


Figure 9.9.1: Representative sensitive receptors within 2km of the Proposed Scheme

Ecological Receptors

9.4.9 The Proposed Scheme does not lie within or adjacent to any sites designated at European, national or local level on the basis of ecological importance. The closest designated area is the Bedelands Farm Local Nature Reserve (LNR) located just over 2km from the Proposed Scheme but not adjacent to any road.

9.5 ENVIRONMENTAL DESIGN AND MANAGEMENT

9.5.1 No significant changes to the Environmental Design and Management of the Proposed Scheme have been proposed in relation to air quality. As presented below in Section 9.7 Additional Mitigation and Monitoring, dust mitigation measures considered a lower level of risk impacts than those presented in the 2018 ES and the 2019 ES Addendum.

9.6 ASSESSMENT OF EFFECTS AND SIGNIFICANCE

Construction Phase

9.6.1 The potential significant effects during construction are defined for the risk of dust soiling effects. This risk is calculated from the potential dust emission magnitude of impact of each of the construction stages and the sensitivity of the receiving area.

Potential dust emission magnitude of impact

9.6.2 The potential dust emission magnitude of the Proposed Scheme has been determined based on information provided by the project team.

9.6.3 Table 9.4 shows the information provided by the design team on the potential magnitude of the different construction parameters; the last column defines the potential magnitude of impact in accordance with IAQM's Guidance on construction dust.

9.6.4 There are no buildings to be demolished within the Proposed Scheme. Therefore, there is no dust emission risk for Demolition. The dust emission magnitude is Neutral for Demolition.

9.6.5 The Site area is above 10,000m^2 on a clayey soil type with the potential for dust generation. It is estimated that no more than 5-10 heavy earth moving vehicles will be active at any one time, the construction material will be mostly soil with smaller amounts of concrete, and thus dusty, with no crushing and screening on site. Therefore, the dust emission magnitude for earthworks is considered to be Large for Earthworks.

9.6.6 The total volume of construction works for the bridge construction is estimated to be less than 25,000m^3. Concrete, with potential for dust release, is to be used. The dust emission magnitude is Small for Construction activities.

9.6.7 It is anticipated that there will be between 10-50 HGV outward movements per day. The surface material has the potential for dust release, and it is assumed that there will be an unpaved road length of over 100m during construction of the Proposed Scheme. Therefore, the dust emission magnitude is Medium for Trackout.

Table 9.4: Potential Dust Emission Magnitude

Construction activity	Parameter	Quantity	Potential magnitude of impact
Demolition	Total building volume	No buildings to be demolished	Neutral
Earthworks	Total site area	> 10,000m^2	Large
	Potentially dusty soil type	Clayey	
	Heavy earth moving vehicles active at any one time	5-10	
	Formation of bunds (height)	No bunds to be built	
	Total material moved	20,000 – 100,000 tonnes	
	Earthworks during wetter months	Construction works to take place all over the year	
Construction	Total building volume	No building construction	Small
	Potentially dusty construction material	Limited amounts of concrete to be used.	
Trackout	HDV outward movements in one day	10-50	Medium

	Potentially dusty surface material	Clayey	
	Unpaved road length	>100m	

Sensitivity of receiving area

9.6.8 Table 9.5 shows that there is a Low sensitivity to dust soiling effects or health effects of PM_{10} affecting human receptors. This is due to the low number of receptors within very close proximity to the Proposed Scheme and the low PM_{10} annual mean concentration of the area (14 $\mu g/m^3$ for 2021). There are no ecological receptors within 350m of the Site, therefore sensitivity for ecological receptors has not been considered further.

Table 9.5: Sensitivity of Receptors

Receptor sensitivities	Sensitivity of Receptor	Distance to source and number of receptors	PM_{10} annual mean concentration	Sensitivity of the Area
People to dust soiling effects	High sensitivity where users can expect enjoyment of high level of amenity	>100m 1 (St Paul's Catholic College)	-	Low
People to the health effects of PM_{10}	High sensitivity at schools	>100m 1 (St Paul's Catholic College)	<24µg/m^3	Low

Risk of Impacts

9.6.9 In line with IAQM's Guidance on construction dust methodology, there is either a negligible or low risk of impacts for most of the construction stages.

Table 9.6: Summary Dust Table

Activity	Demolition	Earthworks	Construction	Trackout
Dust Soiling	Negligible	Low risk	Negligible	Low risk
Human Health	Negligible	Low risk	Negligible	Low risk

9.6.10 The 2018 ES and the 2019 ES Addendum had identified a high risk to dust soiling effects and a medium risk to human health of PM_{10}. The area assessed in the 2018 and the 2019 ES Addendum included areas closer to sensitive receptors during the construction of the residential development. The Proposed Scheme only has one sensitive receptor (St Paul's Catholic College) within 350m of the Site and no sensitive receptors within 100m. Consequently, the risk to dust soiling and human health of PM_{10} is lower.

Construction Phase Road Traffic Emissions

9.6.11 The 2018 ES and the 2019 ES Addendum expected that the peak period of construction phase HGVs movement was expected to occur in 2025 with the potential for up to approximately 58 two-way HGVs movements per day. This number of vehicle movements was considered temporary and not high enough to have the potential to cause a significant adverse effect at any local air quality sensitive receptors. This has not changed since the 2019 ES Addendum.

Operational Phase

9.6.12 Annual mean concentrations of NO_2 and PM_{10} have been modelled at 24 sensitive receptors at areas within 2km of the Proposed Scheme. These sensitive receptors are distributed in a smaller area than the ones considered in the 2018 ES and the 2019 ES Addendum since the Proposed Scheme is smaller than the area assessed as part of the Northern Arc Allocation development. Following review of the results, it has not been necessary to enlarge the study area beyond 2km of the Proposed Scheme.

Nitrogen Dioxide

9.6.13 The results of the ADMS-Roads air quality modelling of operational traffic (based on current guidance, i.e. with reduced emission rates and background concentration to the completion year of 2030) for NO_2 are presented in Table 9.7.

Table 9.7: Results of the ADMS Modelling (NO_2)

Receptor	NO_2 Annual Mean (µg/m^3)						
	2019 Baseline	Do Minimum 2025	Do Something 2025	% Change	Do Minimum 2030	Do Something 2030	% Change
1 Leylands Way	16.6	11.4	11.4	0	9.0	9.8	2
1 Lower Church Road	19.3	12.1	12.1	0	9.9	10.8	2
2 London Road	16.5	11.4	11.4	0	9.2	10.1	2
90 London Road	21.5	14.0	14.1	0	10.9	11.9	3
17 Woodcroft	14.1	12.2	12.3	0	9.7	10.7	3
1 London Road	16.3	11.1	11.1	0	9.0	9.9	2
1 Sussex Way	15.2	11.6	11.6	0	9.1	10.1	3
1 West Street	15.0	11.5	11.5	0	9.9	10.8	2
The Gattons Infant School	12.3	9.5	9.6	0	8.6	9.4	2
1 Withy Bush	15.6	9.1	9.2	0	8.0	8.8	2
St Paul's Catholic College East	16.3	11.5	12.0	1	9.4	10.0	2
St Paul's Catholic	15.3	11.6	13.5	5	10.4	9.3	-3

Receptor	NO_2 Annual Mean (µg/m^3)						
	2019 Baseline	Do Minimum 2025	Do Something 2025	% Change	Do Minimum 2030	Do Something 2030	% Change
College West							
1 The Oaks	18.7	12.2	13.7	4	11.1	9.6	-4
18 The Oaks	17.4	11.6	11.6	0	9.8	8.4	-4
42 Malthouse Lane	17.3	11.4	11.5	0	9.2	10.2	3
1 Gatehouse Lane	11.9	9.0	9.1	0	8.0	8.5	1
2 Malthouse Lane	13.2	10.3	10.3	0	9.3	10.0	2
2 Gatehouse Lane	10.9	8.6	8.6	0	7.6	8.5	2
The Dene North	10.6	8.2	8.3	0	7.3	8.0	2
The Dene South	10.5	8.2	8.2	0	7.2	8.0	2
1 Cuckfield Road	12.5	9.1	9.1	0	7.4	8.3	2
1 Bishopstone Lane	15.1	8.7	8.7	0	7.9	8.5	2
West Sussex Alternative Provision College	11.8	9.1	9.2	0	8.1	8.9	2

Receptor	NO_2 Annual Mean (µg/m^3)						
	2019 Baseline	Do Minimum 2025	Do Something 2025	% Change	Do Minimum 2030	Do Something 2030	% Change
The Squires	13.4	10.2	10.3	0	9.0	9.8	2

9.6.14 The results in Table 9.7 indicate that for 2019, the NO_2 annual mean concentrations are predicted to meet the NO_2 objective at all sensitive receptor locations.

9.6.15 The 1-hour mean AQS objective for NO_2 is unlikely to be exceeded at a roadside location where the annual mean NO_2 concentration is less than 60µg/m3. As shown in Table 9.7, the predicted NO_2 annual mean concentrations in 2019 are below 60µg/m^3 at all of the existing sensitive receptors modelled. Therefore the 1-hour mean objective is met at these locations.

9.6.16 All existing receptors are predicted to be below the NO_2 annual mean objective in 2025 for both 'Do Minimum' and 'Do Something'. Therefore, the 1-hour mean objective is also predicted to be met at all existing receptor locations.

9.6.17 All existing receptors are predicted to be below the NO_2 annual mean objective in 2030 for both 'Do Minimum' and 'Do Something'. Therefore, the 1-hour mean objective is also predicted to be met at all existing receptor locations.

9.6.18 Using the impact descriptors, the Proposed Scheme is predicted to result in a 'negligible' impact on annual mean NO_2 concentrations at all existing receptors. It is considered the effect of the Proposed Scheme on NO_2 concentrations would be not significant. This is in line with the findings of the 2018 ES and the 2019 ES Addendum.

Particulate Matter (PM_{10})

9.6.19 The results of the ADMS-Roads modelling of operational traffic for PM_{10} are presented in Table 9.8.

Table 9.8: Results of the ADMS Modelling for PM_{10}

Receptor	Annual Mean (µg/m³)						
	2019 Baseline	No. of Days >50µg/m³	Do Minimum (2025)	No. of Days >50µg/m³	Do Something (2025)	No. of Days >50µg/m³	2025 % Change
1 Leylands Way	16.0	0	14.6	0	14.6	0	0
1 Lower Church Road	16.6	1	14.9	0	14.9	0	0
2 London Road	16.1	0	14.7	0	14.7	0	0
90 London Road	17.0	1	15.5	0	15.5	0	0
17 Woodcroft	15.9	0	15.4	0	15.4	0	0
1 London Road	16.3	0	15.0	0	15.0	0	0
1 Sussex Way	16.3	0	15.3	0	15.3	0	0
1 West Street	15.8	0	14.7	0	14.7	0	0
The Gattons Infant School	15.3	0	14.1	0	14.1	0	0
1 Withy Bush	16.3	0	14.4	0	14.4	0	0
St Paul's Catholic	15.7	0	14.7	0	14.8	0	0

Receptor	Annual Mean (µg/m^3)						
	2019 Baseline	No. of Days >50µg/m^3	Do Minimum (2025)	No. of Days >50µg/m^3	Do Something (2025)	No. of Days >50µg/m^3	2025 % Change
College East							
St Paul's Catholic College West	15.7	0	14.6	0	15.3	0	-2
1 The Oaks	16.2	0	14.7	0	15.2	0	-3
18 The Oaks	15.9	0	14.5	0	14.5	0	-3
42 Malthouse Lane	15.8	0	14.4	0	14.4	0	0
1 Gatehouse Lane	14.7	0	13.6	0	13.6	0	0
2 Malthouse Lane	14.3	0	13.1	0	13.1	0	0
2 Gatehouse Lane	14.5	0	13.4	0	13.4	0	0
The Dene North	14.6	0	13.5	0	13.6	0	0
The Dene South	14.6	0	13.5	0	13.5	0	0

Receptor	Annual Mean (µg/m^3)						
	2019 Baseline	No. of Days >50µg/m^3	Do Minimum (2025)	No. of Days >50µg/m^3	Do Something (2025)	No. of Days >50µg/m^3	2025 % Change
1 Cuckfield Road	15.0	0	13.8	0	13.8	0	0
1 Bishopstone Lane	15.0	0	13.0	0	13.0	0	0
West Sussex Alternative Provision College	15.6	0	14.4	0	14.5	0	0
The Squirrels	15.9	0	14.8	0	14.9	0	0

9.6.20 As shown in Table 9.8, the annual mean concentrations of PM_{10} are predicted to be well below the objective of 40µg/m^3 in 2019, 2025 and 2030. This is for both 'Do Something' and 'Do Minimum' scenarios at all the existing sensitive receptors modelled. The Proposed Scheme is predicted to result in a 'negligible' impact at all existing sensitive receptors modelled.

9.6.21 The results in Table 9.8 indicate that in 2019, 2025 and 2030, all existing sensitive receptors are predicted to be below the 24-hour mean PM_{10} objective value of 35 days exceeding 50µg/m^3. This is for both the 'Do Something' and 'Do Minimum' scenarios.

9.6.22 Using the impact descriptors, the Proposed Scheme is predicted to result in a 'negligible' impact at all existing sensitive receptors. It is considered that the effect of the Proposed Scheme on local air quality would be not significant.

9.7 ADDITIONAL MITIGATION AND MONITORING

Mitigation of Short-Term Impacts

9.7.1 The risk assessment of dust from the demolition and construction phases of the Proposed Scheme concluded that there is a negligible to low risk of dust soiling effects and to human health effects. As a result of this, certain mitigation measures from the IAQM guidance documents, are recommended to remove the potential for any significant impacts. Mitigation

stated in the 2018 ES and the 2019 ES Addendum corresponded to a higher level of risk since it included the residential development area which is adjacent to existing sensitive receptors. The Proposed Scheme is more isolated and therefore, the dust mitigation measures correspond to a lower level of risk.

9.7.2 In this instance for the Proposed Scheme, as there is a negligible to low risk of dust soiling to health effects of PM_{10}, the general measures applicable to a low-risk site should be applied. These are detailed in **Table 9.9**.

Table 9.9: Dust mitigation measures for low risk to earthworks and trackout

Mitigation measure	Low Risk
Develop and implement a stakeholder communications plan that includes community engagement before work commences on the Site.	Required as per Planning Permission DM/18/5114. St Paul's Catholic College the only sensitive receptor within the study area.
Display the name and contact details of person(s) accountable for air quality and dust issues at the Site. This may be the environment manager/engineer or the site manager.	Highly recommended
Display the head or regional office contact information	Highly recommended
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, and be approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in this document. The desirable measures should be included as appropriate for the Site.	Desirable
Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.	Highly recommended
Make the complaints log available to the local authority when asked.	Highly recommended
Record any exceptional incidents that cause dust and/or air emissions, either on or off-site, and the action taken to resolve the situation in the logbook.	Highly recommended
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked.	Desirable

Mitigation measure	Low Risk
Increase the frequency of site inspections by the person accountable for air quality and dust issues on the Site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Highly recommended
Plan the Site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.	Highly recommended
Avoid runoff of water or mud from the Site	Highly recommended
Remove materials that have a potential to produce dust from the Site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.	Desirable
Cover, seed or fence stockpiles to prevent wind whipping.	Desirable
Ensure all vehicles switch off engines when stationary - no idling vehicles.	Highly recommended
Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on un-surfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate).	Desirable
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.	Highly recommended
Avoid bonfires and burning of waste materials.	Highly recommended
Avoid scabbling (roughening of concrete surfaces) if possible	Desirable
Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.	Desirable
Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.	Desirable
Avoid dry sweeping of large areas.	Desirable
Ensure vehicles entering and leaving the Site are covered to prevent escape of materials during transport.	Desirable

Mitigation measure	Low Risk
Record all inspections of haul routes and any subsequent action in a site logbook.	Desirable
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Desirable

Mitigation of Long-Term Impacts

9.7.3 As identified, the effect of the Proposed Scheme on local air quality would be not significant. No further mitigation measures are envisaged.

9.8 UPDATED RESIDUAL EFFECTS AND CONCLUSIONS

9.8.1 The risk assessment for potential dust impacts during construction of the Proposed Scheme has resulted in the recommendation of mitigation measures applicable to the level of risk. This includes, for example, good site management and dust inspections, planning the Site layout in an effective way, keeping materials stored in such a way as to reduce dust impacts and adequate dust suppression methods including wheel washes. Provided there is the correct implementation of these mitigation measures, construction activities are predicted to have negligible dust impact at sensitive receptor locations.

9.8.2 In the 2025 'Do Something' scenario, the assessment indicates that the Proposed Scheme will have a Negligible impact on NO_2 annual mean concentrations at individual receptor locations assessed. It will also have a Negligible impact on annual mean PM_{10} concentrations at individual receptor locations assessed. It is not predicted that the Proposed Scheme will cause any exceedances of the short-term NAQOs.

9.8.3 In the 2033 'Do Something' scenario (calculated with 2030 background concentrations as a worst-case scenario), the assessment indicates that the Proposed Scheme will have a Negligible impact on NO_2 annual mean concentrations at individual receptor locations assessed. It will also have a Negligible impact on annual mean PM_{10} concentrations at individual receptor locations assessed. It is not predicted that the Proposed Scheme will cause any exceedances of the short-term NAQOs.

Table 9.10: Updated Residual Effects

Impact	Magnitude of impact	Significance of effect
Construction dust	Negligible	Neutral
Construction HGV traffic	Negligible	Neutral
Operational traffic	Negligible	Neutral

9.9 UPDATED CUMULATIVE EFFECTS ASSESSMENT

9.9.1 There are no changes to or additional cumulative effects as a result of the Proposed Scheme.

10 EFFECT INTERACTIONS, RESIDUAL EFFECTS AND CONCLUSION

10.1.1 No changes or additional effects to those presented in Chapter 17: Effect Interactions of the 2018 ES as a result of the Proposed Scheme are anticipated.

10.2 UPDATED MITIGATION REQUIREMENTS

10.2.1 No additional mitigation has been identified as required as part of the assessments in this Further Information Report. However, in line with Condition 8, *"Prior to the commencement of development within each reserved matters area, a Construction Environmental Management Plan (CEMP) shall be submitted to and approved in writing by the Local Planning Authority in respect of development within that reserved matters area."*

10.3 RESIDUAL EFFECTS AND CONCLUSIONS

10.3.1 A summary of the residual effects and conclusions for each assessment topic within this Further Information is outlined below.

Ecology

10.3.2 No additional residual and cumulative effects are considered above those identified within the 2018 ES and 2019 Addendum but pre commencement checks for nesting birds are required should vegetation clearance activities occur from late February to early August inclusive

Ground Conditions

10.3.3 The completion of a ground investigation has allowed for more definitive conclusions to be drawn concerning the underlying geology and the potential for contamination in the ground beneath the Proposed Scheme. The risk to built structures has increased from the 2018 assessment however the other impacts identified as part of the 2018 ES and 2019 ES Addendum remain unchanged.

Landscape and Visual

10.3.4 Although no change or additional residual effects have been identified, a further BS5837 tree survey is required in some areas to better understand the effects of clearance and demolition.

As this has not yet been undertaken, the assessment will require further review once this has been undertaken.

Cultural Heritage

10.3.5 This chapter has been informed by an updated search of data repositories and a recent geophysical survey undertaken in 2019 encompassing part of the Site. However, this chapter has not identified any residual effect to be significant in terms of the 'EIA Regulations'.

Noise and Vibration

10.3.6 No change or additional residual effects have been identified other than to operational traffic which has been updated in line with the methodology in the recently published DMRB LA 111. However, the conclusions remain the same as per the 2018 ES and the 2019 ES Addendum in that no significant effects due to operational road traffic noise are envisaged.

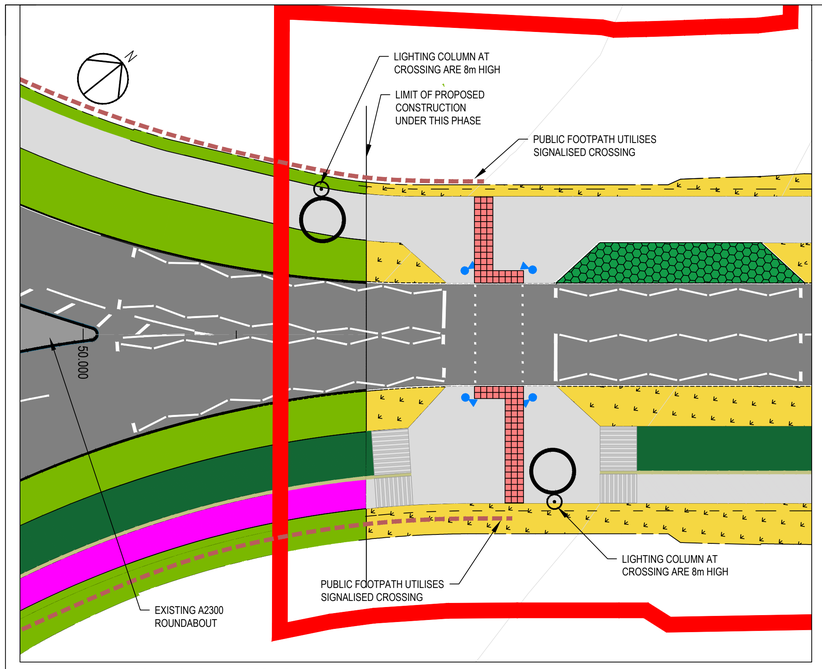
Air Quality

10.3.7 In the 2025 'Do Something' scenario, the assessment indicates that the Proposed Scheme will have a Negligible impact on NO_2 annual mean concentrations at individual receptor locations assessed. It will also have a Negligible impact on annual mean PM_{10} concentrations at individual receptor locations assessed. It is not predicted that the Proposed Scheme will cause any exceedances of the short-term NAQOs.

10.3.8 In the 2033 'Do Something' scenario (calculated with 2030 background concentrations as a worst-case scenario), the assessment indicates that the Proposed Scheme will have a Negligible impact on NO_2 annual mean concentrations at individual receptor locations assessed. It will also have a Negligible impact on annual mean PM_{10} concentrations at individual receptor locations assessed. It is not predicted that the Proposed Scheme will cause any exceedances of the short-term NAQOs.

Appendix A

THE PROPOSED SCHEME



INSET No.1 - PROPOSED TOUCAN CROSSING

1m 0 5m 10m 15m 20m

1:200

10m 0 10m 20m 30m 40m

1:500

NOTES:

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE STATED.
2. EMBANKMENT SIDE SLOPES ARE 1 IN 3 UNLESS SPECIFIED OTHERWISE
3. CUTTING SIDE SLOPES ARE 1 IN 3.5 UNLESS SPECIFIED OTHERWISE.

KEY:

- PHASE 2 CONSTRUCTION WORKS BOUNDARY
- ANCIENT WOODLAND AREA
- ANCIENT WOODLAND 15m OFFSET
- ANCIENT WOODLAND 25m OFFSET
- FLOOD EXTENT OUTLINE (100 YEAR + 105% CC)
- WATERCOURSE
- PUBLIC FOOTPATH NO. 14HU
- FLOOD COMPENSATION AREA
- PROPOSED NATIVE SHRUB PLANTING
- PROPOSED WILDFLOWER GRASS
- PROPOSED HARDSCAPE GRANITE SETTS MIXED SIZE
- SHARED USE FOOTWAY/CYCLEWAY BOUND SURFACE COURSE - BLACK ASPHALT CONCRETE
- CARRIAGEWAY WITH CONSERVATION KERBING CARRIAGEWAY SURFACE TO BE HOT ROLLED ASPHALT
- GRASSCRETE
- SEGREGATED CYCLE TRACK FINISHED IN GREEN SURFACING
- SEGREGATED FOOTWAY BOUND SURFACE COURSE - BLACK ASPHALT CONCRETE
- BUFF COLOURED BLISTER STYLE TACTILE PAVING
- RED COLOURED BLISTER STYLE TACTILE PAVING
- GREY COLOURED TRAMLINE/LADDER STYLE TACTILE PAVING. TRAMLINES LAID PARALLEL TO DIRECTION OF TRAVEL ON CYCLEWAY. TRAMLINES LAID PERPENDICULAR TO DIRECTION OF TRAVEL ON FOOTPATH
- GREY COLOURED CORDUROY STYLE TACTILE PAVING.
- AVENUE TREES (INDICATIVE LOCATIONS, APPROX 5m HIGH WITH 2.5m CLEAR STEM TO MAINTAIN VISIBILITY)
- LIGHTING COLUMN (6m HIGH UNLESS OTHERWISE LABELLED. BLACK LIGHTING COLUMN)
- SIGNAL POLE AND PUSH BUTTON
- TRAFFIC SIGN

Rev	Drwn	Chkd	Appd	Description	Date
P07	JM	GL	AJB	GROUND RAISING ADDED	01/04/2025
P06	AS	GL	AJB	BRIDGE EARTHWORKS AMENDED	31/03/2025
P05	AS	GL	AJB	GREY CHIPPINGS REMOVED FROM FOOTWAY/CYCLEWAY SURFACE	27/11/2024
P04	JM	GL	AJB	PRE-PLANNING APPLICATION COMMENTS ADDRESSED	08/10/2024
P03	KS	GL	AJB	GSH EXTENDED ON THE EAST SIDE TO TIE IN WITH PHASE 1. LANDSCAPE BUND AREA ADDED. LIGHTING COLUMNS PROVIDED FOR THE GSH	15/02/2024
P02	AS	KS	AJB	CONSTRUCTION WORKS BOUNDARY AND ROAD MARKINGS AMENDED	19/07/2023

Purpose of Issue
For Planning S0

Classification
Public

Client
Homes England
Jackson

Project
Western Bridge Link Road
Burgess Hill

Drawing
GENERAL ARRANGEMENT
SHEET 1 of 1
PHASE 2

Scale @ A1	Drawn	Checked	Approved
1:500	JSA	GL	AJB

Project No. CS100377
Date 11.11.24

Drawing Identifier (Project - Originator - Zone - Level - File Type - Role - Number) WBLR-WSP-HPN-04-DR-C-0223
BS1192 Compliant revision P07

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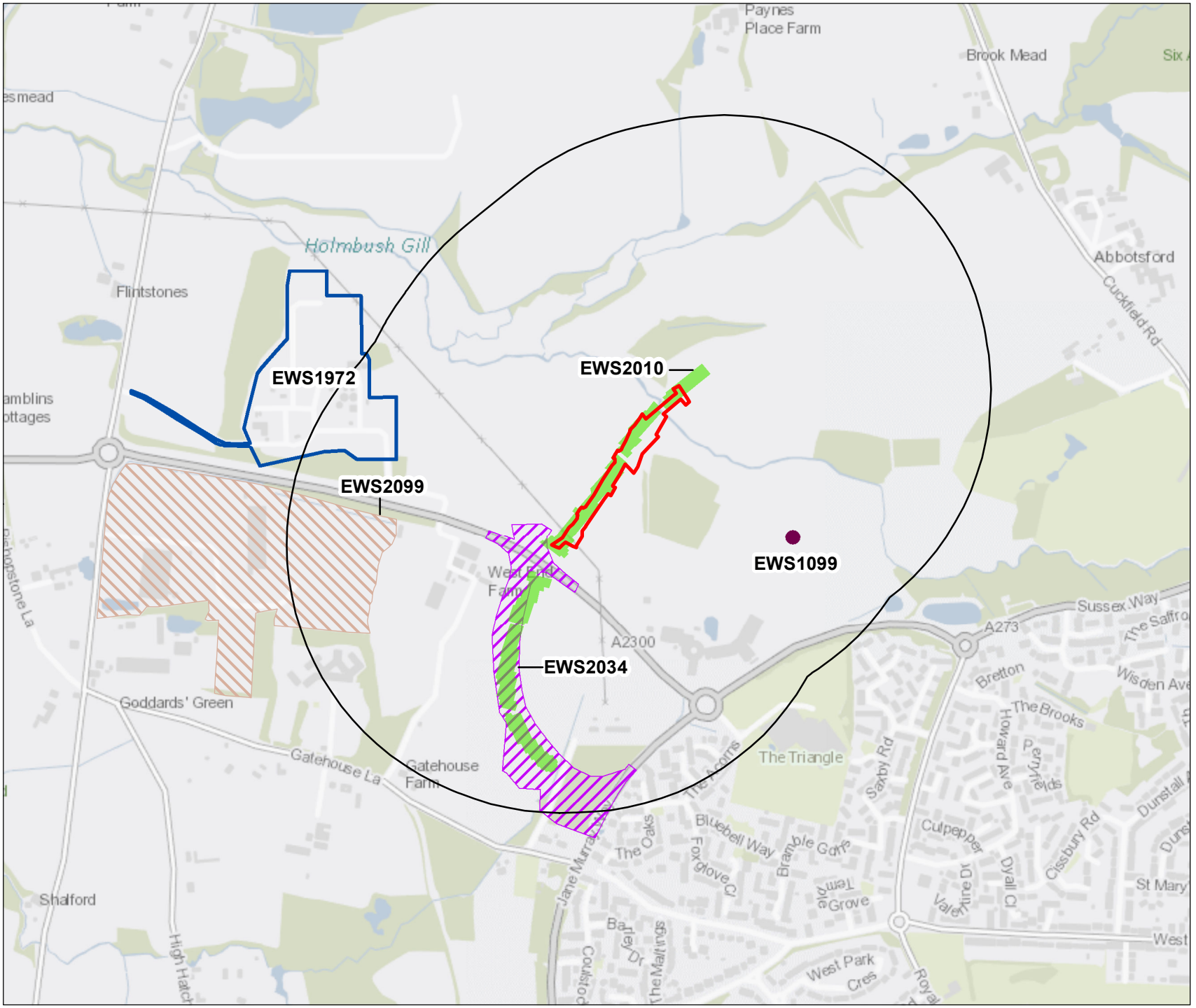
London
E14 4HD
WSP.com

Appendix B

CULTURAL HERITAGE BASELINE CONDITIONS



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N

Site Boundary

Study Area

Archaeological Investigations:

Geophysical Survey

Watching Brief

Evaluation

Geophysical Survey and Evaluation

The data in this figure was obtained from West Sussex Historic Environment Record (HER) on 21/11/2022. WSCC HER ref no. 202223-096.

Desk-Based Assessments (DBAs) are not displayed on this figure.

Metres

0 50 100 200 300 400

WSP

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Phase 2 - Further Information Report

Figure 7.3: Previous Archaeological Investigations of Interest

Brook Holt 3 Blackburn Road Sheffield S61 2DW
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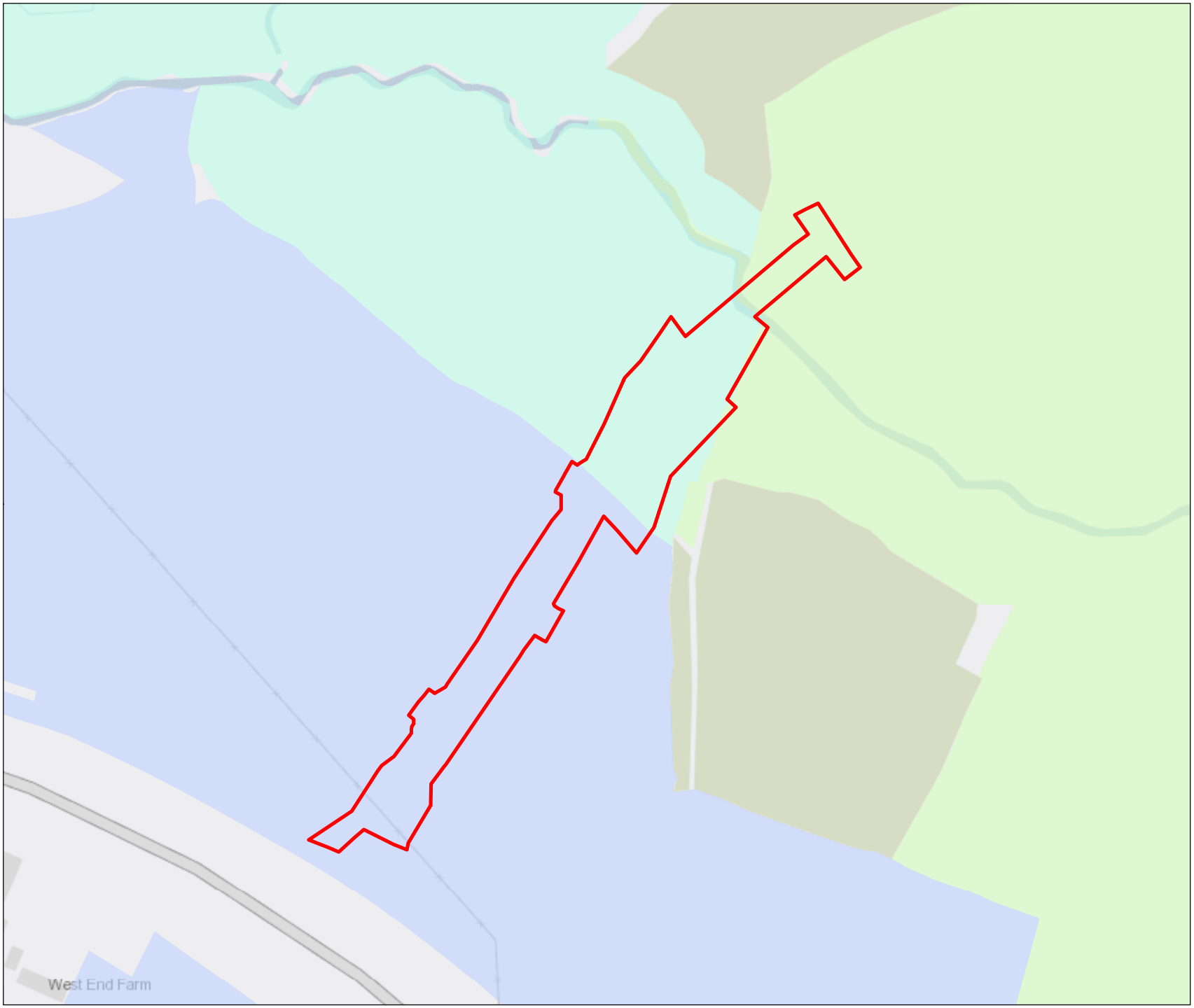
Date: January 2023 | Scale: 1:10,000 | Drg.Ref: ET/Figure 7.3



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Site Boundary

HLC Type:

HWS5775

HWS7478

HWS7491

N

The data in this figure was obtained from West Sussex Historic Environment Record (HER) on 21/11/2022. WSCC HER ref no. 202223-096.

Metres

0 12.5 25 50 75 100

WSP

Western Bridge and Link Road Phase 2 - Further Information Report

Figure 7.4: Historic Landscape Characterisation (HLC) in WBLR Phase 2 Allocation Area

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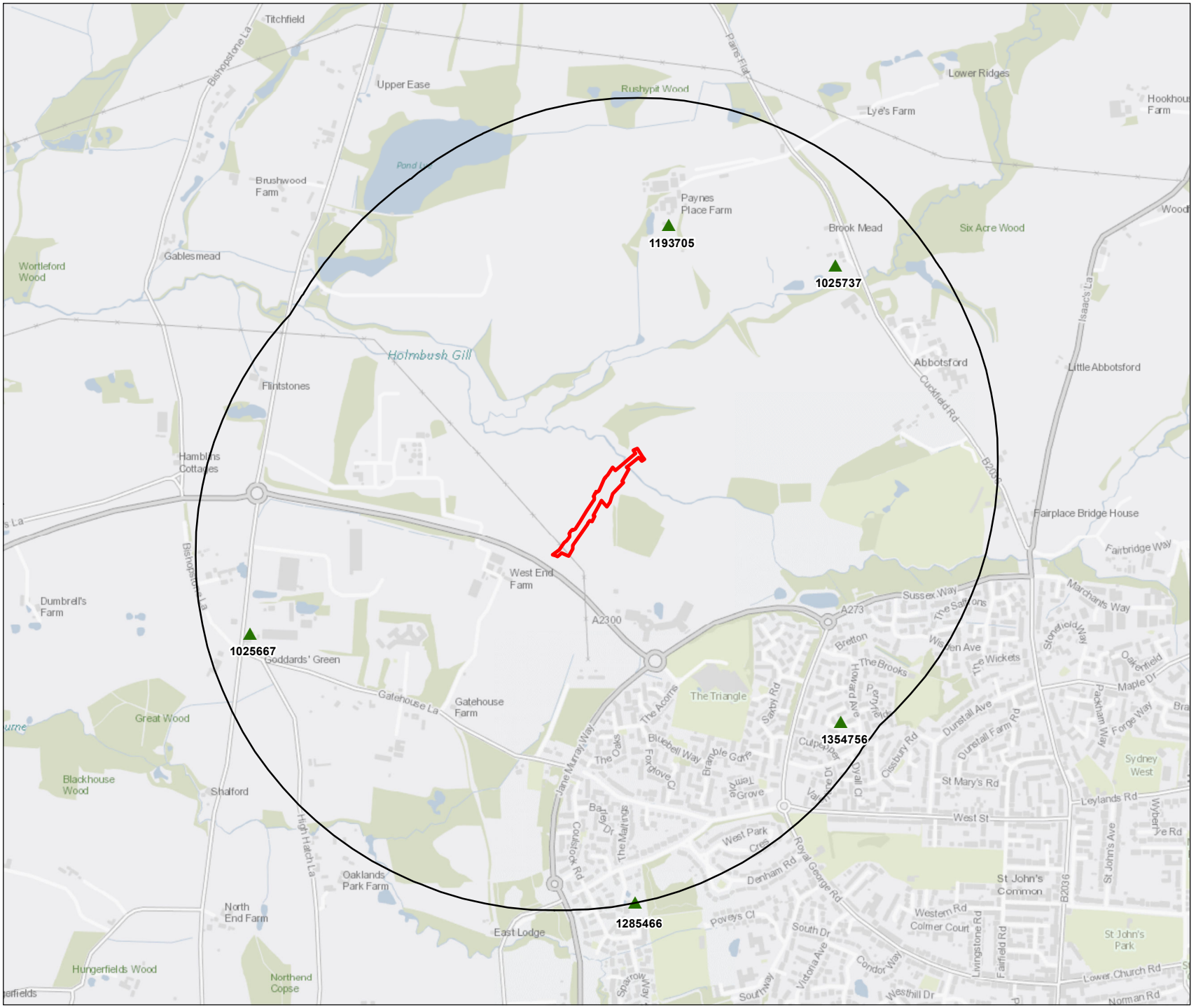
Date: January 2023 | Scale: 1:2,500 | Drg.Ref: ET/Figure 7.4



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Site Boundary

Study Area

Grade II Listed Building

N

Metres

0 50 100 200 300 400

WSP

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Figure 7.1: Designated Heritage Assets within a 1 km Study Area

Brook Holt 3 Blackburn Road Sheffield S61 2DW
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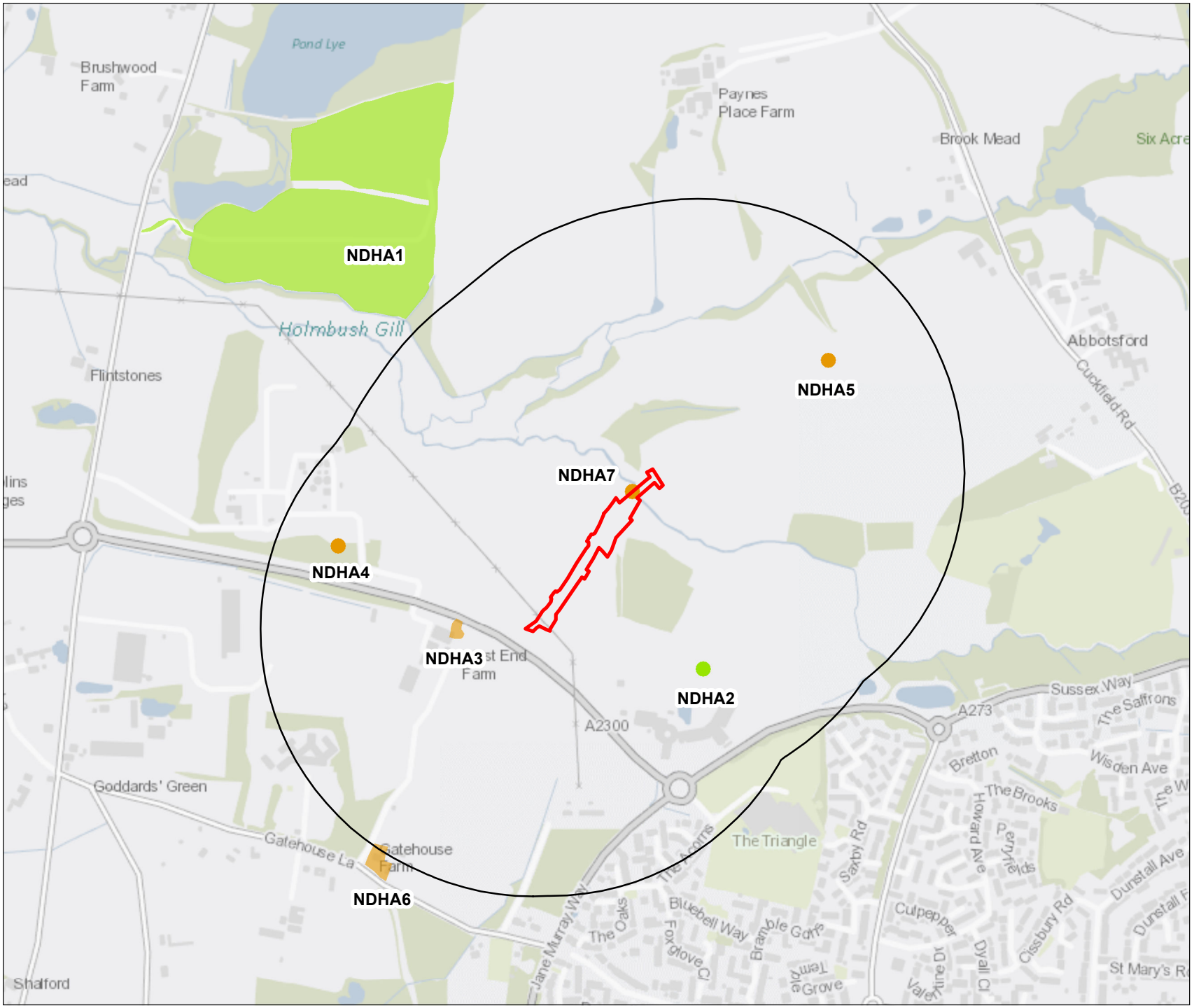
Date: January 2023 | Scale: 1:15,000 | Drg.Ref: ET/Figure 7.1



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N

Site Boundary

Study Area

Non-Designated Heritage Assets (NDHA):

Post-medieval

Multi-period

Unknown

The data in this figure was obtained from West Sussex Historic Environment Record (HER) on 21/11/2022. WSCC HER ref no. 202223-096.

Metres

0 50 100 200 300 400

WSP

Western Bridge and Link Road
Phase 2 - Further Information Report

Figure 7.2: Non-Designated Heritage Assets in a 500 m Study Area

Brook Holt 3 Blackburn Road Sheffield S61 2DW
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Date: January 2023 | Scale: 1:10,000 | Drg.Ref: ET/Figure 7.2

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