Arrow Valley Solar

March 2026

EN0110033

Environmental Impact Assessment (EIA) Scoping Report

Volume III Appendices

Document Reference
[AVS-ATR-GEN-AA-DOC-ENV-000007]

Contents

List of tables

Appendix 2 Methodology

A2.1 Transboundary Effects Screening Matrix

A2.1.1. Regulation 32 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires the consideration of any likely significant effects on the environment of European Economic Association (EEA) States.

A2.1.2. Guidance upon the consideration of transboundary effects is provided in the Planning Inspectorates guidance – Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process[1].

A2.1.3. The following screening matrix provides the consideration of transboundary effects for the Scheme, using the matrix provided in Annex 1 of the Transboundary guidance.

Table A 2-1 Screening Matrix for Possible Substantial Effects on the Environment of EEA States

Criteria and Relevant Considerations	Commentary with Regard to Proposed Scheme
Characteristics of the development Size of the development Use of natural resources Production of waste Pollution and nuisance Risk of accidents Use of technologies	The resources required for the construction of the Scheme are likely to be obtained from the global market, but it is envisaged that materials would be obtained locally wherever possible. No waste, nuisances or accidents are likely to extend beyond the border of the UK. No novel technologies are proposed that have potential for transboundary effects.
Location of development (including existing use) and Geographical area What is the existing use? What is the distance to another EEA state? (Name EEA state)? What is the extent of the area of a likely impact under the jurisdiction of another EEA state?	The Scheme's closest EEA boundary is France, located approximately 300km to the south. No impacts are likely to extend beyond the jurisdiction of the UK, with the exception of potential greenhouse gas emissions (GHG). The latter is expected to be minimal given the nature of the Scheme, which will not emit GHG

[1] The Planning Inspectorate (2025) Nationally Significant Infrastructure Projects: Advice on Transboundary Impacts and Process. Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-transboundary-impacts-and-process

Criteria and Relevant Considerations	Commentary with Regard to Proposed Scheme
	emissions during its operation (except for any emissions associated with maintenance vehicles and repair works).
Environmental importance Are particular environmental values (e.g. protected areas – name them) likely to be affected? Capacity of the natural environment. Wetlands, coastal zones, mountain and forest areas, nature reserves and parks, Natura 2000 sites, areas where environmental quality standards already exceeded, densely populated areas, landscapes of historical, cultural or archaeological significance.	European statutory designated nature conservation sites are not likely to be affected. It is not anticipated that there is potential for transboundary effects (and therefore any effects on important environmental receptors beyond the UK).
Potential impacts and carrier By what means could impacts be spread (i.e. what pathways)?	The only potential transboundary environmental impact which is considered likely is from GHG emissions. These emissions would be spread by atmospheric processes and are anticipated to be minimal given the nature of the Scheme. The Scheme is expected to offset GHG emissions through the generation of clean electricity, that otherwise would have been generated from a typical fuel mix comprising technologies such as gas fired power stations for example.
Extent What is the likely extent of the impact (geographical area and size of the affected population)?	The only potential transboundary environmental impact which is considered likely is from GHG emissions,

Criteria and Relevant Considerations	Commentary with Regard to Proposed Scheme
Magnitude What will the likely magnitude of the change in relevant variables relative to the status quo, taking into account the sensitivity of the variable?	which are known to contribute to changes on climate on a global scale. The impact of GHG emissions is considered irreversible within human lifetimes, however as above, the emissions are expected to be minimal during construction and decommissioning (in the order of one to three years). The Scheme is expected to lead to a beneficial contribution to UK GHG emissions during operation (assumed to be 60 years). The temporal pattern of GHG emissions is likely to be relatively constant during the construction and decommissioning phases. It is proposed to calculate the likely GHG emissions as part of the EIA. GHG impacts will be put into context in terms of their impact on the UK's five year carbon budgets set legally binding targets for greenhouse gas emissions. The GHG emissions offset through the production of cleaner electricity during the operational phase will be accounted for within the GHG emissions calculations. In any event, the global nature of GHG impacts means that it is not possible to apportion or identify any impact in GHG emissions in terms of environmental effects on any particular country or state. It follows that there is no potential for significant effects on the environment of any EEA State or group of EEA States resulting from GHG emissions from the Scheme, as the environmental receptor in this regard is the global atmosphere, rather than the environment of any country or state or group of countries or states. The GHG emissions are considered at a global level, and so are captured by the assessment in any event.
Probability What is the degree of probability of the impact? Is the impact likely to occur as a consequence of normal conditions or exceptional situations, such as accidents?	
Duration Is the impact likely to be temporary, short-term or long- term? Is the impact likely to relate to the construction, operation or decommissioning phase of the activity?	
Frequency What is likely to be the temporal pattern of the impact?	
Reversibility Is the impact likely to be reversible or irreversible?	

Criteria and Relevant Considerations	Commentary with Regard to Proposed Scheme
Cumulative impacts Are other major developments close by?	Proposed developments within 5km of the Scheme will be taken into consideration in the Environmental Impact Assessment (EIA). It is not anticipated that there is potential for significant cumulative transboundary effects.

A2.2 Commitments Register

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
CO1	ES	Additional	Environmental Management	An outline Construction Environmental Management Plan (oCEMP) will be prepared to support the DCO Application. The oCEMP will set out the mitigation measures identified through the EIA process to be employed during the construction phase.	Chapter 2, Section 2.5.6	oCEMP	DCO Requirement				
CO2	ES	Additional	Environmental Management	An Outline Operational Environmental Management Plan (oOEMP) will be provided with the DCO Application. This will include control measures to ensure no significant impacts would arise during the maintenance and replacement activities.	Chapter 2, Section 2.5.6	oOEMP	DCO Requirement				
CO3	ES	Additional	Traffic Management	An outline Construction Traffic Management Plan (oCTMP) including details on construction logistics and construction worker travel will be prepared in support of the DCO Application that includes information to guide the delivery of material, plant, equipment, and staff during the construction phase. The local highway authority and other key local stakeholders will be involved in the development of the mitigation documents, with consultation taking place on any measures that are proposed to be implemented.	Chapter 2, Section 2.5.6	oCTMP	DCO Requirement				
CO4	ES	Additional Mitigation	Landscape Management	An Outline version of the Landscape and Ecological	Chapter 2,	oLEMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
				Management Plan (oLEMP) will be provided with the DCO Application. The management of the landscape and ecological features will be undertaken in accordance with a detailed Landscape and Ecological Management Plan (LEMP) that will be secured via a requirement of the DCO	Section 2.5.6						
CO5	ES	Additional Mitigation	Ecological Protection	An outline version of the Ecological Protection and Mitigation Strategy (EPMS) will be produced which will detail the additional avoidance and mitigation measures relevant to ecological protection. This will include details of any required licenses. A detailed version of this document will be finalised after the DCO has been secured.	Chapter 2, Section 2.5.6	EPMS	DCO Requirement				
CO6	ES	Additional Mitigation	Site Reinstatement	The Site would be reinstated in accordance with an Outline Decommissioning Environmental Management Plan (oDEMP). The oDEMP will be subject to the approval of the local planning authorities.	Chapter 2, Section 2.5.6	oDEMP	DCO Requirement				
CO7	ES	Additional Mitigation	Battery Safety	The BESS will be designed, built and operated in accordance with relevant Fire Regulations and Health and Safety Executive guidance, to be detailed in an Outline Battery Safety Management Plan (oBSMP). This will specifically describe measures to ensure that all safety concerns around battery energy storage system,	Chapter 2, Section 2.5.6 Chapter 5, Section 5.5	oBSMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
				including fire risk, are addressed as far as reasonably practicable. The relevant local fire and rescue service will be consulted in the preparation of the management plan.							
CO8	Scoping	Additional Mitigation	Construction Activities	Construction activities are likely to be carried out Monday to Friday 07:00-18:00 and between 08:00 and 13:30 on Saturdays. However, some activities may be required outside of these times (such as the delivery of abnormal loads, concrete pours for foundations, nighttime working for cable construction works in public highways or horizontal direction drilling activities). Where possible, construction deliveries will be coordinated to avoid HGV movements during the traditional AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00).	Chapter 4, Section 4.4.7	oCEMP, oOEMP, oDEMP	DCO Requirement				
CO9	ES	Additional Mitigation	Land use Management	The land underneath and around the Solar Panel Mounting Structures would be sown wildflower grassland (or equivalent planting scheme identified through the EIA process). The Applicant will explore how this vegetation is managed through during the Operational Phase of the Scheme. For example, a combination of sheep grazing and hay/silage production may be use in order to manage vegetation. For the purposes of EIA Scoping, it has been assumed	Chapter 4, Section 4.5.6	oLEMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
				that that vegetation will be managed with machinery.							
CO10	ES	Embedded Mitigation	Decommissioning	The Operational Phase of the Scheme is proposed to be 60 years. During the Decommissioning Phase, all the above ground infrastructure including PV Panels, Mounting Structures, above ground cabling, Conversion Units and fencing would be removed and recycled or disposed of in accordance with good practice following the waste hierarchy, with materials being reused or recycled whenever possible. All waste will be disposed of in accordance with the legislation and best practice guidance at the time of decommissioning. The underground ducting and joint bays within the Cable Route Corridor will be decommissioned in accordance with the latest regulations and good practice at that time but are anticipated to be left in-situ to minimise adverse environmental effects. It may be possible to remove the cable itself by extracting it at the joint bays from within the ducting, so that the cable can be recycled.	Chapter 4, Section 4.5.1 and 4.6.2	oCEMP, oOEMP, oDEMP	DCO Requirement				
CO11	ES	Embedded Mitigation	Project Outcomes, Design Principles and Parameters	Appropriate setbacks and buffers will be included within the design to limit the environmental impacts caused by the Scheme during construction, operation and	Chapter 4, Section 4.3.3	Design Parameters and Principles	DCO Schedule				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
				decommissioning. These setbacks and buffers will be developed based on consultation feedback, relevant statutory guidance, baseline assessments and professional judgement.							
CO12	ES	Additional Mitigation	Lighting	During the Construction and Decommissioning Phases, the Scheme will require temporary lighting, which would be designed as far as reasonably practicable to minimise any light spill and sky glow and will not be continuously lit. Lighting is likely to be limited to core construction working hours.	Chapter 4, Section 4.3.24	oCEMP and oDEMP	DCO Requirement				
CO13	ES	Additional Mitigation	Lighting	During the Operational Phase, the Scheme will generally remain unlit with the exception of the Customer and National Grid Substations with manually operated or motion-detection lighting utilised for operational and security purposes. The lighting of the Customer Substation, National Grid Substation and BESS would be in accordance with Health and Safety requirements, particularly around any emergency exits.	Chapter 4, Section 4.3.25	oOEMP	DCO Requirement				
CO14	ES	Additional Mitigation	Lighting	The lighting design would seek to limit any impacts on sensitive receptors through, as secured through the oOEMP.	Chapter 4, Section 4.3.25	oOEMP	DCO Requirement				
CO15	ES	Embedded Mitigation	Heritage	Visually and physically intrusive infrastructure elements will be sited in areas assessed to have lower potential for impact to designated and non-designated	Chapter 13, Section 13.4	Works Plans	DCO Schedule				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	Commitment Stage (Scoping, PEIR, ES)	Commitment Type (Embedded or Additional Mitigation	Title	Description	EIA Scoping Report Location	Application Document	How is this Commitment Secured?	PEIR Location	Compliance Date and Details	Phase (e.g Pre-commencement)	Who (decision maker)
				heritage assets, archaeological remains and the historic landscape as far as practicable. Where intrusive excavation is required for higher impact zones such as for the installation of the CR, Substations, access roads, enabling works, construction compounds or BESS, the design and siting of these elements will seek to avoid known archaeological remains or areas of archaeological potential or minimise impacts upon these as far as practicable. Where practicable, the Scheme will limit the necessity for excavation through design decisions, such as by retaining on-site cabling above ground attached to panels. Where excavation cannot be avoided, the use of previously disturbed areas will also be prioritized where practicable, to avoid disturbance of unknown deposits.							
CO16	ES	Embedded Mitigation	Air Quality	Dust and particulate matter emissions produced during Construction Phase activities would be controlled through the implementation of the oCEMP and oDEMP. It is considered that due to the size and proximity of the Scheme to nearby sensitive human receptors that the highest risk of impact, 'high risk', has been assessed in line with the IAQM guidance and therefore	Chapter 5, Section 5.5.16	oCEMP, oDEMP, oCTMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	Commitment Stage (Scoping, PEIR, ES)	Commitment Type (Embedded or Additional Mitigation	Title	Description	EIA Scoping Report Location	Application Document	How is this Commitment Secured?	PEIR Location	Compliance Date and Details	Phase (e.g Pre-commencement)	Who (decision maker)
				associated high risk mitigation measures will be implemented and included in the oCEMP and oDEMP. Construction transport logistics will be managed through the implementation of the Outline Construction Traffic Management Plan (oCTMP) which will be submitted as part of the DCO application. This will include recommendations that, where practicable, construction traffic avoids routes through villages and AQMAs.							
CO17	ES	Embedded Mitigation	Noise	Construction traffic is expected to utilise the strategic road network wherever practicable, resulting in a minimal increase in vehicle flows on many major roads in the locality, including the A46 which runs across the study area. An Outline Construction Traffic Management Plan (oCTMP) will be implemented as part of the outline Construction Environmental Management Plan (oCEMP), incorporating measures to minimise disturbance from road traffic noise. These are likely to include careful route selection to avoid sensitive areas where practicable, restrictions on delivery times, appropriate speed limits, and measures to repair any road surface damage on the local road network	Chapter 10, Section 10.4	oCTMP, oCEMP, oOEMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	Commitment Stage (Scoping, PEIR, ES)	Commitment Type (Embedded or Additional Mitigation	Title	Description	EIA Scoping Report Location	Application Document	How is this Commitment Secured?	PEIR Location	Compliance Date and Details	Phase (e.g Pre-commencement)	Who (decision maker)
				attributable to construction traffic, where necessary. The selection of low noise equipment will be prioritised where practicable, and the layout of noise generating infrastructure will be optimised to mitigate effects at nearby receptors as the design progresses. This will be finalised in Scheme design and evidences within the oCEMP as part of the DCO. Where necessary, additional operational mitigation (such as acoustic enclosures, attenuators, or screening) will be identified and described within the outline Operational Environmental Management Plan (oOEMP) and the ES.							
CO18	ES	Additional Mitigation	Soils	A Soil Management Plan (oSMP) will be developed to help guide good practice and minimise potential effects on soils and agricultural land quality.	Chapter 2, Section 2.5.6	oSMP	DCO Requirement				
CO19	ES	Additional Mitigation	Topsoil Management	At the BESS and substation locations, topsoil will be stripped and retained on site as part of the landscaping, to protect the soil quality for reinstatement once the hard infrastructure has been removed.	Chapter 9, Section 9.6.4	oLEMP, oSMP	DCO Requirement				
CO20	ES	Embedded and Additional Mitigation	Glint and Glare	The impact of the Scheme can only reliably be determined via detailed geometric modelling; this will be undertaken in accordance with the methodology and guidance as stated in the Scoping Report.	Chapter 15, Sections 15.3 and 15.4	Works Plans	DCO Schedule				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	Commitment Stage (Scoping, PEIR, ES)	Commitment Type (Embedded or Additional Mitigation	Title	Description	EIA Scoping Report Location	Application Document	How is this Commitment Secured?	PEIR Location	Compliance Date and Details	Phase (e.g Pre-commencement)	Who (decision maker)
				Common mitigation strategies for ground-based receptors are as follows and will be considered by the Applicant if they are required: ▪ Provision of screening (planting or opaque fence) at the Site boundary or elsewhere between the observer and reflecting panel areas; ▪ Design of the configuration of infrastructure on-site. This may involve changes to the azimuth angle of the solar panels; and/or changes to the elevation (tilt) angle of the solar panels; and ▪ Changes to technology. This may involve implementing areas of Fixed South Facing PV Arrays or Single Axis Trackers (note that both options are considered under this assessment)							
CO21	ES	Embedded Mitigation	Security and Crime Prevention	The Scheme would include security measures during all phases including a fence, security lighting, and CCTV coverage. During the Operation & Maintenance phase, the Site would be bound by a 2.5-metre-high perimeter fence, which would increase to 3 metres around the Conversion Units, BESS, Customer Substation and National Grid Substation. The Site would incorporate CCTV cameras around its perimeter, ensuring that	Chapter 4	Works Plans	DCO Schedule				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
				the Site is secure and well monitored.							
CO22	ES	Embedded Mitigation	Skills and Jobs	The Scheme will provide an opportunity for local residents to acquire new skills and training within the construction industry via the outline Skills, Supply Chain and Employment Plan submitted as part of the DCO. The baseline has shown that the LADs have a low level of qualification levels and with the potential for the Scheme to provide education and training initiatives (e.g., school programmes, adult learning and apprenticeships) which are to be assessed as the Scheme design progresses.	Chapter 5, Section 5.4	Skills, Supply Chain and Employment Plan	DCO Requirement				
CO23	ES	Embedded Mitigation	Access to Public Rights of Way	As the Scheme progresses, the Applicant will aim to develop an Outline Public Rights of Way Management Plan (OPRoWMP) to improve existing PRoWs on the Site, where practicable. This will be informed by public consultation and engagement with key stakeholders.	Chapter 2, Section 2.5.6	oPRoWMP	DCO Requirement				
CO24	ES	Embedded Mitigation	Public Consultation	Appointment by the Applicant and/or Principal Contractor(s) of a Public/Community Liaison Officer, who will be responsible for proactively providing information to and communicating with residents and stakeholders. Development and implementation of a suitably tailored Community Engagement Plan (CEP) or	Chapter 14, Section 14.5	oCEMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	Commitment Stage (Scoping, PEIR, ES)	Commitment Type (Embedded or Additional Mitigation	Title	Description	EIA Scoping Report Location	Application Document	How is this Commitment Secured?	PEIR Location	Compliance Date and Details	Phase (e.g Pre-commencement)	Who (decision maker)
				similar, via a Public/ Community Liaison Officer. This should be reflective of the community characteristics, including any specific linguistic or specialist communication needs and be tailored to the area's demographics. It should include arrangements and commitments for the provision of advance information on the construction programme to enable affected persons to plan ahead, as well as procedures and mechanisms for managing complaints and triggering corrective actions, should the need arise. The plan should be in accessible formats and utilise inclusive communication strategies.							
CO25	ES	Embedded and Additional Mitigation	Highway Safety: Prevention of accidents	Initially through Scheme design and then implementation of the oCTMP, the Scheme will ensure mitigation measures are put in place for safe access for pedestrians and cyclists with the aim to reduce and prevent traffic accidents and road related injuries.	Chapter 11, Section 11.4	oCTMP	DCO Requirement				
CO28	ES	Additional Mitigation	Recycling	In the UK, the Waste Electrical and Electronic Equipment (WEEE) Regulations 2013 mandate recycling responsibilities of manufacturers to take back decommissioned solar PV modules. This to ensure responsible disposure of solar PV modules and increase recycling of materials. Suppliers of solar PV modules for the Scheme will be	Chapter 5, Section 5.2	oCEMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	Commitment Stage (Scoping, PEIR, ES)	Commitment Type (Embedded or Additional Mitigation	Title	Description	EIA Scoping Report Location	Application Document	How is this Commitment Secured?	PEIR Location	Compliance Date and Details	Phase (e.g Pre-commencement)	Who (decision maker)
				registered with a producer compliance scheme that has an industry managed take-back and recycling scheme. The Applicant will ensure this is followed through. Possibilities to re-use or recycle materials will be explored before resorting to landfill options in alignment with the Waste Management Plan for England 2021.							
CO29	ES	Embedded Mitigation	Waste Management	A Waste Management Plan (WMP) will be produced, and will contain estimates of by type and quantity, of expected residues and emissions and quantities and types of waste produced during the Construction, Operational, and Decommissioning Phases will be provided. The oCEMP will include measures to minimise waste, such as a waste hierarchy, and will set out site management procedures such as waste management, recycling opportunities, and off-site disposal.	Chapter 5, Section 5.2	oCEMP	DCO Requirement				
CO30	ES	Additional Mitigation	Electrical Infrastructure: Off Site Manufacturing	All electrical infrastructure (such as but not limited to Ground mounted PV Modules inverters, transformers, batteries and other associated infrastructure) will be manufactured off-site and delivered ready for installation. Construction and assembly waste is expected to be minimal, including packaging wastes (wood and plastics), fencing	Chapter 5, Section 5.2	oCEMP	DCO Requirement				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	Commitment Stage (Scoping, PEIR, ES)	Commitment Type (Embedded or Additional Mitigation	Title	Description	EIA Scoping Report Location	Application Document	How is this Commitment Secured?	PEIR Location	Compliance Date and Details	Phase (e.g Pre-commencement)	Who (decision maker)
				(metal and wood), WEEE and concrete.							
CO31	ES	Embedded Mitigation	Flooding	A Flood Management Plan will be developed to ensure that the proposed construction Site can be safely operated and will not be affected in the event of a flood, and that floodplain working can be minimised as far as possible. This will include adoption of the EAs flood warning system and for operation the implementation of a sustainable drainage strategy.	Chapter 5, Section 5.7	oCEMP	DCO Requirement				
CO32	ES	Embedded Mitigation	Watercourse and Aquifer Buffers	Where possible, all Site activities, including the location of the solar panels will be located 10m from any watercourses. Additionally, no works will be carried out within 3m of the aquifers. The design and accompanying GI must confirm that this is achievable and maintained to ensure construction activities do not adversely impact groundwater.	Chapter 5, Section 5.7	oCEMP	DCO Requirement				
CO33	ES	Embedded Mitigation	All hedgerows and woodland (non- ancient)	Unless Arboricultural surveys indicate otherwise (due to greater root protection area (RPA)), a minimum separation buffer of 5m will be applied to all hedgerows and woodland (non-ancient) for the Scheme within, or adjacent to the Order Limits.) This will be confirmed through the evolution of the Scheme Design Principles and will be presented in the Constraints and Parameters Plans.	Chapter 6, Section 6.5	Works Plans	DCO Schedule				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
CO34	ES	Embedded Mitigation	Ditch	A separation buffer of 10m will be applied to all ditches for Proposed Development within, or adjacent to the Order Limits. This will be confirmed through the evolution of the Scheme Design Principles and will be presented in the Constraints and Parameters Plans.	Chapter 6, Section 6.5	Works Plans	DCO Schedule				
CO35	ES	Embedded and Additional Mitigation	Species specific buffers	Species-specific buffer zones will be adopted, where required, for proposed development within, or adjacent to the Order Limits. This will form part of the Scheme Design Principles and will be presented in the Constraints and Parameters Plans.	Chapter 6, Section 6.5	Works Plans	DCO Schedule				
CO36	ES	Embedded Mitigation	Individual Trees and groups of trees	Unless Arboricultural surveys indicate otherwise (due to greater root protection area (RPA)) a separation buffer of 10m will be applied to all individual trees and groups of trees for proposed development within, or adjacent to the Order Limits. This will be confirmed through the evolution of the Scheme Design Principles and will be presented in the Constraints and Parameters Plans.	Chapter 6, Section 6.5	Works Plans	DCO Schedule				
CO37	ES	Embedded Mitigation	Ponds	A separation buffer of 10m will be applied to all ponds for proposed development within, or adjacent to the Order Limits. This will be confirmed through the evolution of the Scheme Design Principles and will be presented in the Constraints and Parameters Plans.	Chapter 6, Section 6.5	Works Plans	DCO Schedule				

Commitment Details					Scoping			Later Stage Use (PEIR/Draft DCO)			
Commitment Reference	**Commitment Stage (Scoping, PEIR, ES)**	**Commitment Type (Embedded or Additional Mitigation**	**Title**	**Description**	**EIA Scoping Report Location**	**Application Document**	**How is this Commitment Secured?**	**PEIR Location**	**Compliance Date and Details**	**Phase (e.g Pre-commencement)**	**Who (decision maker)**
CO38	ES	Embedded Mitigation	ProW	A minimum separation buffer of 15m buffer from all infrastructure (excluding cables) to ProW will be adhered to and will be presented in the Constraints and Parameters Plans.	Chapter 5, Section 5.8	Works Plans	DCO Schedule				

Appendix 5 Topics to be Scoped Out

Water Environment

A5.1 WFD Assessment

Introduction

A5.1.1. The WFD is a European Directive (Directive 2000/60/EC), which sets out a strategic planning process for the purposes of managing, protecting and improving the water environment. The WFD was transposed into law in England and Wales in 2023 by the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 ("the WFD Regulations").

A5.1.2. As of 1 January 2021, the WFD Regulations became retained EU law, and the references in the WFD Regulations to the WFD refer to the version of the European Directive in place at the time when the WFD Regulations came into force (10 April 2017). Therefore, the principal legal basis is the WFD Regulations which currently mirror the EU Directive. In this report "WFD" refers to WFD Regulations applicable to England and Wales, not the EU Directive.

A5.1.3. The WFD separates the water environment into discreet spatial units, referred to as 'water bodies'. Water bodies are intended to represent either (i) spatially constrained bodies of water e.g. lakes or groundwater aquifers or (ii) zones of a linear body of water that share similar physical characteristics e.g. the division of larger rivers into discreet reaches that are relatively homogenous in character.

A5.1.4. The main aims of the WFD are to:

- Prevent deterioration in the status of aquatic ecosystems, protect them and improve the ecological condition of waters;
- Aim to achieve at least 'Good Status' for all waters by 2015 (2021 or 2027 where fully justified within an extended deadline under Schedule 16);
- Promote sustainable use of water;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to the aquatic environment;
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and,
- Help reduce the effects of floods and droughts.

A5.1.5. The Environment Agency is the Government's 'competent authority' for implementing the WFD in England; it monitors, advises and manages many aspects of the water environment though regulating discharges, abstractions and processing environmental permits and licenses. The Environment Agency is committed to implementing environmental improvements that would result in the achievement of the objectives of the WFD.

A5.1.6. The WFD classification for a defined water body is produced by the assessment of a wide variety of different 'elements' which includes:

- 'Biological elements' such as phytoplankton, macrophytes, phytobenthos, benthic invertebrates and fish;
- 'Supporting elements' that include chemical measurements such as ammonia, dissolved oxygen, pH, phosphate, copper, zinc and temperature; and,
- 'Supporting conditions' (sometimes referred to as hydromorphology) that assess the physical attributes of the water body such as 'river continuity', 'quantity and dynamics of flow' and 'morphology'.

A5.1.7. The assessment given for each element is also accompanied by a measure of certainty in the result. The status classification is published in a River Basin Management Plan (RBMP) and provides a baseline condition against which compliance and future improvements can be measured.

Surface water bodies

A5.1.8. The WFD sets a default objective for all rivers, lakes, estuaries (transitional), groundwater and coastal water bodies to achieve Good Status by 2027 at the latest. For surface water bodies, Good Status is a function of both Good Ecological Status (GES) and Good Chemical Status (GCS).

A5.1.9. Artificial and Heavily Modified water bodies (A/HMWBs) are considered unable to attain GES due to either current or historical modifications that are/have been necessary to provide a function to society, known as their 'human use' (e.g. flood protection, navigation, water supply). They are required to achieve Good Ecological Potential (GEP), through the implementation of a series of Mitigation Measures, designed to allow the water body to achieve the best ecological condition that it can whilst maintaining its human use. Ecological quality elements that are not sensitive to the human use in a A/HMWB still need to attain conditions that are consistent with GES in order to attain GEP. Furthermore, A/HMWBs still need to attain GCS which, along with GEP will collectively result in Good Status in these water bodies.

A5.1.10. New activities and schemes that affect the water environment may adversely impact WFD quality elements, resulting in deterioration of the

specific quality element and the status of the water body itself. They may also preclude the implementation or effectiveness of proposed improvement measures, that would prevent the water body meeting its WFD objectives for GES/GEP in the future. Under the WFD, activities and Schemes must not cause deterioration in water body status or prevent a water body from meeting GES/GEP by precluding the delivery of the required improvement measures.

A5.1.11. The overall ecological status of a water body is primarily based on consideration of its biological quality elements (phytoplankton, macrophytes, phytobenthos, benthic invertebrates and fish) and is determined by the lowest scoring of these elements. These biological elements are supported by the physico-chemical (water quality) and hydromorphological (hydrological or tidal regime, river continuity and morphological conditions (i.e. habitat)) quality elements.

A5.1.12. To achieve GCS, a water body must pass a separate chemical status assessment, relating to pass/fail checks on the concentrations of various identified priority/dangerous substances.

Groundwater bodies

A5.1.13. Groundwater bodies are defined as distinct volumes of groundwater within an aquifer or aquifers. They are not spatially contiguous with the boundaries of surface water catchments. For groundwater bodies, good status has a quantitative and a chemical component. Both are measured on a scale of good, or poor, and a confidence rating is assigned to the status assessment of high or low. Together, these provide a single final classification of either good or poor status. There is also a trend objective set for groundwater bodies where environmentally significant and sustained rising trends in pollutant concentrations need to be identified along with a definition of the starting point (percentage of level or concentration) for trend reversal. Furthermore, the WFD also requires the prevention of any input of priority substances and limiting (or control) of the input of all other substances to groundwater to prevent the deterioration of status.

Methodology

Overview

A5.1.14. This WFD assessment follows guidance produced by the Planning Inspectorate (PINS)[2]. The guidance suggests that a WFD assessment be comprised of three key components:

- Stage 1 - WFD Screening assessment
- Stage 2 - WFD Scoping assessment
- Stage 3 - WFD Impact assessment

A5.1.15. The requirements of each of the Screening and Scoping stages of WFD assessment are detailed below. As the Scheme is at the preliminary design stage, only Screening and Scoping stages have been completed. Depending on the outcome of each stage, it is not always appropriate to complete all three stages of assessment (for example, if the Scoping stage determines that an impact assessment is not required). The WFD assessment will be updated at each design stage to capture design development and ensure compliance with the WFD.

Stage 1 - WFD Screening

A5.1.16. A Screening assessment is undertaken to determine the Zone of Influence (ZoI) of the Scheme and the potentially affected WFD water bodies. Assessment is made to determine if there are any activities associated with the Scheme that no longer require further consideration; for example, activities which have been ongoing since before the current RBMP cycle and have thus formed part of the baseline. Water bodies where there is a high confidence of no impact are screened out from further investigation at this stage.

Stage 2 - WFD Scoping

A5.1.17. For the WFD Scoping stage, a desk study presents the baseline characteristics of each WFD water body within the ZoI using the Environment Agency's Catchment Data Explorer (2026)[3] and the Severn RBMP[4]. This characterises the surface water and groundwater bodies potentially impacted by the Scheme (as identified in Stage 1 Screening)

[2] The Planning Inspectorate (2025) Nationally Significant Infrastructure Projects: Advice on the Water Framework Directive. Available at: https://www.gov.uk/guidance/nationally-significant-infrastructure-projects-advice-on-the-water-framework-directive
[3] Environment Agency (2026) Catchment Data Explorer. Available at: https://environment.data.gov.uk/catchment-planning
[4] Environment Agency (2022) Severn river basin district river basin management plan: updated 2022. Available at: https://www.gov.uk/guidance/severn-river-basin-district-river-basin-management-plan-updated-2022

and includes current classification status for all elements, pressures affecting the water body, its sensitivity to change, and identification of watercourses within each water body. An assessment will utilise the available design drawings, scheme descriptions and assumptions to identify potential impact sources and associated impact pathways from the Scheme to the surface water and groundwater receptors within the ZoI based on the relevant water bodies as identified during the Stage 1 Screening.

Stage 1 – WFD Screening Assessment

Scheme Description

A5.1.18. The Scheme comprises of multiple principal components, as described in section 5.7.1 in the scoping report.

Zone of Influence

Surface Water

A5.1.19. The ZoI for surface water bodies comprises the water body catchments which intersect with the Scheme. This includes the solar PV areas ('sub-Sites') and Cable Route Corridor.

Groundwater

A5.1.20. For groundwater receptors, due to the size of groundwater bodies relative to the footprint of the Scheme, the ZoI is limited to a 1km radial buffer around the Scheme boundary. The 1km buffer is considered appropriate to account for potential water quality impacts and assumes these would be suitably diluted beyond this distance; all other impacts are also assumed to be captured within this boundary (i.e. potential changes in groundwater quantity, flow patterns etc.).

Water body Screening

A5.1.21. The Scheme overlaps with six river water body catchments. One groundwater body has been identified within the 1km radial buffer. Table A 5-1 summarises the Screening process providing information on the surface and groundwater bodies within the ZoI.

A5.1.22. Figure 5.7.1 and 5.7.2 in Volume II provide summary maps of the identified water bodies.

A5.1.23. The downstream river water body catchments have not been considered, as the distances from the Scheme to the confluences are over 1km. It is unlikely that any impacts will propagate downstream over this distance.

Table A 5-1 Summary Screening of WFD Water Bodies within ZoI[3]

Water Body ID	Water Body Name	Water Body Type	Overall Status (2022)	Screening (In/Out)	Reason for Screening
GB109054039430	Littleton Bk - source to conf Bretforton Bk	River	Moderate	In	Directly hydrologically connected to Scheme (proposed Solar PV areas, indicative cable route, substation and BESS)
GB109054039470	Noleham Bk - source to conf R Avon	River	Poor	In	
GB109054043680	Arrow - conf R Alne to conf R Avon	River	Moderate	In	
GB109054043700	Piddle Bk - source to conf Whitsun Bk	River	Moderate	In	
GB109054043820	Bow Bk - source to Lett's Mill	River	Moderate	In	Directly hydrologically connected to Scheme (crossed by indicative cable route only)
GB109054044401	Avon-Tramway Br Stratford to Workman Br Evesham	River	Moderate	In	
GB40902G990900	Warwickshire Avon - Secondary Mudrocks	Ground water	Good (20195)	In	This groundwater body underlies the Scheme (Proposed solar PV areas, indicative cable route, substation and BESS)

[5] 2019 is the most recently published data available.

Screening Summary

A5.1.24. Six river water bodies and one groundwater body are screened in for assessment due to hydrological connectivity and proximity to the Scheme. These are considered in the Stage 2 – WFD Scoping Assessment.

Stage 2 – WFD Scoping Assessment

Surface Water Baseline

A5.1.25. All six surface water bodies screened in for assessment (Table A 5-1) are located in the Severn RBD and the following Operational Catchments:

- Avon – Midlands West Operational Catchment:
  - Littleton Bk - source to conf Bretforton Bk
  - Piddle Bk - source to conf Whitsun Bk
  - Bow Bk - source to Lett's Mill
- Avon Rural Rivers and Lakes Operational Catchment:
  - Noleham Bk - source to conf R Avon
  - Avon - Tramway Br Stratford to Workman Br Evesham
- Avon Urban Rivers and Lakes Operational Catchment:
  - Arrow - conf R Alne to conf R Avon

A5.1.26. The current (2022, Cycle 3) WFD status[3] for the surface water bodies is summarised in Table A 5-2, along with objectives, designations, reasons for not achieving good (RNAG) status and linked WFD protected areas[6].

A5.1.27. Table A 5-3 describes the watercourses intersecting each of the sub-Sites and indicative CR sections. These watercourses are shown in Figure 5.7.3 in Volume II.

A5.1.28. For the purposes of this assessment, all watercourses have been given a unique ID. Each of the six WFD designated reaches have been given a major ID (WC1000, WC2000, WC3000 etc.), with each tributary assigned an additional value (e.g., tributaries of WC1000 are assigned WC1100, WC1200, WC1300 etc.).

[6] DEFRA and Environment Agency (2009) Water for life and livelihoods. Available at: https://assets.publishing.service.gov.uk/media/5a7c387fe5274a25a914146f/annexD.pdf. WFD protected areas are defined as areas requiring special protection under other EC Directives and waters used for the abstraction of drinking water

Table A 5-2 Surface Water WFD Summary

Water Body Name	Littleton Bk - source to conf Bretforton Bk	Noleham Bk - source to conf R Avon	Avon- Tramway Br Stratford to Workman Br Evesham	Arrow - conf R Alne to conf R Avon	Piddle Bk - source to conf Whitsun Bk	Bow Bk - source to Lett's Mill
Water Body ID	GB109054039430	GB109054039470	GB109054044401	GB109054043680	GB109054043700	GB109054043820
Hydromorphological Designation	None designated a heavily modified water body					
Objectives (relating to ecological status)	Good (2027)	Good (2027)	Good (2027)	Good (2027)	Good (2027)	Good (2027)
Ecological Classification	Moderate	Poor	Moderate	Moderate	Moderate	Moderate
Biological quality elements	Moderate	Poor	Good	Moderate	Good	Good
Fish	N/A	Poor	N/A	Good	N/A	Good
Invertebrates	Good	Good	High	High	Good	Good
Macrophytes and Phytobenthos (combined)	Moderate	N/A	Good	Moderate	Good	Good
Physico-chemical quality elements	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate
Ammonia (Phys-Chem)	High	High	High	Good	High	High
Biochemical Oxygen Demand	N/A	N/A	N/A	N/A	High	N/A
Dissolved Oxygen	Poor	Good	High	High	Moderate	High
Phosphate	Moderate	Poor	Poor	Poor	Poor	Moderate
Temperature	High	High	High	High	Good	Good
pH	High	High	High	High	High	High
Hydromorphological supporting elements	Not high	Not high	Not high	Not high	Not high	Not high
Hydrological regime	High	High	Supports good	Supports good	Supports good	Does not support good
Morphology	Not high	Not high	N/A	Not high	Not high	Not high
Specific Pollutants	N/A	High	High	N/A	N/A	High
Chemical	Does not require assessment	Does not require assessment	Does not require assessment	Does not require assessment	Does not require assessment	Does not require assessment
Summary of reasons for not achieving good status	Diffuse sources - Poor nutrient management, agriculture and rural land management (Phosphate, Dissolved Oxygen, Macrophytes and Phytobenthos Combined) Mercury and Its Compounds, Polybrominated diphenyl ethers (PBDE) (measures delivered to address reasons, awaiting recovery)	Diffuse sources - Poor livestock management, agriculture and rural land management (Phosphate, Invertebrates) Mercury and Its Compounds, Polybrominated diphenyl ethers (PBDE) (measures delivered to address reasons, awaiting recovery) Diffuse sources – Land drainage, agriculture	Diffuse sources - Poor livestock management, agriculture and rural land management (Phosphate) Point source – sewage discharge continuous (Phosphate) Mercury and Its Compounds, Polybrominated diphenyl ethers (PBDE) (measures delivered to address reasons, awaiting recovery)	Diffuse sources - Poor livestock management, agriculture and rural land management (Phosphate) Point source – sewage discharge continuous (Phosphate) Mercury and Its Compounds, Polybrominated diphenyl ethers (PBDE) (measures delivered to address reasons, awaiting recovery)	Diffuse sources - Poor livestock management, agriculture and rural land management (Phosphate, Dissolved Oxygen) Diffuse sources - Poor nutrient management, agriculture and rural land management (Phosphate, Dissolved Oxygen) Point source – sewage discharge continuous	Diffuse sources - Poor livestock management, agriculture and rural land management (Phosphate) Diffuse sources - Poor nutrient management, agriculture and rural land management (Phosphate) Point source – sewage discharge continuous (Phosphate) Mercury and Its Compounds,

Water Body Name	Littleton Bk - source to conf Bretforton Bk	Noleham Bk - source to conf R Avon	Avon- Tramway Br Stratford to Workman Br Evesham	Arrow - conf R Alne to conf R Avon	Piddle Bk - source to conf Whitsun Bk	Bow Bk - source to Lett's Mill
	Diffuse sources – Urbanisation, urban development (Phosphate)	and rural land management (Invertebrates) Perfluorooctane sulphonate (PFOS) – Under investigation	Perfluorooctane sulphonate (PFOS) – Under investigation Diffuse sources – Urbanisation, urban development (Phosphate)	Perfluorooctane sulphonate (PFOS) – Under investigation	(Phosphate, Dissolved Oxygen) Mercury and Its Compounds, Polybrominated diphenyl ethers (PBDE) (measures delivered to address reasons, awaiting recovery) Perfluorooctane sulphonate (PFOS) – Under investigation	Polybrominated diphenyl ethers (PBDE) (measures delivered to address reasons, awaiting recovery)
Linked Protected Areas	River Avon (to confluence with River Severn) Nitrate Vulnerable Zone (NVZ)	River Avon (to confluence with River Severn) NVZ	River Avon (to confluence with River Severn) NVZ River Arrow, Badsey Brook, River Avon (Warwickshire) (Urban Waste Water Treatment Directive) Offenham (Groundwater NVZ)	River Avon (to confluence with River Severn) NVZ River Arrow (Urban Waste Water Treatment Directive)	River Avon (to confluence with River Severn) NVZ	River Avon (to confluence with River Severn) NVZ Bow Brook (Urban Waste Water Treatment Directive)
2022 Classifications (accessed 10/12/2025)						

Table A 5-3 Watercourses intersecting the sub-Sites and indicative CR sections.

WFD Surface Water Body Catchment	Sub-Sites within water body	Watercourses intersecting sub-Sites	Indicative cable route sections within water body	Watercourses intersecting indicative cable route sections
Littleton Bk - source to conf Bretforton Bk	3a, 3b, 3c, 3d (in part) and 4	Six ordinary watercourses - WC6400, WC6410, WC6500, WC6511, WC6512, WC6800	CR4, CR5 and CR7	Four ordinary watercourses - WC6400, WC6420, WC6421, WC6500
Noleham Bk - source to conf R Avon	3d (in part), 3e, 3f and 3g	Four ordinary watercourses - WC5100, WC5130, WC5140	CR6	One ordinary watercourse - WC5100
Arrow - conf R Alne to conf R Avon	1c (in part), 1d, 1e, 2a, 2b, 2c, 2d and 2e	One main river - WC3000 Ten ordinary watercourses - WC3600, WC3700, WC3710, WC3800, WC3810, WC3900, WC3950, WC3970, WC3980, WC3990	CR2	One ordinary watercourse - WC3930
Piddle Bk - source to conf Whitsun Bk	1a, 1b and 1c (in part)	Three ordinary watercourses - WC2000, WC2500, WC2600	CR1	Three ordinary watercourses - WC2000, WC2200, WC2210,
Bow Bk - source to Lett's Mill	N/A	N/A	CR1	Three ordinary watercourses - WC1200, WC1210, WC1220
Avon- Tramway Br Stratford to Workman Br Evesham	N/A	N/A	CR3	Three ordinary watercourses - WC4000, WC4300

Groundwater Baseline

A5.1.29. The groundwater body screened in for assessment (Table A 5-1) is located in the Severn RBD. The current (2019, Cycle 3) WFD status[3] for the groundwater body is summarised in Table A 5-4. The table also summarises the objectives, RNAGs and linked protected areas set by the Environment Agency.

Table A 5-4 Groundwater Body WFD Summary[3]

Water Body Name	Warwickshire Avon - Secondary Mudrocks
Water Body ID	GB40902G990900
Overall Classification (2019 Cycle 3)	Good
Objectives	Good
Quantitative	Good
Quantitative Status Element	Good
Dependent Surface Water Body Status	Good
GWDTEs test	Good
Saline Intrusion	Good
Water Balance	Good
Chemical	Good
Chemical Status element	Good
Dependent Surface Water Body Status	Good
Drinking Water Protected Area	Good
GWDTEs test	Good
Saline Intrusion	Good
General Chemical Test	Good
Supporting Elements	
Prevent and Limit Objective	Active
Trend Assessment	Upward Trend
RNAG (2019)	N/A
Linked Protected Areas	Thrapstone lake Eutrophic lake NVZ River Nene NVZ SOAR R NVZ Cherwell (Ray to Thames) and Woodeaton Brook NVZ

Water Body Name	Warwickshire Avon - Secondary Mudrocks
	River Avon (to confluence with River Severn) NVZ River Trent (source to confluence with Derwent) NVZ Northampton Sands (Groundwater NVZ) Cotswold Jurassic (Groundwater NVZ) Evenlode (Bledington to Glyme confluence) NVZ River Welland NVZ R Severn - conf R Stour to conf RIver Teme NVZ West Midlands (Groundwater NVZ) R Salwarpe - conf Elmbridge Bk to conf R Severn NVZ Stanford Reservoir Eutrophic lake NVZ Hatfield Bk - source to R Severn NVZ River Chelt NVZ Coventry (Groundwater NVZ) Warmington (Groundwater NVZ) River Swilgate NVZ Offenham (Groundwater NVZ) Balscote (Groundwater NVZ) Warwickshire Avon - Secondary Mudrocks (Drinking water protected area)

Geology and Hydrogeology, Abstractions

A5.1.30. The main superficial deposits[7] in the ZoI are sand and gravel and alluvium deposits of clay, silt sand and gravel following the river corridors. Much of the ZoI is not underlain by any superficial deposits.

A5.1.31. The bedrock geology underlying the ZoI mostly consists of Mercia Mudstone Group and Blue Lias Formation-Mudstone.

A5.1.32. Secondary A aquifers comprise permeable layers that can support local water supplies and may form an important source of base flow to rivers[8]. Secondary B aquifers are mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin

[7] British Geological Survey (2026) GeoIndex (onshore). Available at: https://www.bgs.ac.uk/map-viewers/geoindex-onshore
[8] Environment Agency (2025) Protect groundwater and prevent groundwater pollution. Available at: https://www.gov.uk/government/publications/protect-groundwater-and-prevent-groundwater-pollution/protect-groundwater-and-prevent-groundwater-pollution#groundwater-definition

fissures and openings or eroded layers[8]. Secondary undifferentiated are aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type. These have only a minor value[8].

A5.1.33. There are currently no site investigation data available with regards to groundwater levels in the ZoI.

A5.1.34. There are 13 active groundwater discharge permits in the ZoI[9] and 11 active groundwater abstraction permits within the ZoI[10,11]. The abstractions within the ZoI are for agricultural uses. There are no abstractions for public water supply within the ZoI. Further details of these are included in Chapter 5.7 of the EIA Scoping Report and its associated appendices in Volume III.

A5.1.35. There are no Source Protection Zones (SPZ) within the ZoI[12].

Table A 5-5 Summary of superficial deposits, bedrock geology and aquifer designations.

Period	Formation / Sub-unit	Aquifer Designation
Superficial deposits		
Quaternary	Alluvium-Clay, Silt, Sand and Gravel	Secondary A
	Glaciofluvial deposits	
	Wasperton Sand and Gravel	
	Till, Mid Pleistocene-Diamicton	Secondary Undifferentiated
	Head-Clay, Silt, Sand and Gravel	
Bedrock geology		
Triassic	Arden Sandstone Formation	Secondary A
	Westbury Formation Sandstone	
	Branscombe Mudstone Formation - Mudstone	Secondary B

[9] DEFRA (2026) Environmental Permitting Regulations – Dataset - Discharges to Water and Groundwater. Available at: https://environment.data.gov.uk/public-register/view/search-water-discharge-consents

[10] Groundsure, Enviro+Geo Insight report, Arrow Valley North, Ref GS-6GF-UDD- XD8-DXU, Ref GS-EFU-BLN-8ZJ-ADP, (2026); Groundsure, Enviro+Geo Insight report, Arrow Valley North 2, Ref GS-6UU-L2A-95I-UGP; Ref GS-LT8-1AF-VQW-I6Z, (2026); Groundsure, Enviro+Geo Insight report, Arrow Valley South, Ref GS-YSY-78f-8VS-MDN, Ref GS-1DR-53L-3OV-3TX, (2026); Groundsure, Enviro+GeoInsight report, Arrow Valley South 2, Ref GS-86Q-3IH-ANA-N2D, Ref GS-6OW-C84-X2W-1XM19;

[11] Groundsure, Enviro+Geo Insight report, Arrow Valley North, Ref GS-6GF-UDD- XD8-DXU, Ref GS-EFU-BLN-8ZJ-ADP, (2026); Groundsure, Enviro+Geo Insight report, Arrow Valley North 2, Ref GS-6UU-L2A-95I-UGP; Ref GS-LT8-1AF-VQW-I6Z, (2026); Groundsure, Enviro+Geo Insight report, Arrow Valley South, Ref GS-YSY-78f-8VS-MDN, Ref GS-1DR-53L-3OV-3TX, (2026); Groundsure, Enviro+GeoInsight report, Arrow Valley South 2, Ref GS-86Q-3IH-ANA-N2D, Ref GS-6OW-C84-X2W-1XM19;

[12] Defra (2026) MAGIC Map. Available at: https://magic.defra.gov.uk/

Period	Formation / Sub-unit	Aquifer Designation
	Mercia Mudstone Group - Mudstone	
	Blue Anchor Formation Mudstone	
	Branscombe Mudstone Formation – Dolomitic Siltstone	Secondary Differentiated
	Mercia Mudstone Group – Dolomitic Siltstone	
	Cotham Member - Mudstone	
Jurassic-Triassic	Blue Lias Formation – Mudstone and Limestone, interbedded	Secondary A
	Saltford Shale Member - Mudstone	Secondary B
	Wilmcote Member – Mudstone and limestone, interbedded	Secondary Differentiated
	Penarth Group - Mudstone	
	Blue Lias Formation and Charmout Mudstone Formation	

WFD Protected Areas

A5.1.36. The water bodies scoped in contain various protected areas, as outlined in Table A 5-2 and Table A 5-4. However, only the River Avon (to confluence with River Severn) Nitrate Vulnerable Zone (covering the entire ZoI) and River Arrow and River Avon sensitive Areas: eutrophic rivers (Urban Waste Water Treatment Directive) intersect the ZoI.

A5.1.37. The Warwickshire Avon - Secondary Mudrocks groundwater body is designated as a drinking water protected area (DWPA).

A5.1.38. All other Protected Areas as listed in Table A 5-1 and Table A 5-4 are screened out as they are all located outside of the 1km ZoI, therefore, it is not anticipated that there will be any direct, or indirect impacts to these protected areas within the screened in WFD water body catchments.

Temporary Scheme Activities

A5.1.39. The temporary Scheme activities which have the potential to impact the water environment are summarised below. Any embedded mitigation associated with these activities is outlined below, and the Scoping decisions are outlined in Table A 5-6.

- **Above Ground Construction Activities –** The above ground construction activities associated with the Scheme are expected to take place over a period of approximately 24 months and include:
    - The establishment of the temporary construction compound(s), upgrade of existing tracks and construction of new access tracks, upgrade or construction of crossing points (bridges/culverts) over watercourses;
    - Erection of PV Panels including Mounting Structures;
    - Installation of associated infrastructure such as cable circuits, Conversion Units, Substations, BESS and onsite electrical infrastructure to facilitate the export of generated electricity; and
    - Increased traffic, including HGV and LGV movements for the delivery of construction materials, plant and equipment.
- **Below Ground Construction Activities –** The below ground construction activities associated with the Scheme are expected to take place over a period of approximately 24 months and include:
    - The construction below ground utility infrastructure (cables), including construction of cable trenches up to 2m depth and crossing of watercourses including via open cut crossings and trenchless installation (including horizontal directional drilling (HDD).
    - The construction of piles 1.5 – 4m depth for the solar PV mounting structures; and
    - Possible construction of sheet piles to a maximum depth of 12m associated with foundations of the substations and BESS where ground conditions dictate.
- **Maintenance –** The maintenance activities associated with the Scheme are expected to take place when required over the approximately 60-year lifetime of the Scheme which, although could occur intermittently over the lifetime of the Scheme, each activity will be temporary in nature. These are expected to include:
    - The delivery and installation of replacement components (e.g. solar PV panels, BESS infrastructure), and the removal of old components;
    - Land management; and
    - Cleaning of solar PV panels.
- **Decommissioning –** Decommissioning of the Scheme is expected to take place at the end of its approximately 60-year lifetime. The activities associated with the decommissioning are expected to be similar to the above ground construction activities outlined above. Additional activities are anticipated to include the management of

waste material, such as decommissioned solar PV panels and BESS. The Site will be returned to its existing agricultural use, however, some infrastructure may be left in-situ (e.g. access tracks, below ground cables).

Permanent Scheme Activities

A5.1.40. The permanent Scheme activities which have the potential to impact the water environment over the approximately 60-year operational lifetime of the Scheme are summarised below. Any embedded mitigation associated with these activities is outlined below, and the Scoping decisions are outlined in Table A 5-6.

- **Land Use Change –** The Scheme will result in a temporary land use change from agricultural land to solar PV arrays and associated infrastructure. The solar PV panels will be raised above ground and set out in rows.
- **Increased Impermeable Area –** The Scheme will result in a minimal increase in impermeable area through the creation of limited concrete foundations associated with the conversion units, substations and BESS. The solar PV panels will be raised above ground, therefore, do not alter the existing ground surface. Access tracks will be constructed from permeable materials.
- **Upgrade or Creation of Above Ground Watercourse Crossings for Access Tracks –** It is possible that watercourse crossings, such as culverts or bridges, will be upgraded or created to facilitate the access tracks proposed as part of the Scheme.
- **Changes to Contamination Sources –** The Scheme will result in the storage of hazardous material on Site, for example, materials associated with the BESS and fire suppression systems. Further details can be found in Chapter 5.3 of the Scoping Report.
- **Below Ground Structures –** The Scheme will result in the instillation of below ground cables connecting the Scheme's Sites and the National Grid Substation. Sheet piles may also be installed to a depth of 1.5 – 4m for the solar PV mounting structures, and 12m for the foundations of structures such as the substations and BESS.

Potential Risks and Embedded Mitigation

A5.1.41. This section provides an initial assessment of the potential risks from the Scheme to receptors within the zone of influence, based on the relevant water bodies and their quality elements. Embedded mitigation measures are considered alongside these risks and are incorporated throughout the Scheme. This will minimise impacts on the water environment from the activities and identified risks. These are outlined below.

A5.1.42. All activities, with the exception of any in-channel works, are expected to take place outside of a minimum 10 m buffer to all watercourses. Therefore, no direct morphological impact pathways to receiving watercourses are expected.

Temporary Scheme Activities

Above ground construction activities

A5.1.43. Construction activities including the establishment of temporary construction compounds, upgrade/construction of access tracks and the erection of the solar PV panels and associated infrastructure have the potential to cause pollution to surface water bodies due to the mobilisation of sediments and other pollutants principally associated with the intrusive nature of construction and the subsequent exposure of bare earth. Such activities can also result in soil compaction and increase the impermeable area within the catchment relative to the baseline. This can increase surface water runoff during precipitation events, potentially increasing discharge rates and volumes to existing receptors. Tree and vegetation removal results in changes to surface roughness, reduced infiltration and reduced evapotranspiration, which could result in increased volumes and velocities of runoff. There is also the potential for pollution to enter receiving water bodies from construction vehicles, wastewater from welfare facilities, the storage/stockpiling of materials and from accidental chemical spillages/leakages.

A5.1.44. A Construction Environmental Management Plan (CEMP) will be produced to mitigate the potential impacts on the water environment during construction. The CEMP will follow best practice sediment and pollution management guidelines. It is anticipated that most effects on the water environment resulting from above ground construction activities can be mitigated through the CEMP and, therefore, such activities are **scoped out** for all surface water and groundwater bodies.

A5.1.45. Where in channel works are required, for example, the creation of watercourse crossings for access tracks and open cut watercourse crossings to lay cables, these should be undertaken in line with best practice design and management guidance, including the Culvert, screen and outfall manual (C786), and the channel should be fully restored to its previous condition following any temporary works. Such activities result in a direct hydromorphological change to the watercourse, however, any impacts during construction are expected to be localised and temporary, therefore, are **scoped out** for all surface water and groundwater bodies.

Below ground construction activities

A5.1.46. The construction of below ground utility infrastructure, including HDD, may interact with the underlying groundwater environment and have potential to alter flow paths or provide barriers to groundwater flow. Where there is no overlying low permeable geology, there is also potential for the installation of foundations and piling to create vertical pathways for potentially contaminated surface runoff or construction-related pollutants to enter the groundwater body during construction. There is also the potential for aquifers to be exposed to drilling fluids.

A5.1.47. Subsurface works have the potential to disrupt the quantity of quality of supply for local abstractors which rely upon the limited yields from the aquifer, however, any such impacts will be localised in nature and will not impact the WFD status of the groundwater body. In addition, there are no abstractions for public water supply within the ZoI which could be affected by any temporary impacts on the DWPA. Therefore, impacts on groundwater abstractions can be scoped out.

A5.1.48. It is anticipated that most effects on the water environment resulting from below ground construction activities can be mitigated through the CEMP and, therefore, such activities are **scoped out** for all surface water and groundwater bodies.

A5.1.49. All below ground structures will be constructed in accordance with recognised industry standards and best practice guidance to minimise risks to groundwater and to avoid obstruction of groundwater flow. Site specific intrusive ground investigation to determine groundwater levels and flow pathways will be undertaken where below ground works are required to minimise the risk to groundwater during construction. Taking into account these mitigation measures the anticipated effect on the groundwater environment is negligible and these can be **scoped out**.

Maintenance

A5.1.50. Maintenance activities, including the delivery and installation of replacement components, land management and cleaning of panels, have the potential for pollution from construction/delivery vehicles, the storage/stockpiling of materials and from accidental chemical spillages/leakages to enter receiving water bodies. The solar PV panels will be cleaned with deionised water containing no chemical products.

A5.1.51. The effects of maintenance and replacement activities are anticipated to be lesser than the Construction Phase and would be controlled and managed through appropriate management plans and by the Requirements of the Development Consent Order (DCO).

A5.1.52. An Operational Environmental Management Plan (OEMP) and Landscape and Ecological Management Plan (LEMP) will be provided and include control measures to ensure no significant impacts would arise during the maintenance and replacement activities. No impacts to the water environment are expected after this mitigation, therefore, this activity can be **scoped out** for all surface water and groundwater bodies.

Decommissioning

A5.1.53. The impacts resulting from decommissioning are expected to be similar to the above ground construction impacts. There is also the potential for pollutants mobilised from waste material, such as the BESS, to enter receiving water bodies if managed incorrectly. The Site will be returned to its existing agricultural use. It will be ensured that the existing (pre-development) runoff characteristics are reinstated, especially considering the potential for the compaction of soil during decommissioning. The Site would be reinstated in accordance with a Decommissioning Environmental Management Plan (DEMP) as required by the DCO. The DEMP will include details of how the existing (pre-development) Site characteristics with respect to the water environment will be reinstated. Subject to this, no impacts to the water environment are expected, therefore, this activity can be **scoped out** for all surface water and groundwater bodies.

Permanent Scheme Activities

Land use change

A5.1.54. The temporary change in land use from agricultural land to solar PV arrays and associated infrastructure has the potential to alter runoff pathways and concentrate flows from the solar PV arrays. This 'drip effect' may lead to scour/channelisation and the mobilisation of sediments. It is expected that the land underneath the panels will be planted with an appropriate seed mix and managed as grassland to suitably mitigate this. This will be detailed in the OEMP and LEMP.

A5.1.55. The land use change is also expected to reduce the use of agricultural inputs across the Site area, such as fertilisers and pesticides, which can be expected to result in decreases in these pollutants in the receiving watercourse. This will help address the RNAG 'poor livestock and/or nutrient management resulting from agriculture and rural land management', which is outlined for all six waterbodies in Table A 5-2. Whilst this may impact on the physico-chemical quality elements, this is likely to be a positive change and will not result in a deterioration in status under the WFD, so is **scoped out**.

A5.1.56. No land use change is expected in the Bow Bk – source to Lett's Mill and Avon – Tramway Br Stratford to Workman Br Evesham river water body catchments, as only the below-ground cable will cross these catchments, so this activity is **scoped out** for these water bodies.

A5.1.57. This activity is **scoped out** for the Warwickshire Avon - Secondary Mudrocks groundwater body as there are not expected to be any impacts on the groundwater environment as a result of land use change.

Increased Impermeable Area

A5.1.58. The increased impermeable area resulting from concrete foundations could result in an increase in surface water runoff during precipitation events, potentially increasing discharge rates and volumes to existing receptors.

A5.1.59. A sustainable drainage strategy will be provided to manage and mitigate the additional runoff generated from any new impermeable areas. New access tracks will be constructed from permeable materials, so are not expected to contribute to any increase in impermeable area. Where possible, existing access tracks will be reused.

A5.1.60. It is anticipated that the effects on the water environment resulting from an increase to impermeable area can be mitigated through the sustainable drainage strategy and, therefore, such activities are **scoped out** for all surface water and groundwater bodies.

Upgrade or Creation of Above Ground Watercourse Crossings for Access Tracks

A5.1.61. The installation or upgrading of crossings for access tracks may directly alter hydromorphology, including the loss of natural bed and bank material, with potential adverse effects on aquatic ecology. The number of watercourse crossings potentially required for access tracks and their locations are currently unknown as the design of the Scheme is in its preliminary stages. As outlined in Table A 5-3, there are 23 watercourses intersecting the sub-Sites. With the mitigation set out in the Commitments Register (Appendix 2.2), this activity is **scoped out**. The final access tracks layout will seek to remove or minimise the need for any upgraded or new watercourse crossings, which may allow this activity to be scoped out as the Scheme progresses through detailed design.

A5.1.62. It is assumed that no watercourse crossings for access tracks will be required in the Bow Bk – source to Lett's Mill and Avon – Tramway Br Stratford to Workman Br Evesham WFD river water body catchments, as only the Cable Route Corridor sections CR1 and CR3 cross these catchments, therefore, this activity is scoped out for these water bodies.

A5.1.63. This activity is **scoped out** for the Warwickshire Avon - Secondary Mudrocks groundwater body as there are not expected to be any impacts on the groundwater environment.

Changes to Contamination Sources

A5.1.64. If mobilised, contamination associated, for example, with the BESS and fire suppression systems, could result in an increase in the contamination of water bodies.

A5.1.65. It is expected that any permanent changes to contamination sources will be examined and mitigated through the OEMP and Outline Battery Safety Management Plan (OBSMP).

A5.1.66. It is, therefore, anticipated that the effects on the water environment resulting from this activity can be appropriately mitigated and, therefore, such activities are **scoped out** for all surface water and groundwater bodies.

Below Ground Structures

A5.1.67. The nature of the Scheme means there would be limited physical disturbance of aquifers and groundwater, limited to, where necessary, piles up to a depth of 1.5 to 4m for the solar PV mounting structures and 12m associated with the BESS and substation foundations, and the presence of the below ground cable at up to 2m depth for trenches, or deeper where trenchless installation such as HDD is used beneath watercourses. It is expected that these works will be planned to avoid aquifers by a minimum depth of 3m. The limited spatial nature of these works means that they are unlikely to be barrier to groundwater flow and are not likely to result in a deterioration in the status of the Warwickshire Avon - Secondary Mudrocks WFD groundwater body at the water body scale, therefore, this activity is **scoped out**.

A5.1.68. Subsurface structures have the potential to disrupt the quantity of quality of supply for local abstractors which rely upon the limited yields from the aquifer, however, any such impacts will be localised in nature and will not impact the WFD status of the groundwater body. In addition, there are no abstractions for public water supply within the ZoI which could be affected by any temporary impacts on the DWPA. As such, impacts on groundwater abstractions can be **scoped out**.

A5.1.69. This activity is **scoped out** for the surface water bodies as below ground works are not expected to impact on the surface water environment.

Scoping Outcomes

A5.1.70. The Scoping assessment has undertaken a review of the baseline information within the ZoI and has outlined the Scheme activities which have the potential to impact the water environment. A summary of the water bodies potentially impacted by the various Scheme activities is provided inTable A 5-1.

A5.1.71. Table A 5-6provides a summary of the Scoping outcome for each activity and each water body, after the embedded mitigation outlined in Section 0 has been considered. For any activities that have been scoped in, Table A 5-7 also outlines the WFD quality elements and protected areas that are likely to be impacted. Four surface water bodies and no groundwater bodies have been scoped in to be considered further within an impact assessment.

Table A 5-6 Scoping Outcomes

Activities		Littleton Bk - source to conf Bretforton Bk	Noleham Bk - source to conf R Avon	Avon-Tramway Br Stratford to Workman Br Evesham	Arrow - conf R Alne to conf R Avon	Piddle Bk - source to conf Whitsun Bk	Bow Bk - source to Lett's Mill	Warwickshire Avon - Secondary Mudrocks	Overall Scoping Outcome after embedded mitigation
Temporary activities	Above Ground Construction Activities	Out	Out	Out	Out	Out	Out	Out	Out
	Below Ground Construction Activities	Out	Out	Out	Out	Out	Out	Out	Out
	Maintenance	Out	Out	Out	Out	Out	Out	Out	Out
	Decommissioning	Out	Out	Out	Out	Out	Out	Out	Out
Permanent activities	Land Use Change	Out	Out	Out	Out	Out	Out	Out	Out
	Increased Impermeable Area	Out	Out	Out	Out	Out	Out	Out	Out
	Upgrade or Creation of Watercourse Crossings	Out	Out	Out	Out	Out	Out	Out	Out
	Changes to Traffic	Out	Out	Out	Out	Out	Out	Out	Out
	Changes to Contamination Sources	Out	Out	Out	Out	Out	Out	Out	Out
	Below Ground Structures	Out	Out	Out	Out	Out	Out	Out	Out

Conclusions and Recommendations

Conclusions

A5.1.72. A Water Framework Directive (WFD) Screening and Scoping Assessment has been completed for the Arrow Valley Solar Scheme. It is concluded that:

- **Screening Outcome:** Six surface water bodies and one groundwater body were screened in for assessment due to hydrological connectivity and proximity to the Scheme.
- **Scoping Outcome:** After considering embedded mitigation measures secured in the Commitments Register (Appendix 2.2), all Scheme activities were scoped out as they are unlikely to result in significant impacts on the ability to achieve WFD objectives. No other activities are anticipated to cause deterioration in water body status or prevent achievement of WFD objectives, subject to the mitigation measures being implemented.

Recommendations

A5.1.73. Based on the Scoping outcomes and the mitigation secured through the Commitments Register (Appendix 2.2), a WFD Impact Assessment is not considered necessary as it is unlikely that there will be a deterioration in water body status to any of the screened waterbodies.

A5.1.74. This WFD Screening and Scoping assessment will be updated as the design of the Scheme progresses ahead of submission of the DCO application.

A5.2 Surface watercourses and Scheme elements interaction

Table A 5-7 Surface watercourses and Scheme elements interaction

	Solar PV Parcel*																	
WC ID	1a	1b	1c	1d	1e	2a	2b	2c	2d	2e	3a	3b	3c	3d	3e	3f	3g	4
WC1200																		
WC1210																		
WC1220																		
WC2000	✓	✓	✓															
WC2200																		
WC2210																		
WC2500		✓																
WC2600	✓																	
WC3000							✓			✓								
WC3600										✓								
WC3700									✓	✓								
WC3710									✓									
WC3800									✓	✓								
WC3810										✓								
WC3900			✓	✓	✓			✓										
WC3930																		
WC3950			✓	✓														
WC3970			✓															

	Solar PV Parcel*																	
WC ID	**1a**	**1b**	**1c**	**1d**	**1e**	**2a**	**2b**	**2c**	**2d**	**2e**	**3a**	**3b**	**3c**	**3d**	**3e**	**3f**	**3g**	**4**
WC3980			✓															
WC3990					✓													
WC4000																		
WC4300																		
WC5100														✓	✓	✓	✓	
WC5130														✓				
WC5140														✓				
WC6400																		✓
WC6410																		✓
WC6420																		
WC6421																		
WC6500												✓						
WC6511													✓	✓				
WC6512														✓				
WC6800												✓						

* The shaded watercourses are those which only intersect the cabling, and the watercourses not included in the table are those which do not intersect any of the Scheme components.

A5.3 Discharge consents information

Table A 5-8 Discharge consents information

Permit Holder *	Permit Holder	Effluent Type	NGR	Start Date	WC ID	WC Name
MI/DS/1754/001	E E GEE	Sewage - not water company	SP0540057040	22/05/1963	N/A – Groundwater discharge permit	
MI/S/17/23139/S/001	G A WEBB	Sewage - not water company	SP0229052750	05/09/1995		
MI/DS/981/001	GLOUCESTERSHIRE COUNTY COUNCIL	Agriculture	SP1224046770	17/05/1963		
MI/EPRPB3794VD/001	MR NIGEL KUSCHER	Sewage - not water company	SP0231858807	06/01/2020		
MI/EPRCB3750HU/001	MR STUART DAVIES	Sewage - not water company	SP0238259072	09/05/2024		
MI/S/13/25336/S/001	MRS K GARVIE	Sewage - not water company	SP0995049920	05/03/1999		
MI/EPRFB3199EE/001	MS JULIE HOMES | MR DEAN BANKS & MRS TRACEY BANKS | MR RICHARD EASTON	Sewage - not water company	SP0225356314	03/01/2017		
MI/S/17/26186/R/003	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0341055240	01/01/2010		
MI/S/13/25360/R/006	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0840551406	31/03/2026		
MI/S/15/25854/R/002	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0689052830	27/02/2006		
MI/S/17/26690/R/005	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0191156399	31/03/2025		
MI/S/17/21775/O/003	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0760451092	31/03/2018		

Permit Holder *	Permit Holder	Effluent Type	NGR	Start Date	WC ID	WC Name
MI/EPRQB3499DG/001	THE HEART OF ENGLAND FOREST	Sewage and Trade combined	SP1288848861	05/02/2021		
MI/S/19/25244/S/001	MR J C GOODMAN	Sewage - not water company	SP0262060950	24/04/1997	WC1200	Brandon Brook
MI/S/13/25796/R/003	SEVERN TRENT WATER LIMITED	Sewage - water company	SP1208046961	01/01/2010	WC1500	N/A
MI/EPRDP3420XW/001	NIK SPENCER	Sewage - not water company	SP0380555089	31/08/2010	WC2000	Piddle Brook
MI/S/15/25032/S/001	EARL OF YARMOUTH	Sewage - not water company	SP0553053910	24/07/1996	WC3950	N/A
MI/S/13/07378/O/002	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0960051600	24/02/2011	WC4000	River Avon
MI/S/13/20006/S/001	DANIEL PETER BROADHURST | ALEXANDER GROUP (UK) LIMITED	Sewage - not water company	SP1161051460	27/12/1989	WC4000	River Avon
MI/S/13/07698/O/002	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0959450701	23/12/2019	WC4400	N/A
MI/S/13/25102/S/002	DORSINGTON MANOR LIMITED	Sewage - not water company	SP1289050660	27/05/2000	WC5000	Noleham Brook
MI/S/16/26059/O/002	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0793046336	23/04/2021	WC6000	Littleton Brook
MI/S/16/26188/O/001	SEVERN TRENT WATER LIMITED	Sewage - water company	SP0844048910	31/03/2004	WC6620	N/A

A5.4 Surface water abstraction information

Table A 5-9 Surface water abstraction information

Licence N.*	Name	Point	Details	Easting	Northing	Start Date	WC ID	WC Name
18/54/15/0008	RAGLEY HOME FARMS	WOOD BEVINGTON FARM, ALCESTER - BAN BROOK	Spray Irrigation - Storage	405030	253580	10/01/1966	WC3900	Ban Brook
18/54/15/0233	A H HILLER & SONS LTD	DUNNINGTON HEATH FARM, ALCESTER, WARWICKSHIRE - BAN BROOK	Spray Irrigation - Storage	405860	253060	25/01/1977	WC3900	Ban Brook
18/54/15/0251	Sandfields Farms Ltd	DUNNINGTON COURT FARM, NEAR ALCESTER - RESERVOIR	Spray Irrigation - Direct	407740	253780	21/06/1990	N/A - Reservoir	N/A - Reservoir
18/54/15/0266/1	FORRESTER	BROOM COURT, BIDFORD ON AVON, WARWICKSHIRE - RIVER ARROW	Spray Irrigation - Direct	408280	252770	01/04/2014	WC3000	River Arrow
18/54/15/0266/2	FORRESTER	BROOM COURT, BIDFORD ON AVON, WARWICKSHIRE - RIVER ARROW	Trickle Irrigation - Direct	408280	252770	01/04/2014	WC3000	River Arrow
18/54/15/0272	RAGLEY HOME FARMS	KINGLEY FARM, WIXFORD, ALCESTER - RIVER ARROW	Spray Irrigation - Direct	408496	254903	22/05/1995	WC3000	River Arrow
			Spray Irrigation - Storage					
18/54/15/0123	E D HOLLIS & SONS	SALFORD PRIORS, EVESHAM - RESERVOIR ON BAN BROOK	Spray Irrigation - Direct	407100	252000	24/06/1966	WC3900	Ban Brook
18/54/15/0159	G W WILSON & SONS	OVERSLEY CASTLE - RIVER ARROW	General Farming & Domestic	408560	254800	04/11/1966	WC3000	River Arrow

Licence N.*	Name	Point	Details	Easting	Northing	Start Date	WC ID	WC Name
			Spray Irrigation - Direct					
18/54/15/0242	EASTWICK GROWERS	MARRIAGE HILL FARM, BIDFORD ON AVON - RIVER ARROW	Spray Irrigation - Direct	408370	251570	08/02/1985	WC3000	River Arrow
18/54/15/0158	G W WILSON & SONS	OVERSLEY FARM, WIXFORD, WARWICKSHIRE - RIVER ARROW	General Farming & Domestic	408190	255310	04/11/1966	WC3000	River Arrow
			Spray Irrigation - Direct					
18/54/13/0361	FORRESTER	RIVER AVON AT BIDFORD ON AVON	Spray Irrigation - Direct	409444	251348	30/01/1994	WC4000	River Avon
			Trickle Irrigation - Direct					
18/54/17/0701	Sandfields Farms Ltd	WORCESTER MEADOWS, SALFORD PRIORS - RIVER AVON	Spray Irrigation - Direct	408250	250750	10/10/1995	WC4000	River Avon
18/54/13/0327	Alexander Group (UK) Limited	BIDFORD GRANGE, BIDFORD-ON-AVON - RIVER AVON (2)	Spray Irrigation - Storage	411900	251700	01/03/1989	WC4000	River Avon
			Spray Irrigation - Direct					
18/54/13/0388	SANDFIELDS FARM LIMITED	WORCESTER MEADOWS, SALFORD PRIORS - RIVER AVON	Spray Irrigation - Direct	408250	250750	31/01/2006	WC4000	River Avon
18/54/13/0244	JEREMY GREEN & SONS		Spray Irrigation - Storage	411275	251366	10/01/1968	WC4000	River Avon

Licence N.*	Name	Point	Details	Easting	Northing	Start Date	WC ID	WC Name
		INLAND WATER (RIVER) KNOWN AS THE RIVER AVON AT BARTON	Spray Irrigation - Direct					
			Trickle Irrigation - Storage					
			Trickle Irrigation - Direct					
18/54/13/0254	JEREMY GREEN & SONS	BARTON, BIDFORD-ON-AVON - RIVER AVON	Spray Irrigation - Direct	411200	251300	27/04/1970	WC4000	River Avon
18/54/16/0339	EVESHAM VALE GROWERS LTD	BLACKMINSTER, WORCESTERSHIRE - LITTLETON BROOK	Spray Irrigation - Direct	407500	245300	07/07/1970	WC6000	Littleton Brook

A5.5 Groundwater lithological descriptions

Table A 5-10 Groundwater lithological descriptions

Period	Formation / Sub-unit	Lithological Description	EA Aquifer Designation
Superficial Geology			
Quaternary	Alluvium-Clay, Silt, Sand and Gravel	Unconsolidated detrital material deposited by a waterbody	Secondary A
	Lacustrine Alluvium Clay and Silt	Soft to firm consolidated, compressible silty clay	
	Peat	Partially decomposed mass of semi-carbonized vegetation	
	River Terrace Deposits	Sand and Gravel, with silt, clay or peat	
	Glaciofluvial deposits	Sand and Gravel deposited by meltwaters	
	Brentford Sand and Gravel	Predominantly cold phase sands and gravels	
	Till, Mid Pleistocene-Diamicton	Unsorted and unstratified drift, generally unconsolidated	Secondary Undifferentiated
	Head-Clau, Silt, Sand and Gravel	Poorly sorted and poorly stratified, angular rock debris and/or clayey hillwash and soil creep	
Bedrock Geology			
Triassic	Arden Sandstone Formation	Consists of mudstone interbedded with siltstone and fine to medium-grained sandstone	Secondary A
	Westbury Formation Sandstone	Dark grey mudstones and shales and laminated and lenticular calcareous siltstones with beds of coarse-grained oolitic sandstone	
	Branscombe Mudstone Formation - Mudstone	Mudstone and siltsone, red-brown with common grey-green reduction patches and spots	Secondary B

Period	Formation / Sub-unit	Lithological Description	EA Aquifer Designation
	Mercia Mudstone Group - Mudstone	Dominantly red mudstones and subordinate siltstone	
	Blue Anchor Formation Mudstone	Pale green-grey, dolomitic silty mudstone and siltstones	
	Branscombe Mudstone Formation – Dolomitic Siltstone	Mudstone and siltsone, red-brown with common grey-green reduction patches and spots	Secondary Differentiated
	Mercia Mudstone Group – Dolomitic Siltstone	Dominantly red mudstones and subordinate siltstone	
	Cotham Member - Mudstone	Grey and grey-green calcareous mudstones and shales and laminated and lenticular calcareous siltstones	
Jurassic-Triassic	Blue Lias Formation – Mudstone and Limestone, interbedded	Thinly interbedded limestone and calcareous mudstone or siltstone	Secondary A
	Saltford Shale Member - Mudstone	Mostly grey, fissile or blocky fossiliferous calcareous mudstones; a few limestones	Secondary B
	Wilmcote Member – Mudstone and limestone, interbedded	Alternating limestones and mudstones	Secondary Differentiated
	Penarth Group - Mudstone	Grey to black mudstones with subordinate limestones and sandstones	
	Blue Lias Formation and Charmout Mudstone Formation	Predominantly grey, well bedded, marine calcareous mudstone and silty mudstone	

A5.6 Groundwater abstraction information

Table A 5-11 Groundwater abstraction information

Licence N.*	Name	Point	Details	Easting	Northing	Start Date
18/54/15/0135	A H HILLER & SONS LTD	DUNNINGTON HEATH FARM, ALCESTER, WARWICKSHIRE - BOREHOLE A	General Farming & Domestic Spray Irrigation - Direct	405700	253050	06/07/1966
18/54/15/0135	A H HILLER & SONS LTD	DUNNINGTON HEATH FARM, ALCESTER, WARWICKSHIRE - BOREHOLE B	General Farming & Domestic Spray Irrigation - Direct	406100	252800	06/07/1966
18/54/15/0141	E D HOLLIS & SONS	WOOD BEVINGTON, ALCESTER, WARWICKSHIRE - BOREHOLE	General Farming & Domestic Spray Irrigation - Direct	406500	252900	24/06/1966
18/54/15/0112	Sandfields Farm Ltd	BOREHOLE, TOTHALL, DUNNINGTON	Spray Irrigation - Direct Spray Irrigation - Storage Trickle Irrigation - Direct Trickle Irrigation - Storage	406549	252429	15/06/1966
MD/054/0015/020	Sandfields Farm Ltd	AREA EDGED RED AT OLD DUNNINGTON FARM	Spray Irrigation - Direct Trickle Irrigation - Direct	407390	253225	13/07/2023
18/54/15/0124	E D HOLLIS & SONS	SALFORD PRIORS, EVESHAM - BOREHOLE	Spray Irrigation - Storage General Farming & Domestic	406900	252100	24/06/1966
MD/054/0015/005/R01	Sandfields Farm Ltd	SLATTERS FARM, SALFORD PRIORS, WORCESTERSHIRE - BOREHOLE	Spray Irrigation - Storage	407630	251730	10/06/2025
18/54/13/0092	Smith	BROOM, NEAR BIDFORD-ON-AVON - WELL	Spray Irrigation - Direct	409230	253160	01/06/1966

Licence N.*	Name	Point	Details	Easting	Northing	Start Date
18/54/13/0236	Glendale Horticulture Limited	BROOM, WARWICKSHIRE - BOREHOLE	General Farming & Domestic	409100	252700	12/10/1967
			Spray Irrigation - Direct			
18/54/13/0223	MOORE	BROOM, BIDFORD ON AVON - BOREHOLE	Spray Irrigation - Direct	409400	252900	20/04/1967
18/54/17/0695	Sandfields Farm Ltd	ORCHARD FARM, SALTFORD, PRIORS, EVESHAM	Trickle Irrigation - Direct	407060	251120	27/01/1994
			Trickle Irrigation - Storage			
			Vegetable Washing			
			Spray Irrigation - Storage			
			Spray Irrigation - Direct			

A5.7 Detailed flood risk baseline

Table A 5-12 Detailed flood risk baseline

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
1(a) (58.1 ha)	Flood Zone 1	A total of 1.4% of the sub-Site area is at high risk of surface water flooding, with an additional 2.2% at medium risk, and an additional 9.66% at low risk. The flooding from surface water is due to the presence of a significant flow path running southwest to northeast across the centre of the parcel, roughly following the route of Piddle Brook (WC2000). Discrete areas of the Site are also shown as	None recorded	None recorded

[13] Environment Agency (2026) Get flood risk information for planning in England. Available at: https://flood-map-for-planning.service.gov.uk/
[14] Environment Agency (2025) Surface water map. Available at: https://check-long-term-flood-risk.service.gov.uk/map
[15] Environment Agency (2025) Risk of Flooding From Reservoirs. Available at: https://check-long-term-flood-risk.service.gov.uk/map
[16] Environment Agency (2026) Historic Flood Map. Available at: https://www.data.gov.uk/dataset/76292bec-7d8b-43e8-9c98-02734fd89c81/historic-flood-map1
[17] Environment Agency (2026) Recorded Flood Outlines. Available at: https://www.data.gov.uk/dataset/16e32c53-35a6-4d54-a111-ca09031eaaaf/recorded-flood-outlines1
[18] South Worcestershire Council (2019) South Worcestershire Councils Level 1 Strategic Flood Risk Assessment (2019). Available at: https://www.swdevelopmentplan.org/component/fileman/file/Documents/South%20Worcestershire%20Development%20Plan/SWDP%20Review/Evidence%20Base/SFRA/SFRA-Level-1-Final-Report-South-Worcestershire-Councils.pdf?routed=1&container=fileman-files

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
		being at low risk of surface water flooding, likely associated with ponding in natural topographic depressions.		
1(b) (46.5 ha)	17% of this sub-Site is located in Flood Zone 3, with a further 10% of the sub-Site located in Flood Zone 2. A flow path is likely to be present flowing from the southwest to northeast associated with Piddle Brook (WC2000) and the unnamed WC2500.	A total of 10.2% of the sub-Site area is at high risk of surface water flooding, with an additional 6.1% at medium risk, and an additional 19.8% at low risk.	None recorded	None recorded
1(c) (147.8 ha)	A north-south corridor through the centre of this sub-Site is located in Flood Zone 3 (0.75% of the total sub-Site area), associated with Ban Brook (WC3900). A further 0.9% of the total sub-Site area is located in Flood Zone 2.	This sub-Site is at high-risk of flooding from surface water, following the route of Ban Brook (WC3900) and its tributaries (WC3970 and WC3980) across the centre of the sub-Site from north to south. A flow path is also shown in a west-east direction, joining Ban Brook from the western section of the sub-Site. Based on the LiDAR data, this is	None recorded	None recorded

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
		likely associated with a currently unmapped ditch/drainage feature. A total of 2.5% of the sub-Site area is at high risk of surface water flooding, with an additional 1.7% at medium risk, and an additional 4.3% at low risk.		
1(d) (22.1 ha)	The southern extent of this sub-Site (3.8% of the total sub-Site area) is located in Flood Zone 3, associated with Ban Brook (WC3900). A further 1.2% of the sub-Site is located in Flood Zone 2.	The eastern boundary of the Site is at high risk of flooding from surface water, associated with WC3950, a tributary of Ban Brook. A total of 2.4% of the sub-Site area is at high risk of surface water flooding, with an additional 1.4% at medium risk, and an additional 3.9% at low risk.	None recorded	None recorded
1(e) (148.1 ha)	Flood Zone 1	High risk of flooding from surface water, with extents mainly following the routes of the watercourses (WC3900 and WC3990) and possible unmapped drainage features present on the sub-Site. A flow	None recorded	None recorded

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
		path is also present in the southeastern portion of the Site, connecting to WC3980 in sub-Site 1c. A total of 2.3% of the sub-Site area is at high risk of surface water flooding, with an additional 1.5% at medium risk, and an additional 5.1% at low risk.		
2(a) (108.6 ha)	Flood Zone 1	High risk of flooding from surface water, with a corridor of high risk crossing the centre of the sub-Site, following a possible unmapped ditch/drainage feature visible from the LiDAR data. An area of high risk is also present at the southernmost point of the sub-Site. A total of 1.2% of the sub-Site area is at high risk of surface water flooding, with an additional 0.3% at medium risk, and an additional 1.3% at low risk.	None recorded	None recorded
2(b) (20.4 ha)	The eastern extent of this sub-Site is located in Flood	Areas at risk of flooding from surface water are confined to	The eastern extent of the sub-Site is shown	The sub-Site is shown to have experienced

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
	Zone 3 (33% of the total sub-Site area), associated with the River Arrow (WC3000). A further 3.9% of the sub-Site is located in Flood Zone 2. Flood defences (natural high ground) are present along the River Arrow. The modelled Flood Zone extents account for this natural high ground.	the eastern extent of the Site. A total of 1.6% of the sub-Site area is at high risk of surface water flooding, with an additional 0.6% at medium risk, and an additional 1.7% at low risk.	to be at risk of flooding from reservoirs during both the dry-day and wet-day scenarios. The wet-day reservoir extent is greater than the Flood Zone 3 extent.	historic flooding from the River Arrow in July 2007, with the extent similar to the Flood Zone 3 extent.
2(c) (24.1 ha)	The southern boundary of this sub-Site is located in Flood Zone 3 (1.3% of the total sub-Site area), associated with Ban Brook (WC3900). No Flood Zone 2 extent is present on this sub-Site.	Areas at high risk of surface water flooding are also shown, associated with localised depressions from the LiDAR data. A corridor of medium-low surface water flood risk intersects the sub-Site from north to south and appears to be associated with an unmapped ditch/drainage feature. A total of 0.6% of the sub-Site area is at high risk of surface water flooding, with an additional 0.5%	None recorded	None recorded

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
		at medium risk, and an additional 1.7% at low risk.		
2(d) (134.0 ha)	The southern boundary of this sub-Site is located in Flood Zone 3, associated with Ban Brook (WC3900) (0.6% of the total sub-Site area). A further 0.05% of the sub-Site is located in Flood Zone 2.	The eastern extent of this sub-Site is generally at medium-low risk of surface water flooding. Multiple areas at high risk of surface water flooding are also present across the sub-Site. A total of 3.2% of the sub-Site area is at high risk of surface water flooding, with an additional 2.8% at medium risk, and an additional 10% at low risk.	None recorded	None recorded
2(e) (32.5 ha)	The majority of this sub-Site is located in Flood Zone 3, associated with the River Arrow (WC3000) (52.6% of the total sub-Site area). A further 24.6% of the sub-Site is located in Flood Zone 2. Flood defences (natural high ground) are present along the River Arrow. The modelled Flood Zone	Small areas at high risk of surface water flooding are identified on this sub-Site, with the high and medium extents. A total of 1.4% of the sub-Site area is at high risk of surface water flooding, with an additional 1.6% at medium risk, and an additional 4.3% at low risk.	The sub-Site is shown to be at risk of flooding from reservoirs during both the dry-day and wet-day scenarios. The wet-day reservoir extent is greater than the combined Flood Zone 2/3 extent.	The sub-Site is shown to have experienced historic flooding from the River Arrow in July 2007, with the extent matching the Flood Zone 2 extent.

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
	extents account for this natural high ground.			
3(a) (13.1 ha)	Flood Zone 1	High risk of surface water flooding, concentrated along its southeastern and southwestern boundaries. A total of 5.8% of the sub-Site area is at high risk of surface water flooding, with an additional 2.2% at medium risk, and an additional 8.6% at low risk.	None recorded	None recorded
3(b) (48.2 ha)	The southern corner of this sub-Site is located in Flood Zone 3 (0.7% of the total sub-Site area), associated with WC6500 which runs along the southeastern boundary of the Site. A further 0.5% of the sub-Site is located in Flood Zone 2.	The north-western corner and south-eastern boundary (following WC6500) of this sub-Site are at high risk of surface water flooding. Corridors of high surface water flood risk also cross the centre of the Site, possibly associated with unmapped ditches/drainage features. A total of 4.9% of the sub-Site area is at high risk of surface water flooding, with an additional 1.9% at medium risk, and an additional 5.7% at low risk.	None recorded	None recorded

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
3(c) (50.7 ha)	Flood Zone 1	High risk of surface water flooding, with the high-risk extent mostly following the northern (WC6510) and western boundaries. Areas at risk of surface water flooding are also present in the centre of the sub-Site. A total of 5% of the sub-Site area is at high risk of surface water flooding, with an additional 2.8% at medium risk, and an additional 8.6% at low risk.	None recorded	None recorded
3(d) (98.0 ha)	The northeastern boundary of this sub-Site is located in Flood Zone 3 (1.5% of the total sub-Site area), associated with WC5100. A further 0.2% of the sub-Site is located in Flood Zone 2.	This sub-Site is at high risk of surface water flooding, with the high-risk extents mostly focused in the western portion of the sub-Site, approximately following the routes of WC6511 and WC6512. A total of 5.8% of the sub-Site area is at high risk of surface water flooding, with an additional 2.4% at medium risk, and an additional 6.4% at low risk.	None recorded	None recorded

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
3(e) (17.0 ha)	The western boundary of this sub-Site is located in Flood Zone 3 (6.4% of the total sub-Site area), associated with WC5100. A further 5.8% of the sub-Site is located in Flood Zone 2. A total of 13.6% of this sub-Site falls within the combined Flood Zones plus climate change extent.	Areas at high-risk of surface water flooding are at the centre and western border of the Site. A total of 3.2% of the sub-Site area is at high risk of surface water flooding, with an additional 2.6% at medium risk, and an additional 9.2% at low risk.	None recorded	None recorded
3(f) (13.6 ha)	The western/northwestern boundary of this sub-Site is located in Flood Zone 3 (12.9% of the total sub-Site area), associated with WC5100. A further 3.6% of the sub-Site is located in Flood Zone 2.	Small areas at high-risk of surface water flooding are present along the western/northwestern boundary and northeastern corner of the sub-Site. A total of 1% of the sub-Site area is at high risk of surface water flooding, with an additional 1.1% at medium risk, and an additional 3.3% at low risk.	None recorded	None recorded
3(g) (41.9 ha)	The south/southwestern boundary of this sub-Site is located in Flood Zone 3 (2.6% of the total sub-Site	This sub-Site is at high risk of surface water flooding, with corridors of high risk focussed in the western portion of the Site. A	None recorded	None recorded

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
	area), associated with WC5100. A further 1.2% of the sub-Site is located in Flood Zone 2.	total of 1.2% of the sub-Site area is at high risk of surface water flooding, with an additional 0.8% at medium risk, and an additional 3.7% at low risk.		
4 (37.2 ha)	The northern boundary and central extent of this sub-Site is located in Flood Zone 3 (10.4% of the total sub-Site area), associated with WC6400, WC6410 and a depression running south to north across the centre of the sub-Site. A further 12.8% of the sub-Site is located in Flood Zone 2.	This sub-Site is at high-risk of surface water flooding, with the extent generally following the same pattern as the Flood Zones. A band of high-risk also crosses the centre of the sub-Site from east to west. A total of 9.1% of the sub-Site area is at high risk of surface water flooding, with an additional 3.6% at medium risk, and an additional 9.7% at low risk.	None recorded	The sub-Site is shown to have experienced historic flooding in 2007, associated with WC6400/WC6410, matching that of the Flood Zone 2 extent.
Cable Route Corridor (CRC) Search Area	Section CR1 of the CRC Search Area crosses areas of Flood Zone 2/3, associated with Brandon Brook (WC1200 and WC1210) and Piddle Brook (WC2000, WC2200 and WC2210).	All sections of the CRC Search Area cross areas at high risk of surface water flooding. These areas are generally consistent with the locations of mapped watercourses or other unmapped ditches/drainage	Section CR3 crosses the River Avon and River Arrow corridor, this area is at risk of flooding from reservoirs during both the dry and wet day scenarios.	Section CR3 crosses the River Avon and River Arrow corridor, this area has experienced historic flooding from these rivers in 1968, 1965, 1998 and 2007.

Sub-Site	Flood Zones[13]	Risk of flooding from surface water[14]	Risk of flooding from reservoirs[15.]	Historic flood events [16, 17, 18]
	Section CR3 of the CRC Search Area crosses areas of Flood Zone 2/3, associated with the River Avon (WC4000) and the River Arrow (WC3000). This section also crosses flood defences (natural high ground) which are present along the River Arrow and the River Avon. The modelled Flood Zone extents account for this natural high ground. Sections CR5 and CR7 of the CRC Search Area cross areas of Flood Zone 2/3, associated with Littleton Brook (WC6500) and its tributaries (WC6400 and WC6420). Section CR6 of the CRC Search Area crosses areas of Flood Zone 2/3, associated with WC5100.	features visible from the LiDAR data.		

Appendix 6 Ecology and Biodiversity

A6.1 Desk Study Results

A6.1.1. Table A 6-1 details the statutory designated sites for nature conservation identified within 2km of the Scheme, which comprises the Sites and Cable Route Corridor (CRC) Search Area. The CRC route has been split into seven sections listed CR1 – CR7. No international sites have been identified within 10km of the Scheme. No Statutory designated sites of relevance for bats or migratory birds have been identified up to 30km from the Scheme. Table A 6-2 details the non-statutory designated sites for nature conservation located within 2km of the Site.

Table A 6-1 Statutory designated sites for nature conservation[19] located within 2 km of the Sites and the CRC.

Site Name	Designation	Location of designated site[20] to CRC	Location of designated site to the Sites	Qualifying features/ description
Wylde Moor, Feckenham	Site of Special Scientific Interest (SSSI)	Approximately 130m west of CR1	Over 2km from all the Sites.	Much of the Site is covered by marshy grassland dominated by lesser pond-sedge and blunt-flowered rush with other characteristic wetland plants such as water figwort, great reedmace, marsh thistle, cuckooflower and meadowsweet. Peripheral parts of the marsh have been grazed by cattle and support a species-rich, damp neutral grassland. One of the few sites in the county where snipe still breed. Supports a large population of reed bunting and other breeding birds associated with fen vegetation.
Long Meadow, Thorn	SSSI	Approximately 1.4km west of CR1	Approximately 1.8km north-west of sub-Site 1(b).	The meadow is dominated by grasses such as meadow foxtail, meadow brome and soft brome. The meadow has been selected as a species rich neutral grassland characterised by plants such as cowslip, pepper saxifrage and green winged orchid. It has over 190 species of flowering plants. On the northern side there is a mixed scrub bank which provides opportunities for extensive badger setts.
Windmill Hill	SSSI	Approximately 1.9km north-west of CR7	Approximately 1.3km north-west of sub-Site 4.	The site lies on a west facing slope overlooking the river Avon. It is the largest and most important area of unimproved calcareous grassland on the Rhaetic limestone in Worcestershire and is noted for its rich flora. The main grasses are tor grass, erect brome,

19 Broom Railway Cutting SSSI is located within 2km of the Scheme, however, is designated for geological interest and therefore is excluded from this table.
20 Where designated sites are situated outside of the Site boundary, the distance and direction is given to the closest point that the designated site is from the Site.

Site Name	Designation	Location of designated site[20] to CRC	Location of designated site to the Sites	Qualifying features/ description
				sheep's fescue and meadow oat grass. The site is also noted for its orchids which include twayblade, spotted and greater butterfly orchid.
Rookery Cottage Meadows	SSSI	Approximately 1.5km west of CR1	Over 2km from all Sites.	The three meadows overlie a medieval ridge and furrow and have been maintained by traditional hay cutting with aftermath grazing by cattle. The site lies in the diversity of the semi-natural grassland sward with its rich assemblage of herbs and grasses. The vegetation of the north and south meadows conforms with the mesotrophic (neutral) grassland characterised by crested dog's-tail and common knapweed. The eastern damp meadow has impeded drainage, and shows a transition from mesotrophic grassland, as described, to an extensive area of mire which is typical of the soft rush and common marsh-bedstraw.
Stock Wood Meadows	SSSI	Approximately 1.9km west of CR1	Over 2km from all Sites.	Two meadows are maintained as traditional hay meadows, with aftermath grazing. A stream runs through part of the site and there is a pond in the north-east corner. The site lies in the diversity of the damp semi-natural mesotrophic (neutral) grassland sward, characterised by crested dog's-tail and common knapweed.
Cleeve Prior Bank	Local Nature Reserve (LNR)	Approximately 1km south-west of CR3	Approximately 900m west of sub-Site 3(a).	The site comprises a mosaic of woodland, scrub and small areas of grassland with records for a variety of lime loving plants. The site includes large stretches of woodland dominated by ash with various other trees scattered including field maple, wild cherry, lime, horse chestnut and Norway maple. The field-layer here holds a good diversity of species, including bluebell, hart's tongue, stinking iris, cuckoo pint, wood false-brome and sweet violets.

Table A 6-2 Non-statutory designated sites for nature conservation within 2 km of the Sites and CRC[21][22].

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Abbots Morton Road Verge	Local Wildlife Site (LWS)	Approximately 800m north of CR2.	Adjacent to sub-Sites 1(c) and 1(e).	The site consists of semi-improved grassland, mixed woodland and hedgerow all display high species diversity, with some very local Warwickshire species such as Dewberry and Wild Basil being more numerous here than almost anywhere else in the county.
Tothall Lane Meadow	LWS	Approximately 190m north of CR2.	Approximately 170m west of sub-Site 2(d)	The site consists of a small rectangular field of rather damp semi-improved neutral grassland. The surrounding land is highly cultivated consisting mainly of medium-large arable fields.
Alcester - Broom Disused Railway	LWS	Located within CR3	Located within sub-Sites 2(b) and 2(e)	The site includes a wide variety of habitats ranging from mature Ash/Oak woodland through scrub, tall herb and rough grassland, to semi-improved calcareous grassland, reed swamp, seasonal pools and sparsely vegetated substrates
Broom Old Quarry	LWS	Located 20m north of CR3	Located 15m east of sub-Site 2(e)	The site was formerly a small sand and gravel pit. Since then, the site has been left to develop naturally with virtually no additional planting, and is now a mosaic of scrub, tall herb and semi-improved neutral grassland.
Cranhill Nature Reserve	LWS	Over 2km from CRC	Approximately 1.9km north of sub-Site 3(g)	This section of historic disused railway between Bidford-on-Avon and Welford-on-Avon provides a fantastic haven for wildlife and has a mosaic of habitats creating a floristically diverse site

[21] As the CRC extents have been updated since the initial desk study request, some of the non-statutory designated sites have not been included within 2km of the CRC. However, this is not considered to be a significant limitation due to the majority of the final CRC for Scoping being located within the Site areas.
[22] Worcestershire Biological Records Centre did not provide any potential LWS (pLWS), so only pLWS from Warwickshire Biological Records Centre have been included in table.

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Oversley Wood	LWS	Over 2km from CRC	Approximately 1.7km north-east of sub-Site 2(b)	The site is a replanted ancient woodland with still areas of semi-natural woodland present. It is exceptionally rich in both fauna and flora, with 244 species of vascular plants noted during the LWS survey but many more are known to be present.
Welford Old Orchard	LWS	Over 2km from CRC	Approximately 1.1km east of sub-Site 3(g)	The site includes areas of grassland with a herb-rich sward that including several plants with a preference for semi- improved calcareous soils such as Fairy Flax, Wild Carrot, Agrimony, Glaucous Sedge, Hoary Ragwort, and Perforate St John's-wort.
Cress Hill	LWS	Over 2km from CRC	Approximately 1.5km east of sub-Site 3(g)	The LWS comprises a small block of community-owned land situated on the south side of the River Avon LWS, about 0.5 km southwest of Welford-on-Avon.
Sands Meadow	LWS	Located adjacent to CR1	Over 2km from all the Sites	Three ridge and furrow meadows to the east of Inkberrow, on a gentle east-facing slope running down to a ditch and marshy ground with springs on the eastern boundary. There are recent records for adder's tongue fern and spring sedge.
Lady's Coppice & Morton Bank	LWS	Located within CR1.	Over 2km from all the Sites	The site comprises of grasslands, scrub and semi-natural broadleaved woodland. The broadleaved woodland vegetation is ash/field maple with dog's mercury, bluebell and ramsons dominant in the ground flora. The grassland at the northern end of the site has been planted up with trees, though small glades still remain as fragments. The drier grass swards on the steepest slopes include burnet saxifrage, pignut, ladies bedstraw and cowslip.

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Holberrow Green Meadow	LWS	Approximately 150m east of CR1	Over 2km from all the Sites	A small square-shaped, damp, rushy meadow in the middle of Holberrow Green village next to the B4092 road. The site is split into roughly equal parts by a fence line running north-west to south-east. The field's terrain is flat, but a ridge and furrow pattern runs across it from south-west to north-east. There are no watercourses on the site though a seasonal pond lies on the north-east edge. On the ridge-tops is a neutral grass sward of crested dog's-tail with black knapweed.
Shurnock Meadows	LWS	Located adjacent to CR1	Over 2km from all the Sites	The field block to the immediate south of Meadow Farm is the wettest. It has been partially improved but is now reverting back to sedge/rush/meadowsweet vegetation, showing transitions between a common knapweed with crested dogs tail sward.
River Arrow	LWS	Located within CR3	Adjacent to sub-Sites 2(b) and 2(e)	The River Arrow is a relatively natural lowland river of largely good ecological quality. The river meanders through south-west Warwickshire, providing a corridor for wildlife as well as supporting a diverse flora and fauna itself.
River Avon and Tributaries	LWS	Located within CR3	Approximately 500m north of sub-Site 3(a)	This section of the river retains many natural features, including several islands remnant channels and abundant diverse bankside vegetation. There are various habitats associated with the river, including woodland, meadows, scrub and ruderal areas.
Littleton, Broadway & Badsey Brooks and Tributaries	LWS	Approximately 1.3km south-west of CR7.	Approximately 350m south-west of sub-Site 4	This complex of medium sized brooks combine to form a tributary of the River Avon and drain a significant area of land stretching east from Evesham to the Cotswold scarp. In most places the banks are high, quite steep and frequently covered in trees and

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
				shrubs, with many pollarded willows. Suitable habitats for otter and commuting and foraging bats.
Weethley Wood and Bank Complex	LWS	Approximately 750m east of CR1.	Adjacent to sub-Sites 1(c) and 1(e)	A substantial remnant of ancient woodland on a west-facing escarpment of rhaetic limestone geology. Much of the wood was cleared and replanted with conifers, though parts retain the original structure - oak standards with ash and hazel understorey coppice. Species of importance: bluebell, wood sorrel, wood anemone, dog's mercury, sanicle ramsons, woodspurge, spurge laurel, herb Paris, primrose
Inkberrow Millenium Green	LWS	Approximately 100m west of CR1.	Over 2km from all the Sites.	Two meadows on a gentle south-east facing slope near to Inkberrow parish church. The south-east corner of the site has a small patch of woodland and a historic moat. Species-rich hedgerows border the Green with ash, coppiced hazel, wych elm and a local variety of pear tree.
Muzzy Hill & Hill Croft Pasture	LWS	Approximately 480m north-east of CR1.	Over 2km from all the Sites.	The Site consists of woodland, scrubby grassland, semi-natural neutral/calcareous grassland and roadside verge. Predominantly ash-woodland which appears on the county inventory of semi-natural ancient woodland. The canopy is mixed ash/oak with sub-layer of field maple. Shrub canopy is mix of hazel elder and some holly showing evidence of coppicing in the past. Ground flora is dominated by dog's mercury
Piddle and Whitsun Brooks	LWS	Located within CR1.	Approximately 1.2km north-west of sub-Site 1(e).	The Piddle Brook and its tributary the Whitsun Brook drain most of the eastern part of the east Worcestershire plain and form a valuable wildlife corridor through an otherwise predominantly agricultural landscape. For much of their length both brooks have

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
				a natural channel form and exhibit the expected range of features including occasional pools and riffles, debris dams and meanders, often with deeply incised banks. The two brooks have good dragonfly fauna and otters are known to occur.
Yeald & Oak Yew Hill Woods	LWS	Over 2km from CRC	Approximately 640m south-west of sub-Site 1(a).	This is an ancient woodland site but the majority of the original canopy trees have been cleared, and the wood replanted with non-native conifer species or with introduced broadleaves, such as beech and hybrid poplar. The blocks toward the northern edge have a low-density larch canopy with very occasional broadleaved standards – oak and ash. There is an understorey of pole-stage ash, birch and coppiced hazel over a ground flora characteristic of ash woodland-type.
Slade Wood	LWS	Approximately 1.2km south-west of CR1.	Adjacent to sub-Site 1(a).	One of the richest ancient woodland fragments in the county. As well as a highly diverse flora throughout, the wood exhibits a number of interesting features – such as old boundary banks/ditches with veteran oak and field maple hulks; species-rich grassy and marshy rides; ponds and pools with iris and broadleaved pondweed and stream dingles with lush growth of ferns and locally, mosses and liverworts.
Long Wood & Commisioners Wood	LWS	Approximately 1.8km south of CR1.	Approximately 100m south of sub-Site 1(a)	Two small remnants of semi-natural ancient woodland. The vegetation of these woodlands, having developed on calcareous/neutral strata, exhibits various sub-communities of the ash/field maple/dog's mercury vegetation type. Commisioners wood is an ash woodland with oak canopy and an understorey of wych elm and field maple.

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
				Long Wood is predominantly ash type with some oak, and patches of hawthorn and blackthorn.
Cleeve Prior	LWS	Approximately 150m south-west of CR3.	Approximately 700m north-west of sub-Site 3(a)	The site includes large stretches of woodland dominated by ash although with various other trees scattered throughout including native species such as field maple, wild cherry and lime together with non-native species such as horse chestnut and Norway maple. The field-layer here holds a good diversity of species, including bluebell, hart's tongue and stinking iris. The county rarity deadly nightshade occurs here.
Fox Covert	LWS	Approximately 200m north-east of CR6.	Adjacent to sub-Sites 3(f) and 3(e).	A small woodland with ash and oak over elm and some wayfaring tree.
The Ling Ground and Weethley Wood	Potential LWS (pLWS)	Approximately 850m east of CR1.	Adjacent to sub-Sites 1(c) and 1(e).	No descriptions of the site have been provided by WaBRC
Bush Wood	pLWS	Approximately 900m north-west of CR2.	Adjacent to sub-Sites 1(c) and 1(e).	No descriptions of the site have been provided by WaBRC
Franklins Lane Verge, King Edward Plantation and Longwood	pLWS	Approximately 1.6km west of CR2.	Approximately 200m south of sub-Site 1(a).	No descriptions of the site have been provided by WaBRC

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Grassland near Bevington Waste	pLWS	Approximately 250m west of CR2.	Adjacent to sub-Sites 1(c) and 1(d).	No descriptions of the site have been provided by WaBRC
Ragley Park Woods	pLWS	Approximately 730m north of CR2.	Adjacent to sub-Site 2(a).	No descriptions of the site have been provided by WaBRC
Dunnington Court Plum Orchard	pLWS	Approximately 700m north of CR3.	Adjacent to sub-Site 2(a).	No descriptions of the site have been provided by WaBRC
Wood near Wixford	pLWS	Approximately 1.7km north of CR3.	Approximately 100m north of sub-Site 2(b)	No descriptions of the site have been provided by WaBRC
Fields South of Wixford	pLWS	Approximately 1.4km north of CR3.	Adjacent to sub-Site 2(b)	No descriptions of the site have been provided by WaBRC
Meadow near Broom	pLWS	Located within CR3.	Adjacent to sub-Site 2(e)	No descriptions of the site have been provided by WaBRC
Salford Coppice, associated hedge and pond	pLWS	Approximately 1.95km south of CR2.	Approximately 1.7km south-west of sub-Site 2(c)	No descriptions of the site have been provided by WaBRC

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Plantation at Waterloo Road	pLWS	Approximately 1.5km east of CR3.	Approximately 1.6km south-east of sub-Site 2(e)	No descriptions of the site have been provided by WaBRC
Marcliff Meadow	pLWS	Located within CR3.	Approximately 600m north of sub-Site 3(a)	No descriptions of the site have been provided by WaBRC
Fields at Marcliff	pLWS	Approximately 100m east of CR3.	Approximately 150m east of sub-Site 3(a)	No descriptions of the site have been provided by WaBRC
Marcliff Hill Orchard	pLWS	Adjacent to CR3.	Approximately 130m north of sub-Site 3(a)	No descriptions of the site have been provided by WaBRC
Bidford Golf Course	pLWS	Approximately 670m north-east of CR3.	Approximately 680m north of sub-Site 3(g)	No descriptions of the site have been provided by WaBRC
Pates Meadow	pLWS	Approximately 450m north-east of CR3.	Approximately 770m north of sub-Site 3(g)	No descriptions of the site have been provided by WaBRC
Roman Field Wood	pLWS	Approximately 1.8km east of CR3	Approximately 200m north of sub-Site 3(g)	No descriptions of the site have been provided by WaBRC
Bickmarsh Orchard	pLWS	Approximately 50m west of CR3.	Approximately 750m north-east of sub-Site 3(b)	No descriptions of the site have been provided by WaBRC

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Avon Tributary near Salford Priors	pLWS	Approximately 580m west of CR3.	Approximately 850m south of sub-Site 2(d)	No descriptions of the site have been provided by WaBRC
Worcester Meadows North	pLWS	Approximately 720m west of CR3.	Approximately 830m south of sub-Site 2(d)	No descriptions of the site have been provided by WaBRC
Scrub at Abbots Salford	pLWS	Approximately 1.1km west of CR3.	Approximately 1.6km west of sub-Site 3(a)	No descriptions of the site have been provided by WaBRC
Caravan Field	pLWS	Approximately 1km south-west of CR3.	Approximately 1km west of sub-Site 3(a)	No descriptions of the site have been provided by WaBRC
Dorsington Manor Farm Hedge	pLWS	Approximately 1.7km north-east of CR6.	Adjacent to sub-Site 3(g)	No descriptions of the site have been provided by WaBRC
Collett's Farm Hedge	pLWS	Approximately 960m north-east of CR6.	Adjacent to sub-Site 3(f)	No descriptions of the site have been provided by WaBRC
Springs, Three Oakhill, The Belts Wood and Old Pack Wood	pLWS	Over 2km from CRC	Approximately 750m north-east of sub-Site 1(e)	No descriptions of the site have been provided by WaBRC

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Thornhill Wood	pLWS	Over 2km from CRC	Approximately 200m east of sub-Site 1(e)	No descriptions of the site have been provided by WaBRC
Co-Operative Meadow	pLWS	Over 2km from CRC	Approximately 2km north of sub-Site 2(a)	No descriptions of the site have been provided by WaBRC
Oversley Mill Flood Meadows	pLWS	Over 2km from CRC	Approximately 2km north of sub-Site 2(b)	No descriptions of the site have been provided by WaBRC
Exhall Court Wet Meadow	pLWS	Over 2km from CRC	Approximately 950m east of sub-Site 2(b)	No descriptions of the site have been provided by WaBRC
Cranhill Meadows	pLWS	Over 2km from CRC	Approximately 1.95km north of sub-Site 3(g)	No descriptions of the site have been provided by WaBRC
Upper Welford House Meadows	pLWS	Over 2km from CRC	Approximately 460m east of sub-Site 3(g)	No descriptions of the site have been provided by WaBRC
Greenacres Orchard	pLWS	Over 2km from CRC	Approximately 1.5km east of sub-Site 3(g)	No descriptions of the site have been provided by WaBRC

Site Name	Designation	Location of designated site to CRC	Location of designated site to the Sites	Qualifying features/ description
Cress Hill Extension	pLWS	Over 2km from CRC	Approximately 1.8km east of sub-Site 3(g)	No descriptions of the site have been provided by WaBRC
Nolesham Brook Farm Field	pLWS	Over 2km from CRC	Approximately 1.8km east of sub-Site 3(f)	No descriptions of the site have been provided by WaBRC

A6.1.2. Table A 6-3 details the locations of priority habitats and ancient woodlands identified through the desk study and MAGIC website that are within 1 km of the Site. Table A 6-4 lists veteran trees found within 500 m of the Site.

Table A 6-3 Priority habitats and ancient woodlands within 1 km of the Sites and CRC.

	Priority Habitat/ ancient woodland name	No. of habitat parcels within 1 km	Distance to CRC	Distance to the Sites
Priority Habitat	Coastal and floodplain grazing marsh	Six parcels	The closest habitat parcel is located within CR3	The closest habitat parcel is located 15m south of sub-Site 2(e)
	Deciduous woodland	145 parcels	Three deciduous woodland parcels are located within CR1. Four deciduous woodland parcels are located within CR3.	16 deciduous woodland parcels are located directly adjacent to the following sub-Sites: 1(a), 1(b), 1(c), 1(e), 2(a), 2(b), 2(d), 3(b), 3(e), 3(f), 3(g) and 4.
	Good quality semi-improved grassland	15 parcels	The closest habitat parcel is located adjacent to CR6	The closest habitat parcel is located directly adjacent to sub-Site 3(d).

	Priority Habitat/ ancient woodland name	No. of habitat parcels within 1 km	Distance to CRC	Distance to the Sites
	Lowland meadows	Five parcels	The closest habitat parcel is located adjacent to CR1.	The closest habitat parcel is located approximately 500m north of sub-Site 4.
	No main habitat but additional habitats present	21 parcels	The closest habitat parcel is located approximately 150m west of CR1.	One habitat parcel is located within sub-Site 1(c)
	Traditional orchard	82 parcels	One habitat parcel is located adjacent to CRC1 and two habitat parcels are located adjacent to CR4.	Six habitat parcels are located directly adjacent to sub-Sites 2(a), 2(d), 3(b), 3(f) and 3(g).
Ancient Woodland	Bush Wood		900m north-west of CR2.	Adjacent to sub-Sites 1(c) and 1(e).
	Cockerham's Wood		900m north of CR2.	170m east of sub-Site 1(e).
	Commissioners Wood		Over 1km.	Adjacent to sub-Site 1(a)
	Ennister Wood		720m north of CR2.	Adjacent to sub-Site 2(a).
	Hanging Wood		Adjacent to CR1.	Over 1km from all Sites.
	Long Wood		Over 1km.	25 m south of sub-Site 1(a).
	Nunnery Wood		Over 1km.	70 m north of sub-Site 1(e).
	Pearsons Wood		Over 1km.	225m north-east of sub-Site 1(e).
	Rous Lench Wood		Over 1 km.	870 m west of sub-Site 1(a).
	Slade Wood		Over 1km.	Adjacent to sub-Site 1(a).

	Priority Habitat/ ancient woodland name	No. of habitat parcels within 1 km	Distance to CRC	Distance to the Sites
	Thornhill Wood		Over 1km.	220m east of sub-Site 1(e).
	Three Oak Hill Wood		Over 1km.	685m north-east of sub-Site 1(e).
	Weethley Wood		550m east of CR1.	Adjacent to sub-Site 1(e).
	Williams Wood		370m south-east of CR1.	Adjacent to sub-Sites 1(b) and 1(c).
	Yeald Wood		Over 1km.	660m south of sub-Site 1(a).

Table A 6-4 Veteran trees within 500 m of the Sites and CRC[23].

Local records centre	Veteran tree species	Grid reference of veteran tree	Distance to CRC	Distance to the Sites
Warwickshire Biological Records Centre (WaBRC)	Ash	SP08845059	Within CR3.	Over 500m.
	Black Mulberry	SP08834928	Over 500m.	95m west of sub-Site 3(b).
	Black Poplar	SP1214251272	Over 500m.	320m north of sub-Site 3(g).
	Crack-willow	SP09315057	160m east of CR3.	Over 500m.
	Crack-willow	SP12075139	Over 500m.	460m north of sub-Site 3(g).
	Crack-willow	SP12345116	Over 500m.	165m north of sub-Site 3(g).
	Crack-willow	SP12435071	Over 500m.	20m east of sub-Site 3(g).
	Crack-willow	SP12545106	Over 500m.	165m north-east of sub-Site 3(g).

[23] Due to the changes in CRC extents following the initial data search request, some of the veteran tree records will not have been included within the local records centres data. The ancient tree inventory webpage has therefore been used to identify any missing veteran trees located within 500m of the CRC extents for Scoping.

Local records centre	Veteran tree species	Grid reference of veteran tree	Distance to CRC	Distance to the Sites
	Evergreen oak	SP09185312	Over 500m.	485m east of sub-Site 2(e).
	Field Maple	SP12205148	Over 500m.	500m north of sub-Site 3(g).
	Hazel	SP12145142	Over 500m.	445m north of sub-Site 3(g).
	Hazel	SP12155143	Over 500m.	460m north of sub-Site 3(g).
	Hazel	SP12165144	Over 500m.	465m north of sub-Site 3(g).
	Horse-chestnut	SP08794940	Over 500m.	175m north-west of sub-Site 3(b).
	Pedunculate oak	SP0506653969	Over 500m.	Within sub-Site 1(c).
	Pedunculate oak	SP06635399	Over 500m.	325m east of sub-Site 2(a).
	Pedunculate oak	SP06865398	Over 500m.	100m east of sub-Site 2(a).
	Wild service-tree	SP0445254570	Over 500m.	230m east of sub-Site 1(e).
	Willow	SP12215113	Over 500m.	150m north of sub-Site 3(g).
	Yew	SP05525530	Over 500m.	295m east of sub-Site 1(e).
Worcestershire Biological Records Centre (WoBRC)	Ash	SP0324056580	115m north-east of CR1.	Over 500m.
	Horse-chestnut	SP0879049370	Over 500m.	160m north-west of sub-site 3(b).
	Horse-chestnut	SP0870049190	Over 500m.	250m west of sub-site 3(b).
	Pedunculate oak	SP0307056530	Adjacent to CR1.	Over 500m.
	Pedunculate oak	SP0316056500	10m east of CR1.	Over 500m.
	Pedunculate oak	SP0318056520	30m east of CR1.	Over 500m.
	Pedunculate oak	SP0322056540	75m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0323056550	90m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0324056560	100m north-east of CR1.	Over 500m.

Local records centre	Veteran tree species	Grid reference of veteran tree	Distance to CRC	Distance to the Sites
	Pedunculate oak	SP0325056590	130m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0329056620	180m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0330056630	195m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0350056210	365m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0357055980	435m east of CR1.	Over 500m.
	Pedunculate oak	SP0357056000	440m east of CR1.	Over 500m.
	Pedunculate oak	SP0357056020	440m east of CR1.	Over 500m.
	Pedunculate oak	SP0357056040	445m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0357056050	435m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0357056060	440m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0357056070	440m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0606052290	Over 500m.	430m south-west of sub-Site 2(c).
Ancient Tree Inventory[24]	Pedunculate oak	SP0247260544	Within CR1.	Over 500m.
	Pedunculate oak	SP0237660461	Within CR1.	Over 500m.
	Pedunculate oak	SP0237360118	Within CR1.	Over 500m.
	Pedunculate oak	SP0231960084	Within CR1.	Over 500m.
	Pedunculate oak	SP03245982	420m south-east of CR1.	Over 500m.
	Pedunculate oak	SP0331356635	205m north-east of CR1.	Over 500m.
	Common ash	SP0332656655	210m north-east of CR1.	Over 500m.

[24] Woodland Trust (2026) Ancient Tree Inventory Webpage. Available at: https://ati.woodlandtrust.org.uk/tree-search

Local records centre	Veteran tree species	Grid reference of veteran tree	Distance to CRC	Distance to the Sites
	Pedunculate oak	SP0338156689	290m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0339656699	295m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0341056711	310m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0343156712	345m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0343356737	390m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0345956748	395m north-east of CR1.	Over 500m.
	Pedunculate oak	SP03625669	480m north-east of CR1.	Over 500m.
	Pedunculate oak	SP0361356680	465m north-east of CR1.	Over 500m.
	Pedunculate oak	SP03615667	455m north-east of CR1.	Over 500m.
	Pedunculate oak	SP03605666	440m north-east of CR1.	Over 500m.
	Pedunculate oak	SP03575653	370m east of CR1.	Over 500m.
	Pedunculate oak	SP03545641	340m east of CR1.	Over 500m.
	Pedunculate oak	SP0354356433	340m east of CR1.	Over 500m.
	Pedunculate oak	SP0334856346	150m south-east of CR1.	Over 500m.
	Common ash	SP0339356308	200m south-east of CR1.	Over 500m.
	Pedunculate oak	SP0336556279	205m south-east of CR1.	Over 500m.
	Pedunculate oak	SP03495628	310m south-east of CR1.	Over 500m.
	Pedunculate oak	SP03515628	330m south-east of CR1.	Over 500m.
	Pedunculate oak	SP03525629	340m south-east of CR1.	Over 500m.
	Pedunculate oak	SP03525624	370m south-east of CR1.	Over 500m.
	Pedunculate oak	SP03545623	380m south-east of CR1.	Over 500m.

Local records centre	Veteran tree species	Grid reference of veteran tree	Distance to CRC	Distance to the Sites
	Pedunculate oak	SP0355256198	400m south-east of CR1.	Over 500m.
	Pedunculate oak	SP03575617	450m south-east of CR1.	Over 500m.
	Pedunculate oak	SP0360155830	320m east of CR1.	Over 500m.
	Pedunculate oak	SP0361955806	325m east of CR1.	Over 500m.
	English Elm	SP0371055517	70m east of CR1.	Over 500m.
	Pedunculate oak	SP0372255282	135m east of CR1.	Over 500m.
	Pedunculate oak	SP0377655155	100m north-east of CR1.	Over 500m.
	Common ash	SP0335955179	70m west of CR1.	Over 500m.
	Common ash	SP0334055188	90m west of CR1.	Over 500m.
	Pedunculate oak	SP0426355023	480m east of CR1.	450m west of sub-Site 1(e).

A6.1.3. Desk study records from both Worcestershire and Warwickshire Biological Records Centres have collated records of protected and priority species located within 1km (extended to 2km for bats) of the Sites and CRC. Details of the protected and priority species identified within 1km (extended to 2km for bats) of the Sites and CRC in the last 10 years are provided in Table A 6-5.

Table A 6-5 Protected and Priority species records located within 1km (extended to 2km for bats)[25] of the Sites and CRC[26] in the last 10 years.

Species	Records identified within 1-2 km of Site in last 10 years	Species within 1-2 km of Site in last 10 years.	Location and description of closest record(s) to CRC	Location of closest record(s) to the Sites
Bats	WaBRC returned 96 records of nine species of bat within 2km.	Brown long-eared, common pipistrelle, Daubenton's, Leisler's, *Myotis* sp., natterer's, noctule, soprano pipistrelle and whiskered bat.	Four records located approximately 450m east of CR2 in 2016. Brown long-eared, noctule, common pipistrelle and soprano pipistrelle.	Four records located approximately 40m east of sub-Site 2(c) in 2016. Brown long eared, noctule, pipistrelle sp. and soprano pipistrelle.
	WoBRC returned 50 records of five species of bat within 2km.	Brown long-eared, common pipistrelle, Leisler's, natterer's and soprano pipistrelle.	Six records were located adjacent to CR1 in 2021. Brown long-eared, common pipistrelle, soprano pipistrelle and an unidentified bat.	Eight records located approximately 100m east of sub-Site 1(b) in 2020. Brown long-eared, common pipistrelle, soprano pipistrelle and an unidentified bat.
Badgers	WaBRC returned no records of badger.	N/A.	N/A.	N/A.
	WoBRC returned one record of badger within 1km.	N/A.	The record was located approximately 640m west of CR1 in 2016.	The record is located over 2km from all the Sites.

[25] Warwickshire Biological Records provided protected and priority species records up to 2km from the Site, where records have been provided up to 2km these are also included within the desk study results.
[26] The CRC extents have been updated since the initial desk study data request. Therefore, not all species records have now been included within the 1km (2km for bats) search area. This is not considered to be a significant limitation due to the majority of the final CRC for Scoping being within the Sites boundaries.

Species	Records identified within 1-2 km of Site in last 10 years	Species within 1-2 km of Site in last 10 years.	Location and description of closest record(s) to CRC	Location of closest record(s) to the Sites
Breeding/Wintering Birds	WaBRC returned 7370 records of notable birds within 2km.	Schedule 1 species under Wildlife and Countryside Act 1981 (as amended) recorded: avocet, black-necked grebe, black-tailed godwit, brambling, Cetti's warbler, fieldfare, garganey, green sandpiper, hobby, kingfisher, little ringed plover, Mediterranean Gull, merlin, peregrine, pintail, red kite, redwing, ruff, skylark, wood sandpiper.	214 records located within CR3 in 2018 and 2019. Skylark, mallard, greylag goose, swift, grey heron, Canada goose, goldfinch, greenfinch, black-headed gull, stock dove, woodpigeon, carrion crow, blue tit, mute swan, robin, hobby, coot, moorhen, Mediterranean gull, common gull, yellow gull, red kite, pied wagtail, great tit, house sparrow, cormorant, magpie, sand martin, wren, blackbird and fieldfare.	545 records located within sub-Sites 2(a), 2(b), 2(d) and 3(f) between the years 2018 and 2020. The most recent of these records was a red kite located within the Sites in 2020.
	WoBRC returned 14 records of notable birds within 1km.	Schedule 1 species under WCA act 1981 recorded: Skylark.	Two records of cuckoo adjacent to CR1 in 2021.	The closest record was a red kite located within sub-Site 1(e) in 2019.
Amphibians	WaBRC returned 17 records of amphibians within 2km. Six of these records were for great crested newts (GCN).	GCN, common toad, common frog and smooth newt.	There were no records of amphibians located within 2km of the CRC.	Two records of GCN and two records of amphibians located approximately 1.8km north-east of sub-Site 2(b) in 2016 and 2018.

Species	Records identified within 1-2 km of Site in last 10 years	Species within 1-2 km of Site in last 10 years.	Location and description of closest record(s) to CRC	Location of closest record(s) to the Sites
	WoBRC returned six records within 1km. Five of the records were for GCN.	GCN, common toad.	Three records of GCN located within CR1 in 2020.	There were no records of amphibians located within 2km of all the Sites.
Reptiles	WaBRC returned four records of reptiles within 2km.	Grass snake.	The closest record was located approximately 1.5km north-east of CR6 in 2020.	The closest record was located approximately 550m south-east of sub-Site 3(g) in 2020.
	WoBRC returned three records of reptiles within 1km.	Grass snake.	The closest record was located approximately 900m west of CR1 in 2018.	The closest record was located 340m west of sub-Site 4 in 2020.
Otters	WaBRC returned one otter record of within 2km.	N/A.	The record was located 210m north-east of CR3 in 2018.	The record is located 1.5km north of the sub-Site 3(a) in 2018.
	WoBRC returned one otter record within 1km.	N/A.	The record was located more than 2km from CRC.	The record was located 350m north of sub-Site 1(e) in 2019.
Water voles	WaBRC and WoBRC returned no water vole records within 1/ 2km.	N/A.	N/A.	N/A.
White-clawed crayfish	WaBRC and WoBRC returned no records of white-clawed crayfish within 1/ 2km.	N/A.	N/A.	N/A.
Hazel dormouse	WaBRC and WoBRC returned no hazel	N/A.	N/A.	N/A.

Species	Records identified within 1-2 km of Site in last 10 years	Species within 1-2 km of Site in last 10 years.	Location and description of closest record(s) to CRC	Location of closest record(s) to the Sites
	dormouse records within 1/ 2km.			
Terrestrial invertebrates	WaBRC and WoBRC returned numerous records of terrestrial invertebrates within 1km.	Records include purple emperor butterfly, brown hairstreak butterfly and white-letter hairstreak butterfly which are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).	Brown hairstreak records within CR1 near Feckenham substation.	White-letter hairstreak and small heath records located within sub-Sites 2(d) and 3(g).
Invasive non-native species (INNS)	WaBRC returned 430 records of INNS consisting of eight species within 2km.	Canada goose, Egyptian goose, giant hogweed, Himalayan balsam, mandarin duck, muntjac, pheasant, red-legged partridge	14 records located within CR3 in 2018. Canada goose, pheasant and red-legged partridge.	45 records located within sub-Sites 2(a), 2(b) and 2(c) in 2018 and 2019. Canada goose, pheasant, red-legged partridge and Mandarin duck
	WoBRC returned no records of INNS within 1km.	N/A.	N/A.	N/A.
Other priority mammals	WaBRC returned 78 records of mammal species within 2km, including 3 species of priority mammals.	Brown hare, polecat, stoat, fallow deer and hedgehog.	The closest record was a hedgehog within CR3 in 2016.	Three records of brown hare, stoat and fallow deer located within sub-Sites 2(a) and 2(d) in 2018 and 2019.

Species	Records identified within 1-2 km of Site in last 10 years	Species within 1-2 km of Site in last 10 years.	Location and description of closest record(s) to CRC	Location of closest record(s) to the Sites
	WoBRC returned 11 records of two notable mammal species within 1km.	Brown hare and hedgehog.	The closest record was a brown hare located approximately 80m west of CR1 in 2019.	The closest record was a brown hare located 30m south of sub-Site 1(a) in 2016.

Appendix 11 Noise and Vibration

A11.1 NSR Locations

Table A 11-1 NSR Locations – Site 1 shown on Figure 10.1 Volume II

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 1	Residential	2 Evesham Road	B49 5NA	405509.362	256656.541	75m - 100m
NSR 2	Residential	Rodgeway Barn	B49 5LZ	405519.351	255837.064	175m - 200m
NSR 3	Place of Worship	St James C of E Church	B49 5NA	405447.167	255394.602	175m - 200m
NSR 4	Residential	Properties along Evesham Road	B49 5NA	405855.617	254787.714	10m - 25m
NSR 5	Residential	Turnpike Cottages	WR7 4LX	405826.283	254366.897	<10m
NSR 6	Residential	Properties East of Wood Bevington	B49 5ND	405690.873	254003.715	10m - 25m
NSR 7	Residential	Foxlea Beck	B49 5XL	405620.839	253927.237	10m - 25m
NSR 8	Residential	Wood Bevington Farm	B49 5LX	405304.304	254039.391	100m - 125m
NSR 9	Residential	Mudwalls Farm	B49 5NZ	406114.273	253370.513	450m - 500m
NSR 10	Residential	Properties north of Cock Bevington	WR11 8SJ	405436.393	252822.772	350m - 400m
NSR 11	Residential	59A Low Road	WR11 8SJ	404729.397	252964.507	125m - 150m
NSR 12	Residential	Properties on Franklins Lane	WR11 4SZ	403734.667	252751.342	300m - 350m
NSR 13	Residential	Properties on Low Road	WR11 4UH	402640.167	252600.049	500m - 550m
NSR 14	Residential	Properties on Low Road	WR11 4UH	402351.851	252896.794	400m - 450m
NSR 15	Residential	The Old Cow Shed, Morton Wood Lane	WR7 4LU	403057.066	253694.559	25m - 50m

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 16	Residential	York Cottage, Morton Wood Lane	WR7 4LX	403066.925	254006.648	200m - 250m
NSR 17	Residential	Properties on Abbots Morton Road	WR7 4LX	402914.938	254624.886	400m - 450m
NSR 18	Residential	1 Alcester Road	WR7 4LX	403484.556	254650.102	25m - 50m
NSR 19	Residential	Morton Spirit Farm, Village Road	WR7 4LX	403848.467	255124.971	350m - 400m
NSR 20	Residential	Properties on Gooms Hill	WR7 4LX	404316.119	254642.038	100m - 125m
NSR 21	Residential	Treetops Farm	WR7 4LX	404490.396	254621.702	175m - 200m

Table A 11-2 NSR Locations - Site 2 shown on Figure 10.2 Volume II

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 22	Community	The Kennels, Bidford-on-Avon	B50 4JS	406887.136	254323.106	125m - 150m
NSR 23	Residential	Hollybush Farm	B49 5NN	406982.832	254236.494	10m - 25m
NSR 24	Residential	Properties south of High Street	B49 5NN	406911.269	254003.675	25m - 50m
NSR 25	Residential	30 Dunnington	B49 5NT	406944.65	253590.506	125m - 150m
NSR 26	Residential	Properties on High Street	B49 5NU	407342.235	253603.735	25m - 50m
NSR 27	Residential	Dunnington Lodge	B49 5NU	407284.707	253442.901	100m - 125m
NSR 28	Residential	52 Tothall Lane	B49 5NY	406806.295	252998.726	50m - 75m

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 29	Residential	Tothall Farm House	B49 5NY	406885.327	252717.089	10m - 25m
NSR 30	Residential	Properties along B4088	B49 5NZ	406284.442	252864.859	10m - 25m
NSR 31	Residential (Non Permanent)	Queens Head Inn	WR11 8SH	406194.405	252543.34	125m - 150m
NSR 32	Residential	Properties on School Road	WR118XX	406412.4	252049.385	350m - 400m
NSR 33	Residential	Properties on Perkins Close	WR11 8UZ	406928.988	251992.621	125m - 150m
NSR 34	Residential	Properties on Ridsdale Close	WR11 8XA	407194.734	252100.917	50m - 75m
NSR 35	Residential	Marsh Farm	WR11 8SG	407279.73	252232.845	10m - 25m
NSR 36	Residential	14 Perkins Close	WR11 8UZ	407067.37	251796.061	250m - 300m
NSR 37	Residential	Properties on Kestrel Close	WR11 8AJ	407656.302	251698.175	175m - 200m
NSR 38	Residential	Marriage Hill House	B50 4EX	408465	251806.719	200m - 250m
NSR 39	Residential	Broom Court Farm	B50 4HB	408779.065	252541.476	400m - 450m
NSR 40	Residential	Properties on Kings Lane	B50 4HB	408666.487	252979.894	50m - 75m
NSR 41	Residential	4 Bridge Court	B50 4PS	408745.556	253307.788	25m - 50m
NSR 42	Residential	Properties within Broom	B50 4HT	408792.318	253751.301	150m - 175m
NSR 43	Community	Wixford Village Hall	B49 6DA	408788.512	254548.752	50m - 75m

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 44	Residential	Properties within Wixford	B49 6DY	408671.178	254533.53	25m - 50m
NSR 45	Residential	Properties West of Wixford CP	B49 5NN	408106.071	255030.351	125m - 150m
NSR 46	Residential	Kingley Farm	B49 5NR	408058.766	254892.045	50m - 75m

Table A 11-3 NSR Locations - Site 3 shown on Figure 10.3 Volume II

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 47	Residential	Properties on Froglands Lane	WR11 8LB	408683.05	249908.033	150m - 175m
NSR 48	Place of Worship	Cleeve Prior	WR11 8HZ	408937.772	249472.678	125m - 150m
NSR 49	Residential	St Andrew, Manor Court	WR11 8HZ	408774.295	249322.751	150m - 175m
NSR 50	Community	Memorial Hall, Cleve Prior	WR11 8LE	408686.437	249293.465	200m - 250m
NSR 51	Residential	Sharrow House, Cleeve Road	WR11 8LQ	408914.596	249270.943	10m - 25m
NSR 52	Education	Cleeve Prior C of E Primary School	WR11 8LG	408705.888	249150.751	250m - 300m
NSR 53	Residential	Properties on Hoden Lane	WR11 8LH	408990.224	248798.445	350m - 400m
NSR 54	Residential	Properties on Hoden Lane	WR11 8LH	409695.955	248080.229	300m - 350m
NSR 55	Residential (Non Permanent)	Buckle House B&B	B50 4PE	410619.118	249333.924	450m - 500m
NSR 56	Residential	Clink Cottage	B50 4NY	409886.733	249695.88	250m - 300m

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 57	Residential	Park House, Cleeve Road	B49 6EA	409243.067	249637.502	25m - 50m
NSR 58	Residential	The Grange, Cleeve Road	B50 4NX	409465.738	249771.001	100m - 125m
NSR 59	Residential	19 Cleeve Road	B50 4NX	409431.383	249853.924	25m - 50m
NSR 60	Residential	The Homelands, Cleeve Road	B50 4NX	409469.18	249955.404	100m - 125m
NSR 61	Residential	Holloway House, Cleeve Road	B50 4NX	409626.21	250100.632	300m - 350m
NSR 62	Residential	Rough Cottages, Honeybourne Road	B50 4PF	411025.954	248713.421	150m - 175m
NSR 63	Residential	Properties on Roberts Lane	WR11 8TS	410724.065	247239.145	450m - 500m
NSR 64	Residential	4 Buckle Street	WR11 8QJ	411096.101	247381.74	200m - 250m
NSR 65	Residential	Ullington House	WR11 8QH	411244.859	247547.181	150m - 175m
NSR 66	Residential	Fox Covert Farm, Dorsington Road	CV37 8AP	412003.505	249794.457	25m - 50m
NSR 67	Community	Garden of Heroes and Villains, Dorsington Road	CV378BA	412450.541	249530.86	300m - 350m
NSR 68	Residential	Collett's Farm, Barton Road	CV37 8BA	412645.466	250384.142	250m - 300m
NSR 69	Residential (Non Permanent)	Oak Cottage B&B	CV37 8AU	412664.654	250705.703	200m - 250m
NSR 70	Residential	Elmcroft, Dorsington	CV37 8AT	412387.308	250999.674	10m - 25m

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 71	Residential	The Grange, Dorsington	CV37 8AT	412123.111	251166.689	200m - 250m
NSR 72	Residential	Properties on Welford Road	B50 4ND	411632.02	250860.437	350m - 400m

Table A 11-4 NSR Locations - Site 4 shown on Figure 10.4 Volume II

NSR ID	NSR Type	Address	Postcode	X Coordinate	Y Coordinate	Distance from Site
NSR 73	Residential	Meadow Brook, Roberts Lane	WR11 8TN	407776.331	246053.362	175m - 200m
NSR 74	Residential	1 Clevedon Green	WR11 8TY	408112.937	246110.713	175m - 200m
NSR 75	Residential	Shinehill Farm	WR11 8TR	408411.511	245993.404	25m - 50m
NSR 76	Residential	New Barn Cottage, Shinehill Lane	WR11 8TP	408843.099	246141.597	100m - 125m
NSR 77	Residential	38 Withy Trees Road	WR11 8YB	409282.952	245569.057	300m - 350m
NSR 78	Residential	Properties on Sheenhill Lane	WR11 8YA	409483.479	246046.238	450m - 500m

Appendix 13 Historic Environment

A13.1 Heritage Assessment Criteria

Introduction

A13.1.1. This Appendix details the criteria to be used for determining the significance of effects on heritage assets from the Scheme for the purposes of EIA. The criteria for establishing the value of heritage assets is illustrated in Table A 13-1. The assessment of the magnitude of impact resulting from the Scheme is based on criteria set out in Table A 13-2. The assessment of significance of effect will then be undertaken using professional judgement informed by the matrix presented at Table A 13-3, which rates the heritage assets values against the magnitude of impacts on them, to reach an assessment of the significance of effect. Effects can be neutral, adverse or beneficial. Where significant adverse effects are identified, mitigation measures to avoid or minimise such effects will be identified, and the residual significance of effect assessed.

Assessment Criterion Tables

Table A 13-1 Environmental value (sensitivity) and descriptions

Value / Sensitivity	Criteria
Very high	Internationally important or significant assets. **Archaeological remains:** World Heritage Sites (including nominated sites). Assets of acknowledged international importance. Assets that can contribute significantly to acknowledged international research objectives. **Historic buildings:** Structures recognised as of universal importance as World Heritage Sites. Other buildings of recognised international importance. **Historic landscapes:** World Heritage Sites recognised for their historic landscape qualities. Historic landscapes of international value, whether designated or not. Extremely well-preserved historic landscapes with exceptional coherence, time-depth, or other critical factors.
High	Nationally important heritage assets generally recognised through designation as being of exceptional interest and value. **Archaeological remains:** Scheduled monuments (including proposed sites). Undesignated assets of schedulable quality and importance. Assets that can contribute significantly to acknowledged national research objectives.

Value / Sensitivity	Criteria
	Historic buildings: Scheduled monuments with standing remains. Grade I, Grade II* and Grade II listed buildings. Conservation areas containing very important buildings. Undesignated structures of clear national importance. **Historic landscapes:** Designated historic landscapes of outstanding interest. Undesignated landscapes of outstanding interest. Undesignated landscapes of high quality and importance and of demonstrable national value. Well preserved historic landscapes, exhibiting considerable coherence, time-depth or other critical factors.
Medium	Regionally important heritage assets recognised as being of special interest. **Archaeological remains:** Non-designated assets that contribute to regional research objectives. **Historic buildings:** Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations. Conservation areas containing buildings which contribute significantly to their historic character. Listed structures such as historic milestones which are not in their original location might warrant this value. **Historic landscapes:** Designated special historic landscapes. Undesignated historic landscapes that would justify special historic landscape designation, landscapes of regional value. Averagely well-preserved historic landscapes with reasonable coherence, time-depth or other critical factors.
Low	Assets that are of interest at a local level primarily for their contribution to the local historic environment. **Archaeological remains:** Non-designated assets of local importance. Assets compromised by poor preservation and/or poor survival of contextual associations. Assets of limited value, but with potential to contribute to local research objectives. **Historic buildings:** 'Locally listed' buildings. Historic (unlisted) buildings of modest quality in their fabric or historical association. **Historic landscapes:** Robust undesignated historic landscapes. Historic landscapes with importance to local interest groups. Historic landscapes whose value is limited by poor preservation and/or poor survival of contextual associations.
Negligible	Elements of the historic environment which are of insufficient significance to merit consideration in planning decisions and hence be classed as heritage assets. **Archaeological remains:** Assets with very little or no surviving archaeological importance.

Value / Sensitivity	Criteria
	Historic buildings: Buildings of no architectural or historical note. **Historic landscapes:** Landscapes with little or no significant historical interest.

Table A 13-2 Magnitude of Impact

Magnitude of Impact	Description of Impact
High	Change such that the heritage significance of the asset is totally altered or destroyed through physical impact. Comprehensive change to setting affecting its heritage significance, resulting in a serious loss in our ability to understand and appreciate the asset. This can also include substantial enhancement of an asset's significance as a result of changes to its physical form or setting, including major changes that conserve or restore elements of high significance and alterations to the setting of an asset that very substantially improve our appreciation of it and its significance.
Medium	Change such that the heritage significance of the asset is affected, but not destroyed through physical change (including partial loss). Noticeably different change to setting affecting significance, resulting in erosion in our ability to understand and appreciate the asset. This can also include notable enhancement of an asset's significance as a result of changes to its physical form or setting such as physical alterations that conserve or restore elements of significance and alterations to the setting of an asset that improve our appreciation of it and its significance.
Low	Change such that the heritage significance of the asset is slightly affected through physical alteration. Slight change to setting affecting its heritage significance resulting in a change in our ability to understand and appreciate the asset. This can also include limited improvement of an asset's significance as a result of changes to its physical form and setting.
Very Low	Changes to the asset that hardly affect heritage significance. Minimal change to the setting of an asset that have little effect on its heritage significance resulting in no real change in our ability to understand and appreciate the asset.

Table A 13-3 Likely significant effects relating to the Historic Environment

Heritage Significance	Magnitude of Impact			
	High	Medium	Low	Very Low
High	Major	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Minor
Low	Moderate	Minor	Minor	Negligible
Very Low	Neutral	Neutral	Neutral	Neutral

A13.2 Gazetteer

Table A 13-4 Listed Buildings

Reference	Name	Grade
1024650	CHURCH HOUSE	II
1024651	ARROW BANK	II
1024652	THE ORCHARD	II
1024653	CHURCH OF JAMES	II
1024654	CHURCH OF ST MILBURGA, STABLE APPROXIMATELY 20 METRES SOUTH EAST	II
1024655	MOOR HALL	II*
1024656	HORSESHOE COTTAGE	II
1024657	ORCHARD HOUSE	II
1024667	6, KINGS LANE	II
1024669	YEW TREE HOUSE	II
1024670	The Old Cottage	II
1024671	CHERRYHILL FARM HOUSE	II
1024672	MARLCLIFF FARMHOUSE	II
1024673	18 AND 20, THE BANK	II
1024683	THE ORCHARDS	II
1024684	THE ORCHARDS, BARN APPROXIMATELY 35 METRES NORTH OF HOUSE	II
1024685	FOREST THATCH	II
1024686	Bevington Lodge	II
1024687	GODIVA COTTAGE	II
1024688	THE COTTAGE	II
1024690	KINGLEY, BARN 32 METRES NORTH EAST OF HOUSE	II
1024692	RAGLEY HALL, STABLE BLOCK	II*
1024693	RAGLEY HALL, KITCHEN GARDEN WALLS, GATEPIERS AND GATES	II
1024694	RAGLEY HALL, PRINCIPAL ENTRANCE LODGE (NORTH)	II*
1024695	RAGLEY HALL, PRINCIPAL ENTRANCE LODGE (SOUTH)	II*

Reference	Name	Grade
1024698	MOOR HALL, GRANARY APPROXIMATELY 60 METRES EAST	II
1024699	BROOM HALL	II
1024700	30, CLEEVE ROAD	II
1024708	THE HOLLY BUSH	II
1024709	62, HIGH STREET	II
1081265	THE MANOR HOUSE	II*
1081301	Cobblers Cottage	II
1081302	SOUTH HOUSE	II
1081303	CHURCH OF ST MICHAEL	II*
1081304	THE OLD BAKERY	II
1081305	WALL IN FRONT OF MANOR HOUSE	II
1081306	DOVECOT TO REAR OF THE GREEN COTTAGE	II
1081307	FIELD BARN	II
1081308	Former Manor House	II*
1081309	Summerhouse in garden to west of former Manor House	II
1081310	Dovecote to rear of former Manor House	II*
1081311	Church Croft	II
1081312	Croft Barn and Stocks Barn	II
1081313	THE LAURELS	II
1081314	KEMISES HOUSE	II
1081315	THE OLD COTTAGE	II
1081316	Dingley Dell	II
1081317	The Kings Arms	II
1081318	The Cider Mill	II
1081319	Rose Cottage and The Kot	II
1081320	THE POST OFFICE AND ALMOND COTTAGES	II
1081321	UPPER HOUSE	II
1081343	OUTBUILDING 10M SOUTH EAST OF BICKMARSH HALL	II
1081344	LILAC COTTAGE	II
1081345	CHURCH OF ST ANDREW	II*

Reference	Name	Grade
1081346	PEACOCK HOUSE	II
1081347	ASHBY COTTAGE	II
1081348	THE GREEN COTTAGE	II
1081656	ROUS LENCH COURT	II*
1081657	TOWER ABOUT 100 METRES EAST OF ROUS LENCH COURT	II
1096248	LITTLE KNIGHTON FARMHOUSE	II
1096249	BARN ABOUT 5 METRES WEST OF LITTLE KNIGHTON FARMHOUSE	II
1096254	BARN ABOUT 50 METRES NORTH-WEST OF MORTON-UNDER-HILL FARMHOUSE	II
1096255	MANOR FARMHOUSE	II
1096257	ROCK FARMHOUSE	II
1096258	ROCK COTTAGES	II
1096264	STONEHOUSE FARMHOUSE	II
1096271	BARN ABOUT 50 METRES NORTH-EAST OF LITTLE NORBURY FARMHOUSE	II
1096272	WESTALL HALL FARMHOUSE	II
1096275	LITTLE BOUTS COTTAGE	II
1096279	GEORGE MEMORIAL ABOUT 5 METRES SOUTH OF CHANCEL OF CHURCH OF ST PETER	II
1096282	RIDGEWAY COTTAGE	II
1096283	COOKHILL PRIORY	II*
1096284	CHAPEL ATTACHED TO COOKHILL PRIORY	II*
1096285	THE OLD BULL	II
1096286	MORTON HALL	II
1096287	BARN ABOUT 20 METRES NORTH OF MORTON HALL FARMHOUSE	II
1096288	WINDMILL COTTAGE	II
1096289	MALTHOUSE COTTAGE	II
1096290	THE OLD WINDMILL	II
1096291	MANOR FARMHOUSE	II

Reference	Name	Grade
1096292	BARN ABOUT 20 METRES NORTH OF MANOR FARMHOUSE	II
1096293	THE GABLE HOUSE	II
1096294	LIVING ROOM ATTACHED TO SOUTH-WEST CORNER OF THE GABLE HOUSE	II
1096295	CORNER THATCH	II
1096296	THE OLD RECTORY	II
1096297	OUT HOUSE ABOUT 5 METRES SOUTH-EAST OF HIGH HOUSE FARMHOUSE	II
1096298	LILAC COTTAGE	II
1096299	NOOK COTTAGE	II
1096300	ABBOTS MORTON MANOR	II
1096310	BARN ABOUT 20 METRES SOUTH-EAST OF WRENS NEST FARMHOUSE	II
1096311	1 Midsummer Meadow	II
1096312	GREAT NOBURY FARMHOUSE	II
1096330	BARN ABOUT 100 METRES NORTH-WEST OF YORK COTTAGES	II
1096331	THE OLD MANOR	II
1096332	BARN AND STABLES ABOUT 50 METRES WEST OF WALNUT TREE COTTAGE	II
1096333	BARN ABOUT 50 METRES NORTH-WEST OF WALNUT TREE COTTAGE	II
1096334	WALNUT TREE COTTAGE	II
1096335	BARN AND COW HOUSE ABOUT 75 METRES NORTH OF WALNUT TREE COTTAGE	II
1099994	SHURNOCK COURT	II*
1100063	WATER PUMPS ABOUT TWO YARDS NORTH OF MUTTON HALL	II
1111732	K6 TELEPHONE KIOSK NEAR VILLAGE GREEN	II
1155493	The Laurels Barn And Bramble Barn	II
1155505	WOODBINE COTTAGE	II

Reference	Name	Grade
1155507	SHARROW	II
1155511	HUBAND COTTAGE AND THE DEN	II
1155516	BARN TO REAR OF KING'S ARMS	II
1155531	THE MILL HOUSE AND TEA SHOP	II
1155540	PILE OF STONES	II
1155552	PRIOR HOUSE	II
1155854	LONG HYDE FARMHOUSE	II
1157335	MUTTON HALL	II
1179554	HOME FARM COTTAGE	II
1179562	HIGH HOUSE COTTAGE	II
1179579	BUTTS COTTAGE	II
1179734	COW HOUSE ABOUT 15 METRES SOUTH-WEST OF WRENS NEST FARMHOUSE	II
1179736	2 Midsummer Meadow	II
1179794	SUNDIAL ABOUT 30 METRES NORTH OF CHURCH OF ST PETER	II
1179801	HARVEY MEMORIAL ABOUT 15 METRES NORTH OF NORTH AISLE OF CHURCH OF ST PETER	II
1179848	THE OLD SHOP	II
1179856	INTEBERGA	II
1179868	WHITE COTTAGE	II
1179869	REEDCROFT COTTAGE	II
1179870	BASKET COTTAGE	II
1179884	OUTHOUSE ABOUT 30 METRES NORTH OF MANOR FARMHOUSE	II
1179886	HOME FARMHOUSE	II
1179892	ROCK COTTAGES	II
1183515	2, THE HAMLET	II
1183753	Old Mudwalls Cottage	II
1183822	THATCH END	II
1183845	CORNER COTTAGE	II
1183849	THE BARNS	II
1183862	SOUTH LODGE	II
1183867	70 WOOD BEVINGTON	II

Reference	Name	Grade
1183869	73 AND 74, WOOD BEVINGTON	II
1184138	OVERSLEY FARMHOUSE	II
1200618	RAGLEY PARK, EVESHAM LODGE	II
1200653	BARTON FARM, BARN APPROXIMATELY 25 METRES EAST OF FARMHOUSE	II
1200666	THE MALT HOUSE	II
1200671	BROOM COURT	II
1200767	BROOM TAVERN	II
1200775	THE YEALMS	II
1252323	BARN AT SP0969 5406	II
1252325	K6 TELEPHONE KIOSK EAST NORTH EAST OF WIXFORD BRIDGE	II
1252362	K6 TELEPHONE KIOSK NORTH EAST OF CHERRY HILL FARMHOUSE	II
1253112	K6 TELEPHONE KIOSK, VILLAGE GREEN	II
1300214	FORD COTTAGE FORD FARMHOUSE	II
1300244	OVERSLEY FARM, STABLE APPROXIMATELY 25 METRES OF FARMHOUSE	II
1300272	CHURCH OF ST MILBURGA, BARN APPROXIMATELY 35 METRES SOUTH	II
1300307	CHURCH OF ST MILBURGA, CHURCHYARD CROSS APPROXIMATELY 4 METRES SOUTH	II
1300400	CHURCH COTTAGES TEME COTTAGE	II
1300417	COTTAGE APPROXIMATELY 15 METRES SOUTH OF PERIWINKLE COTTAGE	II
1300443	DUNNINGTON FARMHOUSE	II
1301712	GRANARY AND CART SHED ABOUT 10 METRES NORTH-EAST OF STONEHOUSE FARMHOUSE	II
1301738	CON AMORE	II
1301741	THE ROCK	II

Reference	Name	Grade
1301762	1, 2 and 3, Bull Farm Cottages	II
1301765	URN ABOUT ONE METRE NORTH-EAST OF PORCH OF MORTON HALL	II
1301798	THE TUDOR HOUSE	II
1301816	PINHILLS FARMHOUSE	II
1301903	EDWALYN CLOSE	II
1303125	THE POST OFFICE	II
1303147	ULLINGTON HALL	II
1303150	MANOR FARMHOUSE AND MANOR FARM	II
1303161	CHURCHYARD CROSS IN ST MICHAEL'S CHURCHYARD	II
1303291	THE LONG HOUSE	II
1303304	OLD KEMYS COTTAGE	II
1303307	THE COTTAGE	II
1303316	BREWER'S COTTAGE	II
1349955	STEPS, TERRACE, RETAINING WALL AND BALUSTRADE ABOUT 20 METRES WEST OF ROUS LENCH COURT	II
1349956	THE HOMESTEAD	II
1349959	TURRET HOUSE 150 METRES SOUTH EAST OF COOKHILL PRIORY	II
1350086	BARN TO NORTH OF SHARROW	II
1350087	Former barn to south of The Cider Mill	II
1350088	JAPONICA COTTAGE	II
1350089	LITTLE COTTAGE, BAY COTTAGE AND BARN ATTACHED TO NORTH	II
1350100	BICKMARSH HALL	II
1350102	FIR TREE CORNER	II
1350103	NANCOT	II
1350119	ULLINGTON HOUSE	II
1350120	MANOR FARM	II
1350121	THE NOOK	II

Reference	Name	Grade
1350122	Former stable range on south side of courtyard to former manor house	II
1350123	Former school 50 metres north-north-east of Church Croft	II
1350124	BARN TO REAR OF THE LAURELS	II
1350125	PEAR TREE	II
1350229	CHURCH OF ST PETER	I
1350244	THE WHITE HOUSE	II
1350245	HIGH HOUSE	II
1350246	URN ABOUT ONE METRE SOUTH-EAST OF PORCH OF MORTON HALL	II
1350247	TUDOR COTTAGE	II
1350248	MANOR COTTAGE	II
1350249	HIGH HOUSE FARMHOUSE	II
1350250	APRIL COTTAGE	II
1350251	CYMBELINE	II
1350252	THE NOOK	II
1350267	BARN ABOUT 40 METRES EAST OF MORTON-UNDER-HILL FARMHOUSE	II
1350268	STEP HILL FARMHOUSE	II
1350270	9, PEPPER STREET	II
1350277	BARN OR GRANARY ABOUT 50 METRES EAST OF LITTLE BOUTS COTTAGE	II
1350279	CHURCH OF ST PETER	I
1355314	MOOR HALL, BARN APPROXIMATELY 40 METRES TO SOUTH EAST	II
1355335	THE COTTAGE	II
1355336	THE GRANGE	II
1355337	15, MILL LANE	II
1355338	9 AND 11, THE BANK	II
1355344	COCK BEVINGTON FARM HOUSE	II
1355345	Victoria Cottage	II
1355347	FIELD BARN AT SP 0617 5577	II

Reference	Name	Grade
1355348	RAGLEY HALL	I
1355349	RAGLEY HALL, ICEHOUSE APPROXIMATELY 10 METRES EAST OF STABLES	II
1355351	WIXFORD BRIDGE	II
1355366	CHURCH OF ST MATTHEW	I
1355367	TURNPIKE COTTAGES	II
1355368	WOOD BEVINGTON MANOR	II*
1355369	CHURCH OF ST MILBURGA	II*
1355370	OVERSLEY FARM, BARN APPROXIMATELY 25 METRES EAST OF FARMHOUSE	II
1355371	BANK COTTAGE	II
1382733	COTTAGE APPROXIMATELY 40 METRES WEST OF DORSINGTON MANOR HOUSE (DORSINGTON MANOR NOT INCLUDED)	II
1382739	MANOR HOUSE FARMHOUSE	II
1382740	BARN AND OUTBUILDINGS IMMEDIATELY NORTH EAST OF MANOR HOUSE FARMHOUSE	II
1382784	WEST HILLBOROUGH FARMHOUSE	II

Table A 13-5 Scheduled Monuments

Reference	Name	Designation
1005300	Cookshill Nunnery	Scheduled Monument
1005721	Enclosures 3/4 mile (1200m) N of Salford Priors	Scheduled Monument
1005750	Oversley Castle	Scheduled Monument
1016940	Moated site immediately adjacent to St Peter's Church	Scheduled Monument
1017246	Medieval settlement at Ullington	Scheduled Monument
1018543	Moated site 150m north east of Inkberrow Church	Scheduled Monument
1019760	Churchyard cross in St Milburga's churchyard	Scheduled Monument

Reference	Name	Designation
1020258	Anglo-Saxon cemetery at Bennett's Hill	Scheduled Monument

Table A 13-6 Registered Parks and Gardens

Reference	Name	Grade
1000893	ROUS LENCH COURT	II*
1001196	Ragley Hall	II*

Table A 13-7 Conservation Areas

Name	Designation
Abbots Morton	Conservation Area
Bidford on Avon	Conservation Area
Broom	Conservation Area
Cleeve Prior	Conservation Area
Inkberrow	Conservation Area
North and Middle Littleton	Conservation Area
Rous Lench	Conservation Area
Salford Priors	Conservation Area
South Littleton	Conservation Area

Table A 13-8 Non-Designated Assets

Reference No.	Type	Name	Period
MWA8674	MON	Ryknild Street (Medieval road)	Medieval
MWA8678	MON	Medieval ridgeway	Medieval
MWA4776	MON	Turnpike Road from Alcester to Evesham	Post Medieval
MWA8681	MON	Turnpike road from Evesham to Crabbs Cross	Post Medieval
MWA8684	MON	Turnpike road from Wixford Lane to Chipping Campden	Post Medieval
MWA8644	MON	Early Medieval Holloway from Cleeve Prior to Marlcliff	Early Medieval
MWA7233	MON	Former Evesham and Redditch Railway line opened in the	Post Medieval

Reference No.	Type	Name	Period
		1860s and in use until the early 1960s.	
MWA445	MON	Ryknield Street	Romano-British
MWA8217	MON	Sealt Stret (Early Medieval saltway)	Early Medieval
MWA7835	MON	East & West Junction Railway	Post Medieval
MWA445	MON	Ryknield Street	Romano-British
MWA4340	MON	The Upper Avon Navigation	Post Medieval
MWA33125	MON	Site of former Engine Turntable south of Broom on the Midland Railway late 19th century	Post Medieval
MWA33215	MON	LMS railway short branch constructed 1942 south-west of Broom Junction Station	Modern
MWA25323	FS	Romano-British artefacts found during metal detecting	Romano-British
MWA25524	FS	Late Iron Age artefact found during metal detecting	Late Iron Age
MWA25846	FS	Late Bronze Age to Early Iron Age artefact found during metal detecting	Late Bronze Age to Early Iron Age
MWA26578	FS	Neolithic to Bronze Age artefacts found during metal detecting	Early Neolithic to Middle Bronze Age
MWA26606	FS	Post Mediaeval artefacts found during metal detecting	Post Medieval
MWA26608	FS	Mediaeval artefact bfound during metal detecting	Medieval
MWA26609	FS	Romano-British artefacts found during metal detecting	Romano-British
MWA26651	FS	Post Mediaeval artefact found during metal detecting	Post Medieval
MWA26652	FS	Mediaeval artefacts found during metal detecting	Medieval
MWA26655	FS	Romano-British artefacts found during metal detecting	Romano-British
MWA26944	FS	Iron Age artefacts found during metal detecting	Iron Age

Reference No.	Type	Name	Period
MWA26957	FS	Iron Age artefact found during metal detecting	Iron Age
MWA26958	FS	Iron Age artefact found during metsal detecting	Iron Age
MWA26966	FS	Iron Age artefact found during metal detecting	Iron Age
MWA26967	FS	Iron Age artefact found during metal detecting	Iron Age
MWA27444	FS	Romano-British artefact found during metal detecting	Romano-British
MWA27454	FS	Romano-British artefacts found during metal detecting	Romano-British
MWA27505	FS	Mediaeval artefact found during metal detecting	Medieval
MWA27580	FS	Post Mediaeval artefact found during metal detecting	Post Medieval
MWA28016	FS	Romano-British artefacts found during metal detecting	Romano-British
MWA28273	FS	Mediaeval artefact found during metal detecting	Medieval
MWA28296	FS	Mediaeval artefact found during metal detecting	Medieval
MWA28373	FS	A mesolithic stone hammer of macehead from Weethley.	Mesolithic
MWA28602	FS	Post Mediaeval artefact bfound during metal detecting	Post Medieval
MWA28666	FS	Mediaeval to Post Mediaeval artefact found during metal detecting.	Medieval to Post Medieval
MWA28700	FS	Post Mediaeval artefact found during metal detecting	Post Medieval
MWA28732	FS	Post Mediaeval artefacts found during metal detecting	Post Medieval
MWA28749	FS	Mediaeval artefact found during metal detecting	Medieval
MWA28950	FS	Early Mediaeval artefact found during metal detecting	Early Medieval
MWA29036	FS	Iron Age artefact found during metal detecting	Iron Age

Reference No.	Type	Name	Period
MWA29040	FS	Early Mediaeval artefact found during metal detecting	Early Medieval
MWA29041	FS	Romano-British artefact found during metal detecting	Romano-British
MWA29584	FS	Artefact found during metal detecting	Unknown
MWA1416	BLD	Forge at Ridgeway Farm, Arrow	Post Medieval
MWA1427	BLD	Weethley Toll House	Post Medieval
MWA1889	MON	Broom Mill	Medieval
MWA4448	FS	Early Mesolithic to Late Bronze Age flints from near Bidford on Avon	Mesolithic to Bronze Age
MWA4810	FS	Findspot - Neolithic to Bronze Age flint	Neolithic to Bronze Age
MWA4860	FS	Findspot - Medieval to Post Medieval bronze strap end or buckle belt	Medieval to Post Medieval
MWA4977	FS	Findspot - Roman coins	Romano-British
MWA4986	MON	Roman Settlement 50m E of Welford Pastures	Romano-British
MWA5067	FS	Findspot - Roman coin near Braggington, Dorsington	Romano-British
MWA5068	FS	Findspot - Roman bronze chest fitting	Romano-British
MWA5102	FS	Findspot - Iron Age coin	Iron Age
MWA5613	FS	Items of Medieval date found during metal detecting 300m north east of the sewage works, Salford Priors.	Medieval
MWA5620	FS	Findspot - Post Medieval coin & bronze object	Post Medieval
MWA5625	FS	Findspot - Roman finds	Romano-British
MWA5626	FS	Findspot - Medieval finds	Medieval
MWA5627	FS	Findspot - Post Medieval coins	Post Medieval
MWA5629	FS	Findspot - Medieval harness attachment	Medieval
MWA5688	FS	Findspot - Migration to Early Medieval finds	Early Medieval

Reference No.	Type	Name	Period
MWA5695	FS	Findspot - Roman finds in Bidford on Avon.	Romano-British
MWA6016	FS	Iron Age Pottery from Welford Villa	Iron Age
MWA6017	FS	Findspot - Prehistoric flint artefacts	Mesolithic to Bronze Age
MWA6113	FS	Findspot - Iron Age coin	Iron Age
MWA6324	FS	Findspot - Iron Age pottery	Iron Age
MWA6325	FS	Findspot - flints from Welford	Mesolithic to Bronze Age
MWA6326	FS	Findspot - Iron Age coin	Iron Age
MWA6327	FS	Findspot - Mesolithic flint artefacts	Mesolithic
MWA6328	FS	Findspot - Prehistoric flints	Mesolithic to Bronze Age
MWA6329	FS	Migration period lead object	Early Medieval
MWA1444	BLD	Pumping station S of Broom-Dunnington Road, Salford Priors	Post Medieval
MWA4840	FS	Findspot - Roman metal finds	Romano-British
MWA5616	FS	Findspot - Post Medieval & Imperial coins in Bidford on Avon.	Post Medieval
MWA5011	FS	Findspot - Medieval finds	Medieval
MWA6409	FS	Findspot - Neolithic Flint Scatter N of Salford Priors	Neolithic
MWA4051	FS	Findspot - Prehistoric assorted flints	Neolithic to Bronze Age
MWA4052	FS	Findspot - Roman pottery & coins	Romano-British
MWA4053	FS	Findspot - Medieval bronze finds	Medieval
MWA4054	FS	Findspot - Post Medieval bronze objects	Post Medieval
MWA4055	FS	Findspot - Imperial & Modern finds	Post Medieval
MWA4015	FS	Medieval Coin found at Welford Villa, Coffin Field	Medieval

Reference No.	Type	Name	Period
MWA4016	FS	Assorted C19 Finds, Welford Villa, North Field	Post Medieval
MWA4017	FS	Findspot - Iron Age silver coins	Iron Age
MWA4048	FS	Findspot - Post Medieval metal finds in Bidford on Avon.	Post Medieval
MWA4049	FS	Assorted 19th Century Finds W of Brickmarsh Lane, Bidford on Avon	Post Medieval
MWA4050	FS	Findspot - Medieval finds in Bidford on Avon	Medieval
MWA5994	FS	Findspot - Post Medieval coins in Bidford on Avon.	Post Medieval
MWA7216	RDR	Negative WB, 2 Manor Cottages, Dorsington	Unknown
MWA7240	MON	Platelayers' Hut (Site 14)	Post Medieval
MWA7365	FS	Findspot - Bronze Age metalwork	Bronze Age
MWA7507	FS	Findspot - Iron Age coins	Iron Age
MWA7888	FS	Findspot - Iron Age or Romano-British bronze head	Iron Age to Romano-British
MWA8153	FS	Findspot - Roman pottery near Salford Priors.	Romano-British
MWA1492	MON	Site of Gallows at Dunnington Heath	Post Medieval
MWA1446	BLD	Pump house to E of Ragley Hall Lake	Post Medieval
MWA4014	FS	Findspot - Roman finds in Coffin Field	Romano-British
MWA10032	FS	Find of Roman items at Welford Pastures	Romano-British
MWA10054	FS	Find of undated object near Welford on Avon	Unknown
MWA10163	FS	A medieval ring found in the area of Welford Pastures	Medieval
MWA10164	FS	Find of an Iron Age Coin in Wixford	Iron Age
MWA10166	FS	Find of a medieval coin in Wixford	Medieval

Reference No.	Type	Name	Period
MWA10215	FS	Find of Iron Age material in Bidford on Avon	Iron Age
MWA10227	FS	Findspot - Prehistoric flint	Prehistoric
MWA7230	MON	Saxon Occupation near Broom	Early Medieval
MWA12124	FS	Find of medieval textile fragment, Marsh Farm, Salford Priors	Medieval
MWA12335	MON	Ditches and Banks near Kingley Farm	Medieval
MWA12339	MON	Enclosure and pits beside the Small Brook, Bidford on Avon	Iron Age to Romano-British
MWA15751	FS	Various Romano-British finds from metal detection.	Romano-British
MWA18300	FS	Mediaeval metal detector finds to the north of MWA592 Deserted Medieval Settlement, Bidford on Avon	Medieval
MWA12361	MON	Two areas of ridge and furrow ploughing near Cock Bevington Ridge and Furrow Ploughing near Cock Bevington in the Parish of Salford Priors.	Medieval
MWA12362	MON	Banks and ditches at Wood Bevington Farm, Salford Priors	Medieval
MWA12363	MON	Ridge and furrow ploughing at Weethly Gate, Salford Priors Parish.	Medieval
MWA12364	MON	Ridge and furrow ploughing to the north of Bevington Hall, Salford Priors Parish.	Medieval
MWA12367	MON	Ridge and furrow ploughing to the east of Weethley Gate, Arrow County Parish	Medieval
MWA12368	MON	Ridge and furrow ploughing to the east of Weethley Gate, Arrow County Parish	Medieval
MWA12369	MON	Ridge and furrow ploughing between Iron Cross and the River Arrow,Salford Priors CP	Medieval

Reference No.	Type	Name	Period
MWA18298	FS	A series of Romano-British coins found during metal detecting.	Romano-British
MWA18384	FS	A series of Romano-British artifacts found during metal detecting.	Romano-British
MWA15612	FS	A series of Mediaeval artifacts found during metal detecting.	Medieval
MWA18383	FS	A series of Mediaeval artifacts found during metal detecting.	Medieval
MWA18451	FS	A series of Mediaeval artifacts found during metal detecting.	Medieval
MWA18631	FS	A series of Post Mediaeval artifacts found during metal detecting.	Post Medieval
MWA19926	MON	Broom Bridge	Post Medieval
MWA20149	MON	Ban Brook Bridge	Post Medieval
MWA20151	MON	Lime Bridge	Post Medieval
MWA20221	MON	Welford Pastures Bridge	Post Medieval
MWA20533	MON	Neolithic lithic scatter at Salford Priors	Neolithic
MWA5757	MON	Iron Age/Roman British settlement at Marsh Farm, Salford Priors.	Iron Age to Romano-British
MWA20537	MON	Medieval features at Marsh Farm Quarry	Medieval
MWA20534	MON	Bronze Age pit cluster at Salford Priors	Bronze Age
MWA17385	FS	Bidford on Avon (Post-Mediaeval)	Post Medieval
MWA15553	FS	A series of Romano- British artifacts found during metal detecting.	Romano-British
MWA17372	FS	Romano-British artifacts found during metal detecting	Romano-British
MWA17370	FS	Mediaeval artefact found during metal detecting	Medieval
MWA15580	FS	Artifact found during metal detecting	Medieval

Reference No.	Type	Name	Period
MWA15579	FS	Artifact found during metal detecting	Mesolithic to Bronze Age
MWA15551	FS	Artifacts found during metal detecting	Romano-British
MWA23807	FS	Romano-British artifacts found during metal detecting	Romano-British
MWA23831	FS	Migration artifact found during metal detecting	Early Medieval
MWA23832	FS	Post Mediaeval artifact found during metal detecting	Post Medieval
MWA23833	FS	Romano-British artifact found during metal detecting	Romano-British
MWA23861	FS	Romano-British artifact found during metal detecting	Romano-British
MWA23862	FS	Mediaeval to Post Mediaeval artifact found during metal detecting	Medieval to Post Medieval
MWA23867	FS	Mediaeval artifacts found during metal detecting	Medieval to Post Medieval
MWA23875	FS	Post Mediaeval artifact found during metal detecting	Post Medieval
MWA23876	FS	Mediaeval artifacts found during metal detecting	Medieval
MWA23878	FS	Romano-British artifacts found during metal detecting	Romano-British
MWA23891	FS	Mediaeval artifact found during metal dertecting	Medieval
MWA23892	FS	Mediaeval artifact found during metal detecting	Medieval
MWA23989	FS	Romano-British artifacts found during metal detecting	Romano-British
MWA24000	FS	Mediaeval artifacts found during metal detecting	Medieval
MWA24001	FS	Post Mediaeval artifact found during metal detecting	Post Medieval
MWA24231	FS	Neolithic artefact found during metal detecting	Neolithic
MWA24248	FS	Romano-British artefacts found during metal detecting	Romano-British

Reference No.	Type	Name	Period
MWA24266	FS	Middle Iron Age artefact found during metal detecting	Iron Age
MWA24290	FS	Romano-British artefacts found during metal detecting	Romano-British
MWA24522	FS	Late Bronze Age artefact found during metal detecting	Bronze Age to Iron Age
MWA24710	FS	Mediaeval artefacts found during metal detecting	Medieval
MWA24712	FS	Early Mediaeval artefact found during metal detecting	Early Medieval
MWA24788	FS	Romano-British artefacts found during metal detecting	Romano-British
MWA26759	FS	Post Mediaeval artefact found during metal detecting	Post Medieval
MWA30748	FS	Medieval artefact found during metal detecting	Unknown
MWA30784	FS	Romano-British artefacts found during metal detecting	Unknown
MWA30831	FS	Medieval artefact found during metal detecting	Unknown
MWA30832	FS	Prehistoric artefacts found during metal detecting	Unknown
MWA30852	FS	Iron Age artefact found during metal detecting	Unknown
MWA30863	FS	Medieval artefacts found during metal detecting	Unknown
MWA31054	MON	Arrow Milestone	Unknown
MWA31055	MON	Salford Priors milestone	Unknown
MWA31265	MON	Thornhill Trig Point, Arrow	Unknown
MWA6015	MON	Roman Burial, Welford Pastures Farm, Welford	Romano-British
MWA33323	MON	17th century house at 31 High Street, Broom, Bidford on Avon.	Post Medieval
MWA33324	MON	19th century house , High Street, Broom, Bidford on Avon.	Post Medieval
MWA31713	MON	Pit, Salford Road, Bidford-on Avon	Bronze Age to Iron Age

Reference No.	Type	Name	Period
MWA34776	MON	Site of a milepost on the East & West Junction Railway, 210m west of Bidford Road, Broom	Post Medieval
MWA8538	MON	Broom Court gardens	Post Medieval
MWA8587	MON	Park Hall grounds, Salford Priors	Post Medieval
MWA8630	MON	Woodpeckers, Marlcliff	Modern
MWA8645	MON	Ford across Avon at Salford	Early Medieval
MWA8647	MON	Wihtlac's Ford (possible site)	Early Medieval
MWA6149	MON	Site of Medieval Manor House at Oversley Court	Medieval
MWA543	MON	Boteler's Castle/Oversley Castle, Alcester	Medieval
MWA1511	MON	Aspley juxta Wixford Shrunken Medieval Settlement	Medieval
MWA1519	MON	Moor Hall Moat, Wixford.	Medieval
MWA601	MON	Site of Medieval House and Well 200m S of Moor Hall, Bidford on Avon	Medieval
MWA595	MON	Site of Ford north of The Rookery, Bidford on Avon	Unknown
MWA593	MON	Site of Ford at Broom	Unknown
MWA4543	MON	Undated soil marks	Unknown
MWA1520	MON	Site of Wixford Mill	Medieval
MWA1422	MON	Kingley Horse Engine	Post Medieval
MWA4910	MON	Undated linear and enclosure cropmarks, Kingley	Unknown
MWA8646	MON	Wihtlac's Ford (possible site)	Early Medieval
MWA7238	MON	Site of a former Railway Junction situated south west of Broom	Modern
MWA4922	MON	Undated linear cropmark	Unknown
MWA6736	MON	Poss Linear Cropmarks E Lower Farm, Salford Priors	Unknown
MWA1499	MON	Roman Settlement 800m North of Salford Priors	Iron Age to Romano-British
MWA7227	FS	Early Neolithic Flint Scatter near Salford Priors	Neolithic

Reference No.	Type	Name	Period
MWA6735	MON	Possible Enclosure W of Big Meadow, Bidford on Avon	Unknown
MWA5757	MON	Iron Age/Roman British settlement at Marsh Farm, Salford Priors.	Iron Age to Romano-British
MWA1510	MON	Site of Salford Priors Mill	Medieval
MWA7203	MON	Medieval Activity at Station Road, Salford priors	Medieval
MWA1497	MON	Site of Undated Settlement 600m NW of Church	Unknown
MWA1430	MON	Imperial milestone	Post Medieval
MWA4985	MON	Undated trackway	Unknown
MWA4708	MON	Site of Roman Villa 100m SW of Welford Pastures Fm	Romano-British
MWA1534	MON	Site of Forge at Weethley	Pos
MWA1517	MON	7th century inhumation, Ragley Park	Early Medieval
MWA6407	MON	Cropmark Enclosure 100m North of St Milburga's Church, Alcester	Unknown
MWA9027	MON	Broom Medieval Settlement	Medieval
MWA9028	MON	Wixford Medieval Settlement	Medieval
MWA1428	MON	Imperial milestone	Post Medieval
MWA1521	MON	The former Medieval Deer Park at Ragley Hall	Medieval
MWA8698	MON	Park by Moor Hall, Wixford	Post Medieval
MWA9023	MON	Marlcliff Medieval Settlement	Medieval
MWA9039	MON	Dunnington Post Medieval Settlement	Post Medieval
MWA9167	BLD	Site of former Broom West Signal Box constructed 1942 and closed 1962, situated on the now dismantled LMS line Midland Railway	Modern
MWA9027	MON	Broom Medieval Settlement	Medieval
MWA10174	MON	Iron Age Pit	Iron Age
MWA10179	MON	Undated ditch	Unknown

Reference No.	Type	Name	Period
MWA7232	MON	Iron Age Features northwest of Wixford.	Iron Age
MWA6119	MON	Site of Disproved Iron Age Hillfort at Oversley Castle	Medieval
MWA10308	MON	Iron Age enclosure in Salford Priors	Iron Age
MWA7229	MON	Late Bronze Age pits and mini Ring Ditch, near Broom	Bronze Age
MWA7457	MON	Late Iron Age/ early Romano British Features found in Area D, Salford Priors.	Iron Age to Romano-British
MWA7456	MON	Iron Age/Romano British field system found in Area D	Iron Age to Romano-British
MWA7454	MON	Neolithic Features found in Area E, northwest of Broom.	Neolithic
MWA12326	MON	Possible Ring Ditch near Kingsley	Prehistoric
MWA1496	MON	Roman cropmark enclosure 600m N of Bevington Waste	Romano-British
MWA13001	MON	Bevington Hall (Bevington Manor) garden, Salford Priors	Post Medieval
MWA13004	MON	Broom Hall gardens	Post Medieval
MWA8580	MON	Hiller Garden, Dunnington Heath Farm	Modern
MWA12334	MON	Ridge and Furrow Ploughing in Bidford on Avon parish	Medieval
MWA13039	MON	Ridge and Furrow cultivation south of Upper Welford Cottage	Medieval
MWA6966	MON	Ragley Hall grounds (17th century and later)	Post Medieval
MWA13064	MON	Salford Farm garden, Salford Priors	Modern
MWA8732	MON	Post-medieval activity at Weethley Manor	Post Medieval
MWA1535	BLD	Forge 400m SE of Wixford Bridge	Post Medieval
MWA1814	MON	Site of Dorsington Parva Deserted Medieval Settlement	Medieval

Reference No.	Type	Name	Period
MWA7236	BLD	Site of former railway viaduct over River Arrow East and West Junction Railway south of Broom.	Post Medieval
MWA9352	MON	Site of Gravel pits, West of Bidford	Post Medieval
MWA8408	BLD	Medieval manor house at Wood Bevington	Medieval
MWA1560	MON	Site of Shrunken Settlement at Wood Bevington	Medieval
MWA592	MON	Burnells Broom Deserted Medieval Settlement, Bidford on Avon	Medieval
MWA5690	MON	Roman settlement, Bidford on Avon	Romano-British
MWA4915	MON	Undated linear cropmark	Unknown
MWA4915	MON	Undated linear cropmark	Unknown
MWA4905	MON	Undated cropmark enclosure	Unknown
MWA1533	BLD	Imperial to Modern forge, Dunnington	Post Medieval
MWA6358	MON	Possible medieval settlement of Kingley south of A435/B4085 junction	Medieval
MWA12234	MON	Linear Crop marks, Salford Priors	Iron Age to Romano-British
MWA6293	MON	Fishponds at Moor Hall, Wixford.	Medieval to Post Medieval
MWA4984	MON	Neolithic or Bronze Age Ring Ditch	Neolithic to Bronze Age
MWA9030	MON	Site of St Mathew's Church at Broom	Unknown
MWA8180	MON	Blacksmiths Workshop near 51 High Street Broom	Post Medieval
MWA1561	MON	Cock Bevington Deserted Settlement	Medieval
MWA6733	MON	Cropmark Complex SW of Bidford on Avon	Unknown
MWA12376	MON	Cropmark of partial enclosure SW of Bidford on Avon	Iron Age to Romano-British

Reference No.	Type	Name	Period
MWA6176	MON	Linear Crop Mark Features NE of Broom Court	Unknown
MWA19190	MON	Linear Crop Mark Features NE of Broom Court	Unknown
MWA4909	MON	Modern quarry, Salford Priors	Modern
MWA4921	MON	Undated cropmark enclosure, Dunnington	Unknown
MWA5081	MON	Iron Age/Roman cropmark enclosure, Salford Priors	Iron Age to Romano-British
MWA1855	MON	Salford Bridge	Medieval
MWA7234	MON	Site of former late 19th century Signal Box and Railway Junction south west of Broom latterly known as Broom Junction North signal box	Post Medieval
MWA1432	MON	Site of former Railway Bridge 350m NW of Wixford Bridge on the Midland Evesham to Alcester line	Post Medieval
MWA12333	MON	Cropmark enclosure near Bidford on Avon	Iron Age to Romano-British
MWA597	MON	Crop Mark Enclosure 200m South of Broom Court, Bidford	Iron Age to Romano-British
MWA6731	MON	Enclosure 250m NW of Weethley Gate	Unknown
MWA598	MON	Crop Mark Enclosure 100m N of Moat at Broom Court	Unknown
MWA12360	MON	Ditches near Cock Bevington, Salford Priors Parish	Post Medieval
MWA12361	MON	Two areas of ridge and furrow ploughing near Cock Bevington Ridge and Furrow Ploughing near Cock Bevington in the Parish of Salford Priors.	Medieval
MWA12362	MON	Banks and ditches at Wood Bevington Farm, Salford Priors	Medieval
MWA12370	MON	Curvilinear Crop marks, Salford Priors	Unknown

Reference No.	Type	Name	Period
MWA12374	MON	Rectangular crop marks near Kingley Farm, Salford Priors CP	Post Medieval
MWA12377	MON	Cropmark of partial enclosure SW of Bidford on Avon	Iron Age to Romano-British
MWA12381	MON	Site of Land Army hostel, Salford Priors	Modern
MWA12335	MON	Ditches and Banks near Kingley Farm	Medieval
MWA12339	MON	Enclosure and pits beside the Small Brook, Bidford on Avon	Iron Age to Romano-British
MWA19203	MON	Ploughing headland, SW of Bidford-on-Avon	Medieval
MWA4910	MON	Undated linear and enclosure cropmarks, Kingley	Unknown
MWA6357	MON	Cropmark Enclosures 600m NW of Salford Priors	Prehistoric
MWA7237	MON	Bridge (Site 11)	Post Medieval
MWA589	MON	Broom Court, Bidford on Avon.	Medieval to Post Medieval
MWA6737	MON	Possible Linear Cropmark to N of Iron Cross	Unknown
MWA6744	MON	Possible Enclosure W of Lower Barn, Weethley	Unknown
MWA6416	MON	Wixford Bridge	Post Medieval
MWA1436	MON	Site of former Wixford Railway Station on the Midland line	Post Medieval
MWA1435	MON	Site of former Overbridge built late 19th century carrying road over the Midland Railway, west of Wixford	Post Medieval
MWA1512	BLD	Church of St Milburga, Wixford	Medieval
MWA3894	MON	Ridge and Furrow cultivation in Dorsington Parish	Medieval
MWA1523	MON	Site of Medieval Chapel at Weethley	Medieval
MWA1524	MON	Shrunken Settlement at Weethley	Medieval

Reference No.	Type	Name	Period
MWA15553	FS	Bidford (South West) Romano-British finds (Field 260)	Romano-British
MWA4908	MON	Undated linear cropmark near Broom	Prehistoric
MWA30211	BLD	Barton Farm Barn, Bidford-on-Avon	Post Medieval
MWA30423	BLD	Nos 5-4, Mill Lane, Broom, B50 4HR	Modern
MWA30526	BLD	Nos 73 and 74, Wood Bevington, Alcester	Post Medieval
MWA30527	BLD	The Orchard, Nos 71 and 72 Wood Bevington, Alcester	Post Medieval
MWA30535	BLD	No 70, Wood Bevington, Alcester	Post Medieval
MWA30558	BLD	Bevington Lodge, Nos 64-65 Dunnington, Salford Priors	Post Medieval
MWA30559	BLD	Old Mudwalls Cottage, No 62 Dunnington, Salford Priors	Post Medieval
MWA30576	MON	Prehistoric features north of Broom Lane, Dunnington	Prehistoric
MWA30708	FS	A field survey found a Roman building and occupational debris	Romano-British
MWA30709	FS	The site of a Roman settlement. Romano-British artefcts found during metal detecting.	Romano-British
MWA30717	FS	Romano-British artefacts found during metal detecting	Unknown
MWA30879	LND	Extant Ridge and Furrow earthworks to the west of Fox Covert Farm, Dorsington	Romano-British
MWA31226	MON	Prehistoric activity at Salford Road, Bidford on Avon	Prehistoric
MWA31707	MON	Neolithic pit-ring, Bidford-on-Avon	Neolithic
MWA31708	MON	Neolithic Pit-Ring, Bidford-on-Avon	Neolithic
MWA31709	MON	Neolithic Ring-Ditch, Bidford-on-Avon	Neolithic

Reference No.	Type	Name	Period
MWA31710	MON	Neolithic Ring-Ditch, Bidford-on-Avon	Neolithic
MWA31711	MON	Iron-Age/Romano-British Field Boundaries	Iron Age to Romano-British
MWA1522	BLD	Church of St James, Weethley	Post Medieval
MWA32798	BLD	Moor Hall, Wixford	Medieval
MWA1437	BLD	Railway Station & Goods Yard, Salford Priors	Post Medieval
MWA1438	BLD	Site of former Broom Junction Railway Station, Broom	Post Medieval
MWA33157	MON	Site of former railway signal box erected 1879 north of Broom Junction Station on the Midland Railway	Post Medieval
MWA7235	BLD	Site of former 'Cattle Creep' railway bridge south west of Broom carrying the now disused 1942 LMS line	Post Medieval
MWA33211	MON	Site of former Broom East Junction Signal Box erected 1942 500 metres south-west of Broom when new LMS line was built	Modern
MWA33351	BLD	15, Mill Lane, Broom	Post Medieval
MWA33934	MON	Possible medieval to post medieval fishpond, East of Bush Wood, Weethley	Medieval
MWA31018	MON	Site of Holly Cottage, Kings Lane, Broom	Post Medieval
MWA34051	MON	Ridge and furrow, W of Thornhill Wood, Arrow with Weethley	Medieval
MWA34052	MON	Site of Clay Pit, NW of Weethley Bank	Post Medieval
MWA34344	MON	Ridge and Furrow, east of Dorsington Manor, Welford on Avon	Medieval
MWA34345	MON	Site of Historic Orchard, 465m southwest of Glebe Farm, Welford on Avon	Post Medieval

Reference No.	Type	Name	Period
MWA34624	MON	Probably Prehistoric activity, Salford Road, Bidford on Avon	Prehistoric
MWA34774	MON	Site of overbridge on East & West Junction Railway, Bidford Road, Broom	Post Medieval
WSM01394	BLD	Barn, to rear of the King's Arms, Cleeve Prior	Post Medieval
WSM02801	BLD	St Michael's Church, South Littleton	Medieval
WSM02805	BLD	The Manor House, Main Street, Cleeve Prior	Post Medieval
WSM02806	BLD	Dovecote, to the rear of The Manor House, Cleeve Prior	Post Medieval
WSM02807	BLD	Church of St Andrew's, The Green, Cleeve Prior	Medieval
WSM06105	BLD	The Manor House (Hathaways) Main Street, South Littleton	Post Medieval
WSM06106	BLD	Prior House, (Formerly Top Farmhouse), Main Street, Cleeve Prior	Post Medieval
WSM09267	BLD	Post Office and Adjacent Cottage, South Littleton	Post Medieval
WSM09268	BLD	Manor House Farm, South Littleton	Post Medieval
WSM02802	MON	Moat, East of Manor House, South Littleton	Medieval
WSM02900	MON	Stone-lined culvert, High Street, Cleeve Prior	Medieval
WSM12981	BLD	The Kings Arms, Main Street, Cleeve Prior	Post Medieval
WSM12984	BLD	Dovecote, behind Green Cottage, Cleeve Prior	Post Medieval
WSM20480	BLD	Upper House, Nightingale Lane, Cleeve Prior	Post Medieval
WSM27780	BLD	Cobblers Cottage, Farm Lane, South Littleton	Post Medieval
WSM31217	BLD	Barns, 1-4 Manor Farm, South Littleton	Post Medieval
WSM33103	BLD	The Vicarage, Cleeve Prior	Post Medieval

Reference No.	Type	Name	Period
WSM33113	BLD	Village Hall, Main Street, Cleeve Prior	Post Medieval
WSM37421	BLD	Ullington House, Buckle Street, Pebworth	Post Medieval
WSM39047	BLD	Field Barn, Hoden Lane, Cleeve Prior	Post Medieval
WSM39050	BLD	Dingley Dell, Main Street, Cleeve Prior	Post Medieval
WSM39051	BLD	Woodbine Cottage, Main Street, Cleeve Prior	Post Medieval
WSM39052	BLD	Lilac Cottage, Froglands Lane, Cleeve Prior	Post Medieval
WSM39053	BLD	Pear Tree, Main Street, Cleeve Prior	Post Medieval
WSM39054	BLD	The Old Cottage, Main Street, Cleeve Prior	Post Medieval
WSM39055	BLD	The Cottage, Main Street, Cleeve Prior	Post Medieval
WSM39056	BLD	Kemises House, Main Street, Cleeve Prior	Post Medieval
WSM39057	BLD	Old Kemys Cottage, Main Street, Cleeve Prior	Post Medieval
WSM39058	BLD	The Laurels, Main Street, Cleeve Prior	Post Medieval
WSM39059	BLD	The Post Office and Almond Cottage, Main Street, Cleeve Prior	Post Medieval
WSM39060	BLD	Barn to rear of The Laurels, Main Street, Cleeve Prior	Post Medieval
WSM39061	BLD	Pile of Stones (Eastcott), Main Street, Cleeve Prior	Post Medieval
WSM39062	BLD	Barn range to east of The Laurels, Main Street, Cleeve Prior	Post Medieval
WSM39063	BLD	The Green Cottage, The Green, Cleeve Prior	Post Medieval
WSM39064	BLD	Ashby Cottage, The Green, Cleeve Prior	Post Medieval

Reference No.	Type	Name	Period
WSM39065	BLD	Nancot, The Green, Cleeve Prior	Post Medieval
WSM39066	BLD	Peacock House, The Green, Cleeve Prior	Post Medieval
WSM39067	BLD	Fir Tree Corner, The Green, Cleeve Prior	Post Medieval
WSM39068	BLD	Japonica Cottage, Main Street, Cleeve Prior	Post Medieval
WSM39069	BLD	Former School, 50 m north north east of Church Croft, Main Street, Cleeve P	Post Medieval
WSM39070	BLD	Church Croft (formerly listed as Home Farmhouse), Main Street, Cleeve Prior	Post Medieval
WSM39071	BLD	Barn range 50 m south east of Church Croft, Main Street, Cleeve Prior	Post Medieval
WSM39072	BLD	Summer House, to the west of The Manor House, Cleeve Prior	Post Medieval
WSM39073	BLD	Stable Range and Granary, south of The Manor House, Cleeve Prior	Post Medieval
WSM39074	BLD	Barn to the north of Sharrow, Main Street, Cleeve Prior	Post Medieval
WSM39075	BLD	Sharrow, Main Street, Cleeve Prior	Post Medieval
WSM39076	BLD	Huband Cottage and The Den, Main Street, Cleeve Prior	Post Medieval
WSM39077	BLD	The Old Cider Mill (Evergreen), Main Street, Cleeve Prior	Post Medieval
WSM39078	BLD	Brewer's Cottage, Main Street, Cleeve Prior	Post Medieval
WSM39079	BLD	Barn to South of Old Cider Mill, Main Street, Cleeve Prior	Post Medieval
WSM39080	BLD	Rose Cottage and The Kot, Main Street, Cleeve Prior	Post Medieval
WSM39081	BLD	The Mill House and The Teashop, Main Street, Cleeve Prior	Post Medieval

Reference No.	Type	Name	Period
WSM39780	BLD	Long Hyde Farmhouse, South Littleton	Post Medieval
WSM40349	BLD	Ullington Hall, Pebworth	Post Medieval
WSM31053	PLA	Place-Name Way to the Headland in Anglo Saxon Charter, Cleeve Prior	Romano-British
WSM31054	PLA	Place-Name; Broad Way in AS Charter, Cleeve Prior	Romano-British
WSM42300	BLD	Wall in Front of Manor House, South Littleton	Post Medieval
WSM42301	BLD	Churchyard Cross, St Michael's churchyard, South Littleton	Medieval
WSM42302	BLD	The Nook, Main Street, South Littleton	Post Medieval
WSM42304	BLD	South House, Main Street, South Littleton	Post Medieval
WSM42543	BLD	Friends Meeting House, Shinehill Lane, South Littleton	Post Medieval
WSM05482	MON	Enclosure, Froglands Farm, Cleeve Prior	Iron Age
WSM30850	PLA	Black Ewe (placename) Cleeve Prior	Romano-British
WSM30851	PLA	Black Spit Iron Butts (placename) Cleave.	Romano-British
WSM30836	PLA	Field names containing Blackminster (place name) Offenham	Romano-British
WSM30902	PLA	Field-Name and Place-Name; Blackland Field and Blackland Close, Pebworth	Romano-British
WSM30903	PLA	Meadows, Ox Meadows and Blackland	Romano-British
WSM30904	PLA	Blackland Down Fields	Romano-British
WSM31804	PLA	Field-Name; Holloway Ground, Bidford on Avon (Cleeve Prior)	Post Medieval
WSM31805	PLA	Field-Name; Long Dickin, Cleeve Prior	Post Medieval
WSM31806	PLA	Field-Name; Short Dickin, Cleeve Prior	Post Medieval

Reference No.	Type	Name	Period
WSM31823	PLA	Field-name; Campden Gap Coppice, North Littleton	Romano-British
WSM58280	MON	Possible boundary ditch, West of Orchard Lodge, Quarry Lane, Cleeve Prior	Post Medieval
WSM07808	MON	Limekilns, Cleeve Prior	Post Medieval
WSM09266	MON	Churchyard Cross, South Littleton	Medieval
WSM46097	BLD	Dwelling, The Rookery, South Littleton	Post Medieval
WSM46676	MON	Ridge and Furrow, north west of Pebworth, Pebworth	Medieval
WSM46677	MON	Ridge and Furrow, north west of Pebworth, Pebworth	Medieval
WSM46678	MON	Ridge and Furrow, north west of Pebworth, Pebworth	Medieval
WSM46680	MON	Ridge and Furrow, north west of Pebworth, Pebworth	Medieval
WSM46681	MON	Ridge and Furrow, north west of Pebworth, Pebworth	Medieval
WSM46683	MON	Ridge and Furrow, north west of Pebworth, Pebworth	Medieval
WSM09958	MON	Probable building remains, north of Bickmarsh Lodge, Bickmarsh	Post Medieval
WSM45439	BLD	Military Buildings of the Honeybourne Sub Depot, Shinehill Lane, South Littleton, Evesham	Modern
WSM45440	MON	Demolished Buildings Associated with Honeybourne Sub Depot, Shinehill, South Littleton, Evesham	Modern
WSM27609	LND	US Medical Stores and Military Camp, Honeybourne Sub Depot, Shinehill Lane, South Littleton, Evesham	Modern
WSM45450	MON	Demolished Buildings of Prisoner of War Camp, Long Hyde Road, South Littleton	Modern

Reference No.	Type	Name	Period
WSM27656	LND	Prisoner of War Camp, Long Hyde Road, South Littleton	Modern
WSM47149	MON	Ridge and Furrow, Greenhill, Cleeve Prior	Medieval
WSM47150	MON	Ridge and Furrow, Greenhill, Cleeve Prior	Medieval
WSM47151	MON	Ridge and Furrow, Greenhill, Cleeve Prior	Medieval
WSM47160	MON	Ridge and Furrow, Norval Farm, east of South Littleton	Medieval
WSM47161	MON	Ridge and Furrow, east of South Littleton	Medieval
WSM47163	MON	Ridge and Furrow, east of South Littleton	Medieval
WSM47164	MON	Ridge and Furrow, Norval Farm, east of South Littleton	Medieval
WSM47165	MON	Ridge and Furrow, east of South Littleton	Medieval
WSM47167	MON	Ridge and Furrow, east of South Littleton	Medieval
WSM47168	MON	Ridge and Furrow field system, North and Middle Littleton	Medieval
WSM23323	MON	Site of Medieval village (Conjectural Focus of), Cleeve Prior	Medieval
WSM23327	MON	Old Manor House (Conjectural Site of), Main Street, Cleeve Prior	Post Medieval
WSM23363	MON	Conjectural Roman Road Between Cleeve Hill (North Littleton) and Ryknild St	Romano-British
WSM47973	BLD	Outbuilding to The Upper House, Nightingale Lane, Cleeve Prior	Post Medieval
WSM10142	MON	Ridge and furrow, E of Upper Hoden, Cleeve Prior	Medieval
WSM10143	MON	Ridge and furrow, N of Lower Hoden, Cleeve Prior	Medieval

Reference No.	Type	Name	Period
WSM10144	MON	Ridge and furrow, W of Upper Hoden, Cleeve Prior	Medieval
WSM10146	MON	Ridge and Furrow, north of Ullington, Pebworth	Medieval
WSM10148	MON	Ridge and furrow, SE of Bickmarsh Hall	Medieval
WSM10149	MON	Ridge and furrow, south of Bickmarsh Hall	Medieval
WSM10150	MON	Ridge and furrow, south east of Bickmarsh Hall	Medieval
WSM50136	MON	Ridge and furrow, west of Manor House, Cleeve Prior	Medieval
WSM50137	MON	Ridge and furrow, north of Manor House, Cleeve Prior	Medieval
WSM50138	MON	Ridge and furrow, Cleeve Prior	Medieval
WSM50139	BLD	Top Farm, Froglands Lane, Cleeve Prior	Post Medieval
WSM11395	MON	Vineyard, South Littleton	Medieval
WSM55912	MON	River Avon Navigation, Worcestershire	Unknown
WSM56658	MON	Site of Outbuildings Associated with Manor House, Cleeve Prior	Post Medieval
WSM50881	MON	Site of Outbuildings Associated with Outfarm south east of Church Croft, Cleeve Prior	Post Medieval
WSM50883	BLD	Field Barn east of Moor Barn, Cleeve Prior	Post Medieval
WSM00867	MON	Medieval settlement at Ullington, Pebworth	Medieval
WSM53179	BLD	Shearwood, Cleeve Prior	Post Medieval
WSM53181	MON	Site of Outbuildings Associated with Sharrow, Cleeve Prior	Post Medieval
WSM53182	MON	Site of Outbuildings Associated with The Mill House and Tea Shop, Cleeve Prior	Post Medieval
WSM53183	BLD	Manor House, Cleeve Prior	Post Medieval
WSM53184	BLD	Hoden Farm (Little Hoden), Cleeve Prior	Post Medieval

Reference No.	Type	Name	Period
WSM53187	MON	Site of Little Hoden, Bickmarsh	Post Medieval
WSM53190	BLD	Farmhouse at Bickmarsh Lodge, Bickmarsh	Post Medieval
WSM53192	BLD	L'aubade, Pebworth	Post Medieval
WSM58531	LND	Outfarm south east of Church Croft, Cleeve Prior	Post Medieval
WSM58533	LND	Field Barn east of Moor Barn, Cleeve Prior	Post Medieval
WSM20008	MON	Possible Iron-Age Settlement, "Little Orchard", Cleeve Prior	Iron Age
WSM60827	LND	Little Cottage, Bay Cottage and Barn, Cleeve Prior	Post Medieval
WSM60829	LND	Shearwood, Cleeve Prior	Post Medieval
WSM60830	LND	Church Croft, Cleeve Prior	Post Medieval
WSM60831	LND	Sharrow, Cleeve Prior	Post Medieval
WSM60832	LND	The Mill House and Tea Shop, Cleeve Prior	Post Medieval
WSM60833	LND	Manor House, Cleeve Prior	Post Medieval
WSM60834	LND	Hoden Farm (Little Hoden), Cleeve Prior	Post Medieval
WSM60837	LND	Site of Little Hoden, Bickmarsh	Post Medieval
WSM60840	LND	Bickmarsh Lodge, Bickmarsh	Post Medieval
WSM60842	LND	Ullington House/L'aubade, Pebworth	Post Medieval
WSM60970	LND	Fir Tree Corner, Cleeve Prior	Post Medieval
WSM21702	MON	Grange (Conjectural Focus) of Worcester Priory, Cleeve Prior	Medieval
WSM46663	MON	Ridge and furrow south of South Littleton	Medieval
WSM46664	MON	Ridge and furrow to the south of South Littleton	Medieval
WSM46665	MON	Ridge and furrow east of South Littleton	Medieval
WSM46666	MON	Ridge and furrow east of South Littleton	Medieval
WSM57408	MON	Series of 19th Century Postholes Located at Bowery Lodge, Main Street, South Littleton.	Post Medieval

Reference No.	Type	Name	Period
WSM57409	MON	Site of a Well Located to the North of Bowery Lodge, Main Street, South Littleton.	Medieval
WSM57484	MON	Series of Roman ditches at Froglands Lane, Cleeve Prior	Romano-British
WSM57485	MON	Medieval ditch and gully at Froglands Lane, Cleeve Prior	Medieval
WSM23364	MON	Conjectural Roman Road from South Littleton to Ryknild Street	Romano-British
WSM58140	MON	Ridge and furrow, near Marlcliff Hill, Cleeve Prior	Medieval
WSM58142	MON	Ridge and furrow below Marlcliff Hill, Cleeve Prior	Medieval
WSM24533	MON	South Littleton Village	Medieval
WSM66808	BLD	War Memorial, St Michael's churchyard, South Littleton	Modern
WSM24957	MON	Site of dovecote, South Littleton	Post Medieval
WSM24958	MON	Site of Dovecote, South Littleton	Post Medieval
WSM67803	BLD	Outbuildings at Bickmarsh Lodge, Bickmarsh	Post Medieval
WSM67804	MON	Site of Outbuildings at Bickmarsh Lodge, Bickmarsh	Post Medieval
WSM67815	MON	Ridge and Furrow West of Ullington House/L' aubade, Pebworth	Medieval
WSM67823	BLD	Outbuildings associated with Hoden Farm (Lower Hoden), Cleeve Prior	Modern
WSM68315	MON	Ridge and Furrow, East of Evesham Vale Growers, Blackminster, Bretforton	Medieval
WSM25883	MON	Recreation Ground, South Littleton	Medieval
WSM30300	MON	Roman Road, extending from Alcester to Gloucestershire.	Romano-British
WSM31606	MON	Ridge and Furrow, North of Manor Farm, North and Middle Littleton	Medieval

Reference No.	Type	Name	Period
WSM31640	MON	Ridge and Furrow off Froglands Lane	Medieval
WSM31682	MON	Conjectural Alignment of Postulated Roman Road from Bidford to Bretforton	Romano-British
WSM32562	MON	DMV/SMV (Possible Site of), Hoden, Cleeve Prior	Medieval
WSM32570	MON	Deserted Village/Shrunken Village (Possible Site of), Norval, South Littleton	Medieval
WSM33085	MON	Aircraft Landing Obstacles, east of Cleeve Prior, Cleeve Prior	Modern
WSM33105	MON	Auxiliary Fire Service Base, Main Street, Cleeve Prior	Modern
WSM33110	MON	Home Guard Observation Post, Low Hill, Cleeve Prior	Modern
WSM35880	MON	Romano-British enclosure, Froglands Farm, Cleeve Prior	Iron Age
WSM41417	MON	Pond south west of The Leaselow, Pebworth	Post Medieval
WSM41772	MON	Ridge and Furrow, north east of Manor Farm, North and Middle Littleton	Medieval
WSM42342	MON	Possible World War II building, Bickmarsh	Modern
WSM42538	MON	Romano-British Inhumation, Froglands, Cleeve Prior	Romano-British
WSM70206	MON	Ridge and furrow earthworks east of Meadowbank Farm, North and Middle Littleton	Medieval
WSM70208	MON	Ridge and furrow earthworks at Pebworth Road Poultry Site, Blakes Hill, North and Middle Littleton	Medieval
WSM70209	MON	Ridge and furrow earthworks south of Briar Hill, Blakes Hill, North and Middle Littleton	Medieval
WSM70210	MON	Ridge and furrow earthworks north of Shinehill Lane, North and Middle Littleton	Medieval

Reference No.	Type	Name	Period
WSM70212	MON	Ridge and furrow earthworks north of Shinehill Lane, North and Middle Littleton	Medieval
WSM70215	MON	Ridge and furrow earthworks north of Blakes Hill, North and Middle Littleton	Medieval
WSM70213	MON	Ridge and furrow earthworks north of Football Ground, Blakes Hill, North and Middle Littleton	Medieval
WSM70214	MON	Ridge and furrow earthworks north of Pebworth Road Poultry Site, Blakes Hill, North and Middle Littleton	Medieval
WSM70216	MON	Ridge and furrow earthworks on the Football Ground, Blakes Hill, North and Middle Littleton	Medieval
WSM70217	MON	Ridge and furrow earthworks south of Football Ground, Blakes Hill, North and Middle Littleton	Medieval
WSM70220	MON	Ridge and furrow earthworks south-west of Ullington Mill, North and Middle Littleton	Medieval
WSM70221	MON	Ridge and furrow earthworks north-west of Holborn Cottage, North and Middle Littleton	Medieval
WSM70225	MON	Ridge and furrow earthworks south of Long Hyde Road, South Littleton	Medieval
WSM70226	MON	Ridge and furrow earthworks south of Blacksmith's Lane, South Littleton	Medieval
WSM70227	MON	Ridge and furrow earthworks south Clevedon Green, South Littleton	Medieval
WSM70228	MON	Ridge and furrow earthworks north of Brookland House, South Littleton	Medieval
WSM70229	MON	Ridge and furrow earthworks south of Shinehill Lane, South Littleton	Medieval

Reference No.	Type	Name	Period
WSM70230	MON	Ridge and furrow earthworks north of Shinehill Lane, South Littleton	Medieval
WSM59384	LND	Manor Farm, South Littleton	Post Medieval
WSM60820	LND	South House, South Littleton	Post Medieval
WSM53170	BLD	South House, South Littleton	Post Medieval
WSM51734	MON	Manor Farm, South Littleton	Post Medieval
WSM51735	BLD	Farmhouse at Norvel Farm (Narvel), South Littleton	Post Medieval
WSM59385	LND	Norvel Farm (Narvel), South Littleton	Post Medieval
WSM70617	BLD	Farm buildings at Norvel Farm (Narvel), South Littleton	Post Medieval
WSM70621	MON	Site of farm buildings at Norvel Farm (Narvel), South Littleton	Post Medieval
WSM50793	MON	Site of New Barn/New Barn Cottage, South Littleton	Post Medieval
WSM58443	LND	Site of New Barn/New Barn Cottage, South Littleton	Post Medieval
WSM70628	MON	Site of farm buildings north of Long Hyde Farm, South Littleton.	Post Medieval
WSM60954	LND	Site of farmstead North of Long Hyde Farm, South Littleton	Post Medieval
WSM53169	BLD	Long Hyde Farm, South Littleton	Post Medieval
WSM53304	MON	Farm building, Long Hyde Farm, South Littleton	Post Medieval
WSM60819	LND	Long Hyde Farm, South Littleton	Post Medieval
WSM70711	MON	Foxes Farm (Rough Grounds), Bickmarsh	Post Medieval
WSM53188	BLD	Foxes Farm (Rough Grounds), Bickmarsh	Post Medieval
WSM60838	LND	Foxes Farm (Rough Grounds), Bickmarsh	Post Medieval
WSM53189	BLD	Little Dorsington, Bickmarsh	Post Medieval
WSM70712	MON	Little Dorsington, Bickmarsh	Post Medieval
WSM60839	LND	Little Dorsington, Bickmarsh	Post Medieval

Reference No.	Type	Name	Period
WSM53185	BLD	Hoden Farm (Upper Hoden), Cleeve Prior	Post Medieval
WSM70732	MON	Hoden Farm (Upper Hoden), Cleeve Prior	Post Medieval
WSM60835	LND	Hoden Farm (Upper Hoden), Cleeve Prior	Post Medieval
WSM53178	BLD	Top Farm, Cleeve Prior	Post Medieval
WSM51025	MON	Top Farm, Cleeve Prior	Post Medieval
WSM60828	LND	Top Farm, Cleeve Prior	Post Medieval
WSM70671	LND	Kingsmoor Farm Smallholding, Cleeve Prior, Evesham	Modern
WSM71288	MON	Medieval wall, pits and ditches, North of Farm Lane, South Littleton	Medieval
WSM71289	MON	Possible Moat, North of Farm Lane, South Littleton	Medieval
WSM21264	PRK	Garden (Conjectural Outline), Manor House, Cleeve Prior.	Post Medieval
WSM72068	MON	Enclosure, South of Main Street, Cleeve Prior	Unknown
WSM72162	MON	Site of Charletts, Main Road, Cleeve Prior	Post Medieval
WSM72193	MON	Cropmarks, Northeast of Clayfield Road, South Littleton	Unknown
WSM77487	BLD	Former stable at Sharrow, Cleeve Prior	Modern
WSM72838	BLD	Market Gardening Hovel, Clayfield Road east of B4085, Bretforton	Modern
WSM72839	BLD	Market Gardening Hovel, East of Brook Cottage, Clayfield Road, Bretforton	Modern
WSM72840	BLD	Market Gardening Hovel, Southeast of Brookland House, Clayfield Road, Bretforton	Modern
WSM72842	BLD	Market Gardening Hovel, on path off and north west of Clayfield Barn, Bretforton	Modern

Reference No.	Type	Name	Period
WSM72843	BLD	Market Gardening Hovel, on path off Clayfield Road, East of Clayfield Barn, Bretforton	Modern
WSM72844	BLD	Market Gardening Hovel, on path off Clayfield Road, North of Railway, Bretforton	Modern
WSM72845	BLD	Market Gardening Hovel, on path off Clayfield Road, West of Honeybourne Depot, Bretforton	Modern
WSM72846	BLD	Market Gardening Hovel, Southwest of South Littleton Football Ground, Bretforton	Modern
WSM72847	BLD	Market Gardening Hovel, on path off Clayfield Road, South of Shinehill Farm, Bretforton	Modern
WSM72666	BLD	Market Gardening Hovel, Southeast of Honeybrook Farm, South Littleton	Modern
WSM72667	BLD	Market Gardening Hovel, South of Moyfield, Shinehill Lane, South Littleton	Modern
WSM05492	MON	Enclosures and parallel ditch, Staple Hill, Bickmarsh	Romano-British
WSM82624	MON	Middle Iron Age Farmstead, South of Shinehill Lane, South Littleton	Iron Age
WSM82022	MON	Ridge and Furrow and Undated Pit and Ditches/Gullies at Land of Evesham Road, Cleeve Prior	Medieval
WSM82046	MON	Ridge and Furrow North of Bickmarsh Hall	Medieval
WSM01004	BLD	Morton Hall, Inkberrow	Post Medieval
WSM00297	MON	Inkberrow Castle, Lords Hill Farm	Medieval
WSM04981	BLD	Holberrow Green Windmill, Inkberrow	Post Medieval
WSM30704	BLD	Barn, Perryfields Farm, Inkberrow.	Post Medieval
WSM31553	BLD	Chestnut Cottage [Edwalyn Cottage] Abbots Morton	Post Medieval

Reference No.	Type	Name	Period
WSM31693	BLD	Shurnock Court, Redditch	Post Medieval
WSM04077	MON	Earthworks, E of Hanging Wood, Inkberrow	Unknown
WSM04747	MON	Enclosure, South South East of Shurnock Court	Iron Age
WSM04748	MON	Enclosure and ring ditch south-southeast of Shurnock Court	Iron Age
WSM04749	MON	Enclosures, south-southeast of Shurnock Court	Iron Age
WSM30991	PLA	Road-name: Salterstreet, Pinhills, Inkberrow	Post Medieval
WSM40944	BLD	Barn about 100 metres north-west of York Cottages, Abbots Morton	Post Medieval
WSM40949	BLD	The Nook, Morton Spitt, Abbots Morton	Post Medieval
WSM40958	BLD	Barn, The Gable House, Abbots Morton	Post Medieval
WSM40959	BLD	Cymbeline, Abbots Morton	Post Medieval
WSM40960	BLD	Butts Cottage, Abbots Morton	Post Medieval
WSM40961	BLD	Tudor Cottage, Abbots Morton	Post Medieval
WSM41092	BLD	Cow house, south-west of Wrens Nest Farmhouse, Inkberrow	Post Medieval
WSM41093	BLD	Animal House, Wrens Nest Farm, Inkberrow	Post Medieval
WSM41094	BLD	Shelter Shed, Wrens Nest Farm, Inkberrow	Post Medieval
WSM41095	BLD	Threshing Barn, south east of Wrens Nest Farmhouse, Inkberrow	Post Medieval
WSM41098	BLD	Cart Shed, Wrens Nest Farm, Inkberrow	Post Medieval
WSM41099	BLD	Farm Building, Wrens Nest Farm, Inkberrow	Post Medieval
WSM41100	BLD	Hay Barn, Wrens Nest Farm, Inkberrow	Post Medieval

Reference No.	Type	Name	Period
WSM41101	BLD	Farm Building, Wrens Nest Farm, Inkberrow	Post Medieval
WSM42588	BLD	Farm Buildings at Morton Hall Farm, Inkberrow	Post Medieval
WSM05569	MON	Moated Site, Inkberrow Millennium Green, Inkberrow	Medieval
WSM43738	BLD	Shurnock Court Barns, Shurnock Court, Saltway, Feckenham	Post Medieval
WSM43739	BLD	Outbuilding Adjacent to Shurnock Court, Saltway, Feckenham	Post Medieval
WSM44053	BLD	Milestone, B4090, East of Feckenham, Redditch	Modern
WSM41580	LND	Historic Settlement of Inkberrow	Unknown
WSM42160	LND	Feckenham Forest	Medieval
WSM07274	PRK	Deer Park, Inkberrow Castle, Inkberrow	Medieval
WSM30786	PLA	Salters Street Close, Inkberrow	Post Medieval
WSM30787	PLA	Field-name: Salters Street Ground, Inkberrow	Post Medieval
WSM35465	PLA	Field Named Second Part of Holloway Ground, Near Priory Piece Farm, Inkberr	Post Medieval
WSM35466	PLA	Field Named Part of Further Holloway Ground, Near Priory Piece Farm, Inkber	Post Medieval
WSM07927	MON	Shrunken Medieval Village, Morton Underhill	Medieval
WSM07929	MON	Moat, south west of Holt Farm, Holberrow Green	Medieval
WSM07931	MON	Ridge and furrow, Inkberrow Millennium Green, Inkberrow	Medieval
WSM07935	MON	Moat, Manor Farm (formerly Holberrow Green Farm), Stockwood	Medieval
WSM08599	MON	Site of Mill, Little Nobury, Inkberrow	Medieval
WSM09017	MON	Ridge and furrow, south west of Shurnock Court, Feckenham	Medieval

Reference No.	Type	Name	Period
WSM09018	MON	Ridge and furrow, north of Lady's Coppice	Medieval
WSM09168	PRK	Registered Park and Garden at Rous Lench Court, Rous Lench	Post Medieval
WSM46702	MON	Ridge and furrow, Sands Meadow, Inkberrow	Medieval
WSM33266	MON	Army Camp, Morton Hall, Holberrow Green, Inkberrow	Modern
WSM47174	MON	Crash Site of a Bristol Beaufighter Mk 11 F R2461, Feckenham	Modern
WSM47178	MON	Crash site of a Douglas Boston III W8380, Bevington Waste	Modern
WSM48873	BLD	Barn, Willow View, 50m North East of Little Norbury Farmhouse, Inkberrow	Post Medieval
WSM50002	BLD	Barn at Morton Hall Farm, Holly Bank, Inkberrow	Post Medieval
WSM50003	BLD	18th Century Stone Urn, Northeast of Morton Hall, Inkberrow	Post Medieval
WSM50004	BLD	18th Century Stone Urn, Southeast of Morton Hall, Inkberrow	Post Medieval
WSM50011	BLD	The Malt House, South of Holberrow Green, Inkberrow	Post Medieval
WSM50012	BLD	Basket Cottage, Holberrow Green, Inkberrow	Post Medieval
WSM50013	BLD	Reedcroft Cottage, Holberrow Green, Inkberrow	Post Medieval
WSM50014	BLD	Windmill Cottage, Holberrow Green, Inkberrow	Post Medieval
WSM50015	BLD	The White Cottage, Green Lane, Inkberrow	Post Medieval
WSM00793	MON	Pound, 200 Metres Northwest of Glebe Farm, Feckenham	Post Medieval
WSM56455	MON	Palaeochannel, West of Morton Spirt Farm, Abbots Morton	Palaeolithic

Reference No.	Type	Name	Period
WSM56530	MON	Pond, North West of Morton Spirt Farm, Abbots Morton	Post Medieval
WSM56531	MON	Pond, South of Barrel's Wood, Abbots Morton	Post Medieval
WSM56533	MON	Pond, West of Barrel's Wood, Abbots Morton	Post Medieval
WSM56534	MON	Pond, North West of Barrel's Wood, Abbots Morton	Post Medieval
WSM56535	MON	Pond, North West of Barrel's Wood, Abbots Morton	Post Medieval
WSM56536	MON	Osier Bed, West of Barrel's Wood, Abbots Morton	Post Medieval
WSM56551	MON	Pond, South-East of Salt Way Farm, Redditch	Post Medieval
WSM56552	MON	Marsh, South of Brookside Farm, Redditch	Post Medieval
WSM56553	MON	Pond, South of Brookside Farm, Redditch	Post Medieval
WSM56639	MON	Pond, South of Shurnock Court, Redditch	Post Medieval
WSM15463	MON	Ridge and Furrow, SE of church, Abbots Morton	Medieval
WSM15464	MON	Ridge and Furrow, South East of church. Abbots Morton	Medieval
WSM51375	MON	Site of Outfarm south east of Morton Low, Abbots Morton	Post Medieval
WSM51586	BLD	Outfarm east of Inkberrow School, Inkberrow	Post Medieval
WSM51590	BLD	Outfarm north east of Perry Fields Farm, Inkberrow	Post Medieval
WSM51614	BLD	Outfarm east of Holberrow Green Farm, Inkberrow	Post Medieval
WSM51615	MON	Site of Outfarm south west of Holberrow Green Farm, Inkberrow	Post Medieval
WSM00076	MON	Moat at Shurnock Court, Feckenham, Redditch	Post Medieval
WSM53116	MON	Site of Morton Low, Abbots Morton	Post Medieval

Reference No.	Type	Name	Period
WSM01003	MON	Site of Knighton Mill and mill pond	Post Medieval
WSM00087	MON	New Ham Mill, Redditch	Post Medieval
WSM54783	BLD	Morton Hall Farm (Morton Farm), Inkberrow	Post Medieval
WSM54784	BLD	Manor Farm (Holberrow Green Farm), Inkberrow	Post Medieval
WSM54785	BLD	Holt Farm, Wych Elm House and Red Oak House (Holt Farm), Inkberrow	Post Medieval
WSM54794	BLD	Perry Fields Farm, Inkberrow	Post Medieval
WSM54801	BLD	Wrens Nest Farm, Inkberrow	Post Medieval
WSM54832	BLD	Shurnock Court, Redditch	Post Medieval
WSM55259	MON	Outbuilding Associated with The Gable House, Abbots Morton	Post Medieval
WSM55272	BLD	Malt House Cottage, Inkberrow	Post Medieval
WSM55300	BLD	Crabtrees (Crabtree Farm), Inkberrow	Post Medieval
WSM59025	LND	Site of Outfarm south east of Morton Low, Abbots Morton	Post Medieval
WSM59236	LND	Outfarm east of Inkberrow School, Inkberrow	Post Medieval
WSM59240	LND	Outfarm north east of Perry Fields Farm, Inkberrow	Post Medieval
WSM59264	LND	Outfarm east of Holberrow Green Farm, Inkberrow	Post Medieval
WSM59265	LND	Site of Outfarm south west of Holberrow Green Farm, Inkberrow	Post Medieval
WSM62432	LND	Manor Farm, Inkberrow	Post Medieval
WSM62433	LND	Morton Hall Farm (Morton Farm), Inkberrow	Post Medieval
WSM62434	LND	Manor Farm (Holberrow Green Farm), Inkberrow	Post Medieval
WSM62435	LND	Holt Farm, Wych Elm House and Red Oak House (Holt Farm), Inkberrow	Post Medieval

Reference No.	Type	Name	Period
WSM62444	LND	Perry Fields Farm, Inkberrow	Post Medieval
WSM62451	LND	Wrens Nest Farm, Inkberrow	Post Medieval
WSM62482	LND	Shurnock Court, Redditch	Post Medieval
WSM00101	MON	Holloway Northeast of Mutton Hall	Post Medieval
WSM62909	LND	The Gable House, Abbots Morton	Post Medieval
WSM62922	LND	Malt House Cottage, Inkberrow	Post Medieval
WSM56930	RIG	Area of Palaeolithic Potential, Bretford Sand and Gravel	Palaeolithic
WSM56935	RIG	Area of Palaeolithic Potential, Glaciofluvial Deposits	Palaeolithic
WSM56936	RIG	Area of Palaeolithic Potential, Head Deposits	Palaeolithic
WSM50381	MON	Ridge and Furrow, Abbots Morton	Medieval
WSM50382	MON	Ridge and Furrow, Abbots Morton	Medieval
WSM50383	MON	Ridge and Furrow, Abbots Morton	Medieval
WSM50384	MON	Ridge and Furrow, Abbots Morton	Medieval
WSM50385	MON	Ridge and Furrow, Abbots Morton	Medieval
WSM50373	BLD	Blackberry Cottage, Abbots Morton	Post Medieval
WSM57469	MON	Former road/track near Abbots Morton, Abbots Morton	Post Medieval
WSM57497	MON	Site of house and garden, Morton Low, Abbots Morton	Post Medieval
WSM57498	MON	Site of house and garden, Morton Low, Abbots Morton	Post Medieval
WSM57499	MON	Ridge and furrow, west of William's Wood, Abbots Morton	Medieval
WSM57500	MON	Ridge and furrow, west of William's Wood, Abbots Morton	Medieval
WSM57501	MON	Site of pond, west of William's Wood, Abbots Morton	Post Medieval

Reference No.	Type	Name	Period
WSM57502	MON	Ridge and furrow west of William's Wood, Abbots Morton	Medieval
WSM57503	MON	Pre-inclosure field boundaries, west of Williams Wood, Abbots Morton	Medieval
WSM57504	MON	Site of Homestead, west of Williams Wood, Abbots Morton	Post Medieval
WSM23740	MON	Cannon Gate Posts, Orchard View, Inkberrow	Post Medieval
WSM58255	BLD	Manor Cottage, Inkberrow	Post Medieval
WSM58256	BLD	The Old Post Office, Inkberrow	Post Medieval
WSM24480	MON	Abbot's Morton Village	Medieval
WSM66786	BLD	War Memorial in Inkberrow First School, Inkberrow	Post Medieval
WSM66785	BLD	War Memorial, Holberrow Green	Modern
WSM24901	MON	Ridge and Furrow, North of Shurnock Court, Redditch	Medieval
WSM24902	MON	Ridge and Furrow West of Shurnock Court, Redditch	Medieval
WSM24903	MON	Ridge and Furrow, North-East of Shurnock Court, Redditch	Medieval
WSM30583	MON	Alignment of Roman Road between Droitwich and Alcester (Margary 56B)	Romano-British
WSM31362	MON	Womens' Land Army Hostel, Sands Road, Inkberrow	Modern
WSM09015	MON	Ridge and Furrow, South of Shurnock Court	Medieval
WSM31391	MON	Rifle Range, east of moat, Inkberrow	Modern
WSM09016	MON	Ridge and Furrow, South-West of Shurnock Court, Redditch	Medieval
WSM31428	MON	Infantry Trenches, south west of Manor Farm, Holberrow Green	Modern
WSM31429	MON	Site of Road Block, east of Manor Farm, Inkberrow	Modern

Reference No.	Type	Name	Period
WSM31430	MON	Searchlight Site, south of Morton Hall Lane, Holberrow Green	Modern
WSM31475	MON	Rifle Position, The Wren's Nest, Inkberrow	Modern
WSM31476	MON	Rifle Position, The Wren's Nest, Inkberrow	Modern
WSM31477	MON	Home Guard Traffic Control Point, Wren's Nest, Inkberrow	Modern
WSM31963	MON	Boundary Bank on eastern side of Slade Wood.	Post Medieval
WSM31964	MON	Boundary bank and ditch in Slade Wood.	Post Medieval
WSM31965	MON	Boundary Bank in Slade Wood	Post Medieval
WSM35468	MON	Conjectural Line of Possible Holloway/Trackway, Inkberrow	Post Medieval
WSM36240	MON	Site of Ridge and Furrow, High Street, Inkberrow	Medieval
WSM41011	MON	Pond, north of moat, Inkberrow Millennium Green, Inkberrow	Medieval
WSM41012	MON	Pond, north of moat, Millennium Green, Inkberrow	Medieval
WSM41013	MON	Leat, Inkberrow Millennium Green, Inkberrow	Medieval
WSM42589	MON	Pond at Morton Hall Farm, Inkberrow	Post Medieval
WSM42598	MON	Pond southwest of Morton Hall Farm, Inkberrow	Post Medieval
WSM42599	MON	Pond South West of Morton under Hill Farm, Inkberrow	Post Medieval
WSM42600	MON	Pond southwest of Morton Hall Farm, Inkberrow	Post Medieval
WSM42602	MON	Pond southeast of Tarbridges, Cookhill	Post Medieval
WSM44490	MON	Enclosure and ring ditch south-southeast of Shurnock Court	Iron Age
WSM69471	MON	Pond east of Crabtrees, Inkberrow	Post Medieval

Reference No.	Type	Name	Period
WSM69424	MON	Pond north of Lench Farm, Inkberrow	Post Medieval
WSM69449	MON	Ponds, east of Lench Farm, Inkberrow	Post Medieval
WSM69477	MON	Pond on line of hollow way, Inkberrow	Post Medieval
WSM69889	MON	Ridge and furrow earthworks west of Rockhill Lane, Feckenham	Medieval
WSM69953	MON	Ridge and furrow earthworks south of The Ridings, Holberrow Green, Inkberrow	Medieval
WSM69954	MON	Ridge and furrow earthworks south of The Ridings, Holberrow Green, Inkberrow	Medieval
WSM69956	MON	Ridge and furrow earthworks east of Morton Hall Farm, Holberrow Green, Inkberrow	Medieval
WSM69957	MON	Ridge and furrow earthworks south of Morton Hall Farm, Holberrow Green, Inkberrow	Medieval
WSM69958	MON	Ridge and furrow earthworks west of Holt Farm, Holberrow Green, Inkberrow	Medieval
WSM69962	MON	Ridge and furrow earthworks at Morton Underhill, Inkberrow	Medieval
WSM69966	MON	Ridge and furrow earthworks south of Priory Piece Farm, Inkberrow	Medieval
WSM69967	MON	Ridge and furrow earthworks east of Perry Fields Farm, Inkberrow	Medieval
WSM69968	MON	Ridge and furrow earthworks east of Perry Fields Farm, Inkberrow	Medieval
WSM69969	MON	Ridge and Furrow, Little Nobury, Inkberrow	Medieval
WSM70039	MON	Ridge and furrow earthworks at Tarbridge Farm, Edgiock, Inkberrow	Medieval

Reference No.	Type	Name	Period
WSM70308	MON	Ridge and furrow in William's Wood, Abbotts Morton	Medieval
WSM70309	MON	Trackway in woodland, Weethly Wood	Post Medieval
WSM71262	MON	Ridge and furrow at Rockhill, Feckenham	Medieval
WSM71265	MON	Ridge and furrow at Rockhill, Feckenham	Medieval
WSM60766	LND	Site of Morton Low, Abbots Morton	Post Medieval
WSM53115	BLD	Morton Wood Farm, Abbots Morton	Post Medieval
WSM71511	MON	Morton Wood Farm, Abbots Morton	Post Medieval
WSM60765	LND	Morton Wood Farm, Abbots Morton	Post Medieval
WSM59268	LND	Field Barn north west of York Cottages, Abbots Morton	Post Medieval
WSM51618	BLD	Field Barn north west of York Cottages, Abbots Morton	Post Medieval
WSM51581	MON	Lower Barn Farm (Lower Barn), Abbots Morton	Post Medieval
WSM59231	LND	Lower Barn Farm (Lower Barn), Abbots Morton	Post Medieval
WSM51582	MON	Site of Morton Spirt Barn, Abbots Morton	Post Medieval
WSM59232	LND	Site of Morton Spirt Barn, Abbots Morton	Post Medieval
WSM51621	MON	Site of Field Barn east of Aboots Morton, Abbots Morton	Post Medieval
WSM59271	LND	Site of Field Barn east of Aboots Morton, Abbots Morton	Post Medieval
WSM51622	MON	Site of Field Barn north of Aboots Morton, Abbots Morton	Post Medieval
WSM59272	LND	Site of Field Barn north of Aboots Morton, Abbots Morton	Post Medieval
WSM71917	MON	Site of Moat at Priory Farm, Inkberrow	Medieval

Reference No.	Type	Name	Period
WSM72072	LND	Site of Deer Park, Knighton	Medieval
WSM62445	LND	Little Nobury, Inkberrow	Post Medieval
WSM54795	BLD	Cattle Shelter and Pigsty, Little Nobury, Inkberrow	Post Medieval
WSM62450	LND	Priory Piece Farm, Inkberrow	Post Medieval
WSM54800	BLD	Traditional Farm Building, Priory Piece Farm, Inkberrow	Post Medieval
WSM62950	LND	Crabtrees (Crabtree Farm), Inkberrow	Post Medieval
WSM62452	LND	Lench Farm (Knowl Fields Farm), Inkberrow	Post Medieval
WSM54802	BLD	Threshing Barn, Lench Farm (Knowl Fields Farm), Inkberrow	Post Medieval
WSM59274	LND	Lords Hill Farm (Outfarm), Inkberrow	Post Medieval
WSM51624	BLD	(?) Traditional Farm Building, Lords Hill Farm (Outfarm), Inkberrow	Post Medieval
WSM80445	MON	Ditch, Land South of Alcester Road, Feckenham	Post Medieval
WSM80447	MON	Gully at Land South of Alcester Road, Feckenham	Post Medieval
WSM82594	LND	Woodleigh, Low Road, Church Lench	Post Medieval

Appendix 14 Population and Human Health

A14.1 Application of the methodology

Introduction

A14.1.1. This Appendix is a supplement to the Human Health scoping assessment, provided in Chapter 14 of the main report.

A14.1.2. This document contains more detailed information relating to the application of certain steps of the following methodology, which is presented in the main report and repeated here for context:

1) Confirm the study area – the Study Area relevant to human health, based on what is known at this scoping stage, is identified and summarised.
2) Confirm/refine the human health receptors – the receptors that have the potential to be affected by the Scheme (both positively and negatively) are identified. This comprises the wider population of the relevant Study Area, supplemented by the identification (using health profiling and demographic data) of sensitive/vulnerable groups that could be more susceptible to effects arising from impacts of the Scheme.
3) Identify the sensitivity of receptors – the sensitivity of the receptors to changes to the wider health determinants will be described, based on the criteria set out in the latest ISEP[27] guidance[28].
4) Identify the wider determinants of health – the wider determinants of health (i.e. a diverse range of social, economic and environmental factors that influence people's mental and physical health) considered relevant to the Scheme will be identified and described.
5) Determine the impact of the Scheme on health determinants – taking account of what is known about how the Scheme will change the baseline health determinants, assign impact magnitude based on the criteria set out in ISEP guidance[31]. Assessments from other environmental chapters within the ES will inform the assessment.
6) Identify significant effects – significant effects are identified by assessing the predicted interactions between the identified receptors and impacts. Where interactions exist, an effect will occur and its

[27] Formerly IEMA
[28] ISEP (2022) IEMA Guide: Determining Significance for Human Health in Environmental Impact Assessment. Available at:

significance is determined by combining the receptor sensitivity with the impact magnitude to provide an overall significance rating.

A14.1.3. The methodology information is drawn from the November 2022 ISEP guidance[31] that will apply throughout the EIA process, covering sensitivity and magnitude of impact.

A14.1.4. It also provides supplementary information relating to the rationale for scoping further assessment work, disaggregated by identified human health receptors.

Methodology supporting information

Identifying the Sensitive Receptors

A14.1.5. The baseline data gathered is used to identify specific groups, including the presence of vulnerable groups who are more susceptible to change, and their sensitivity to impacts predicted to arise from the Scheme. The sensitivity of an individual or population/population sub-group varies depending on their ability to withstand exposures and the range of associated impacts or effects, and the physiological (e.g. co-morbidities or disabilities) and socio-economic factors that increase their susceptibility to the exposure. In broad terms, the population located within or closest to the Scheme would be most vulnerable or susceptible to changes occurring as a result of the activities associated with the Scheme. Although some of this population may not be 'vulnerable' in human health, social or other terms, they are likely to be more sensitive to any changes resulting from the Scheme than the wider population as a whole.

A14.1.6. The population sub-groups identified as being more vulnerable or susceptible to impacts arising from the Scheme depends on the characteristics of the local population and the nature and proximity of the local population to the works and activities associated with the Scheme. The baseline study in Section 14.3 of the main report has identified the following vulnerable or sensitive population sub-groups as being present within the Study Area. These vulnerable groups, along with the wider group, will form the receptors for assessment together with a small number of geographically distinct receptor groups that have been included on the basis of their proximity to the Scheme.

A14.1.7. The vulnerable groups listed below are not mutually exclusive e.g. an individual may fit into one or more of these vulnerable group categories:

- **Age**: Families with children and adolescents (e.g. pregnant women, babies, children, and adolescents); and elderly persons.

- **People who are physically or mentally disadvantaged** (e.g. elderly people, people with physical and/or disabilities, people with other health problems or impairments)
- **People who are materially disadvantaged** (e.g. people on low income, people without access to a car, unemployed people).

Defining Sensitivity

A14.1.8. The potential impacts and effects (both positive and negative) of the Scheme on the physical, mental health, and social wellbeing of the local population depends on the sensitivity of receptors to changes to the wider health determinants impacted by the Scheme. The sensitivity of receptors depends on whether the receptor is likely to be directly or indirectly affected, and whether the receptors are well placed or otherwise to deal with these changes. For example, whilst the local health circumstance across the Study Area may be generally good, there may be groups of individuals within that defined population who are particularly sensitive and could experience disproportionate or differential effects. Where inequalities between areas or populations are wide (or at risk of widening), this indicates greater sensitivity.

A14.1.9. The ISEP guidance[31] includes indicative criteria for assigning health sensitivity, as reproduced in Table A 14-1 below. These have been used to assign sensitivity to the receptors at this Scoping stage, to support the receipt of comments within the Scoping Opinion and guide a more proportionate identification of impacts to be scoped into assessment.

Table A 14-1 Sensitivity of human health receptors, from IEMA (ISEP) Guidance

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the Scheme); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and/or people with a very low capacity to adapt
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt
Very Low	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.

Magnitude of Impact

A14.1.10. Identifying and assessing the magnitude of the potential impacts of the Scheme (both positive and negative) depends on the characteristics of the impact on the wider health determinants (for example, from changes to air quality).

A14.1.11. Where appropriate, the assessment is to be informed by the findings from the other technical chapters of the EIA Scoping Report (e.g. Air quality, Noise and Vibration, Landscape and Visual Impacts) and qualitatively considers, using professional judgement, how these findings can be expected to result in changes to human health, including the distribution of effects within the affected population.

A14.1.12. Some of the wider health determinants chosen for assessment such as 'Access to community, recreational and educational facilities' (also drawing on the relevant land use baseline), and 'Employment and Income', for example, are not covered by the other technical assessments. Therefore, professional judgement, industry best practice, and experience from the assessment of similar projects is used to assess the magnitude of impacts leading to resultant effects arising from the Scheme.

A14.1.13. Using the criteria outlined within the ISEP guidance[31], the magnitude of impact for any changes to the wider health determinants on sensitive receptors is assessed as High/Medium/Low/Negligible.

A14.1.14. For consistency, the criteria will match, as closely as possible, that used in the technical assessments of the other environmental topics assessed in this EIA Scoping Report – bearing in mind that some of those assessments will identify aspects such as changes in concentrations of pollutants, and some will be based on quantitative outputs. No health effects are directly reported in the other chapters, although reference may be made in relation to health-based standards (i.e. legislative requirements). Therefore, this Human Health chapter partly focuses on a qualitative assessment of the health consequences of the identified changes reported in each of the technical chapters.

A14.1.15. IEMA guidance provides descriptions for categorising the magnitude of impact (change) arising from a given project, which is referred to in Chapter 18 of the EIA Scoping Report as the impact magnitude. The sections of the guidance relevant to the receptor types present in the Human Health Study Area are included in Table A 14-2 below.

Table A 14-2 Magnitude of impact criteria for Human Health topic, from IEMA (ISEP) Guidance

Category/ Level	Indicative criteria
High	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/injury outcomes; majority of population affected; permanent change; substantial service quality implications
Medium	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications
Low	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications
Negligible	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.

Significance of Effects

A14.1.16. The significance of effects is determined by combining the sensitivity of the receptors with the magnitude of impact. Within the assessment, the significance of effects will be measured according to the Significance of Effect Matrix (Table 4.1 of the IEMA (ISEP) guidance), using professional judgement, best practice, and knowledge from the assessment of similar development types.

A14.1.17. Where two potential values of significance of effect are identified within the significance of effect matrix, professional judgement is used to assign the significance, based on understanding of details of both the magnitude of impact and sensitivity of the receptor. For the purposes of this assessment, major and moderate human health effects are considered 'significant', and minor and negligible effects are considered 'not significant'.

A14.1.18. The IEMA (ISEP) guidance emphasises the importance of adopting a population health approach when determining significance (para. 1.9), and notes that the "assessment of EIA significance at the level of individuals is not proportionate (paragraph 5.2)". This means that "the role of determining EIA levels of effect on health (including identifying significant effects) is therefore not to set a threshold of 'no harm' from development, but to show where, at a population or sub-population level, the harm should weigh strongly in the balance alongside the development's benefits for health and other outcomes."

A14.1.19. The ISEP guidance[31] offers important criteria to support the application of a proportionate approach when assigning significance, utilising professional judgement, as described in Table 7.4 of the ISEP guidance[31].

A14.1.20. The following considerations will influence the assignment of significance, as advocated by the IEMA guidance:

- Whether there would be a high level of exposure or widespread impact.
- Whether the population exposed to an impact is particularly sensitive due to pre-existing vulnerabilities or inequalities.
- The duration of effects and whether they would be reversible.
- Whether the impact is likely to contribute to or affect the deliverability of health policies.
- Whether the impact is likely to achieve health priorities.
- The level of acceptability, including whether statutory thresholds for pollutants would be exceeded and/or whether the issue is a public health priority.
- The severity of the related health outcomes (i.e. whether it is related to a change in mortality or morbidity).

- The strength of evidence for an association between a change in a determinant and health outcomes.
- Whether a large proportion of the population would likely be affected.
- Whether the impact is likely to increase or tackle health inequalities at a population level.

A14.1.21. For the purposes of the assessment, it will be important to clarify the meaning of short, medium and long term effects, taking account of the delivery programme for the Scheme. This will then be applied at the next stage of the EIA process.

A14.1.22. ISEP supplies a matrix for determining significance of effects on human health receptors, which is a product of cross-referencing sensitivity to magnitude of impact and then applying professional judgement. This will be used in the Human Health assessment, as described in Chapter 14 of the EIA Scoping Report and is reproduced below. It is followed by more detailed guidance regarding how to draw conclusions regarding the overall significance of an effect on human health. They are reproduced in Table A 14-3 and Table A 14-4 below.

Table A 14-3 Significance of effects matrix for Human Health, from IEMA (ISEP) Guidance

		Sensitivity to change			
		High	**Medium**	**Low**	**Very Low**
Magnitude of impact	**High**	Major	Major/ Moderate	Moderate/ Minor	Minor
	Medium	Major/ Moderate	Moderate	Minor	Minor/ Negligible
	Low	Moderate/ Minor	Minor	Minor	Negligible
	Negligible	Minor/ Negligible	Minor/ Negligible	Negligible	Negligible

Table A 14-4 Significance conclusion and reasoning related to public health, from IEMA (ISEP) Guidance

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
Major (significant)	The narrative explains that this is significant for public health because (select as appropriate): Changes, due to the Scheme, have a substantial effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, that show consensus on the importance of the effect. Change, due to the Scheme, could result in a regulatory threshold or statutory standard being crossed (if applicable). There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the Scheme and changes to health outcomes. In addition, health priorities for the relevant Study Area are of specific relevance to the determinant of health or population group affected by the Scheme.
Moderate (significant)	The narrative explains that this is significant for public health because (select as appropriate): Changes, due to the Scheme, have an influential effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show mixed views. Change, due to the Scheme, could result in a regulatory threshold or statutory standard being approached (if applicable). There is likely to be a small change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a clear relationship between changes that would result from the Scheme and changes to health outcomes. In addition, health priorities for the relevant Study Area are of general relevance to the determinant of health or population group affected by the Scheme.
Minor (not significant)	The narrative explains that this is not significant for public health because (select as appropriate): Changes, due to the Scheme, have a marginal effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and/or that no relevant consultation themes emerge among stakeholders.

Category / Level	Indicative criteria (judgement based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	Change, due to the Scheme, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable). There is likely to be a slight change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is only a suggestive relationship between changes that would result from the Scheme and changes to health outcomes. In addition, health priorities for the relevant Study Area are of low relevance to the determinant of health or population group affected by the Scheme.
Negligible (not significant)	The narrative explains that this is not significant for public health because (select as appropriate): Changes, due to the Scheme, are not related to the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size or lack of relevant policy, and as informed by the Scheme having no responses on this issue among stakeholders. Change, due to the Scheme, would not affect a regulatory threshold, statutory standard or guideline (if applicable). There is likely to be a very limited change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is an unsupported relationship between changes that would result from the Scheme and changes to health outcomes. In addition, health priorities for the relevant Study Area are not relevant to the determinant of health or population group affected by the Scheme.

Scoping supporting information

A14.1.23. At the scoping stage, receptor sensitivity allows distinctions to be drawn between the human health receptors. In general terms, lower sensitivity receptor groups are more likely to have the capacity to adapt to changes to determinants of human health and, in turn, are less likely to experience significant effects due to the Scheme.

A14.1.24. Where the baseline analysis and Scheme information provides confidence that impact magnitudes are unlikely to combine with receptor sensitivity to lead to significant effects, further assessment of impacts on that receptor are scoped out. Table A 14-5 builds on this

rationale and sets out information that supports the scoping conclusions presented in Chapter 14 of the Scoping Report.

Table A 14-5 Information supporting scoping conclusions

Impact	Determinant of human health	Rationale
Construction		
Introduction of construction traffic movements (across the Study Area network)	Access to community, recreational and educational facilities	Construction traffic movements are expected along the A46, which is a key access route for the study area. Construction traffic is expected to use local B and potentially C roads in order to access Development Parcels. Increased traffic and increased proportions of HDVs within traffic flows could reduce journey time reliability, including for daily functional journeys (e.g. to school and regular community activities). Construction traffic on the network also introduces an elevated risk to the safety, comfort and directness of walking and cycling routes used to access nearby community, recreational and educational facilities, with sensitive groups more likely to be affected. Disruption to regular journeys can deter regular participation; and where journeys are necessary, disruption can elevate stress. **Impacts on this determinant of health are scoped in for all receptors.**
	Access to open space and green space	The wider population of the study area has access to a relatively broad range of open spaces and green spaces and is therefore better equipped to adapt and less sensitive to changes to traffic composition and flows due to the Scheme. **Impacts on this determinant of health for the wider population are scoped out.** Construction traffic may make walking and cycling routes to green/open spaces less safe or attractive, with disproportionate effects more likely for sensitive receptors such as children, older adults, disabled people and lower-income groups. These groups are more likely to be reliant on non-car modes and have fewer options to adapt to changes in access than the wider population. Disruption to access routes can deter regular use. **Impacts on this determinant of health are scoped in for all sensitive receptors and residential sub-populations.**
	Access to healthcare facilities	The wider population of the study area has a broader range of route options for accessing healthcare facilities, which tend to be clustered in larger settlements. This makes this receptor group better equipped to adapt and less sensitive to changes to traffic composition and flows

Impact	Determinant of human health	Rationale
		due to the Scheme. **Impacts on this determinant of health for the wider population are scoped out.** Construction traffic using the A46 and local road network may temporarily reduce the safety and usability of key rural routes relied upon to access healthcare facilities. Children, older adults and people with mobility or cognitive impairments are more sensitive to these changes, partly because they are likely to have a higher reliance on healthcare, but also because they may rely more heavily on non-car modes to access healthcare. Disruption or delay to journeys may be a deterrent and / or cause of stress. **Impacts on this determinant of health are scoped in for all sensitive receptors and residential sub-populations**.
	Characteristics of the transport network	Construction traffic movements are expected along the A46, which is a key access route for the study area. Construction traffic is expected to use local B and potentially C roads in order to access Development Parcels. Increased traffic and increased proportions of HDVs within traffic flows could reduce journey time reliability, as will traffic management measures expected to be included within the CTMP. WCH routes may also be altered during the construction phase, with some closures and temporary diversions likely. Changes in characteristics of the transport network in the study area could lead to alterations in established routes, as users seek alternative routes and traffic becomes displaced over a wider area. The presence of construction traffic will also change the safety and usability of local rural routes, with potentially disproportionate effects on children, older adults, disabled people, and those dependent on walking or limited bus services. Residents closest to haul routes are most directly affected. **Impacts of this determinant of health are scoped in for all receptors.**
	Transport user safety	Construction traffic movements are expected along the A46, which is a key access route for the study area with collision data indicating elevated risks at existing junctions. Construction traffic is expected to use local B and potentially C roads in order to access Development Parcels, which are not designed for regular HDV usage or high flows. Increased traffic and increased proportions of HDVs within traffic flows, particularly along less suitable routes and at

Impact	Determinant of human health	Rationale
		construction compounds, will further elevate collision risk. Children are particularly sensitive to changes as they lack the experience and judgement displayed by adults when moving around in traffic and public spaces, both on foot and cycling; however, elevated risk will affect all receptors. **Impacts of this determinant of health are scoped in for all receptors.**
Changes in amenity (in-combination)	Access to green space and open space	Access in this context relates to the ability to continue to use and enjoy open and green spaces and is connected to their baseline qualities that support recreation and wellbeing, such as rural context and outlook, and, subjectively, tranquillity. Construction related noise, visual disturbance, traffic, changes to WCH routes and general transition to construction sites are likely to combine to lead to reductions in actual and/or perceived amenity. This could deter usage and reduce the value of existing open and green spaces for users. Sensitive groups and the closest residents may experience higher sensitivity; however, changes have the potential to affect all receptors. **Impacts to this determinant of health are scoped in for all receptors.**
	Air Quality	With the application of appropriate dust control measures and other air quality controls through the CEMP, discernible changes in air quality affecting amenity are likely to be very limited in extent. **Impacts to this determinant of health are scoped out for the wider population, and materially disadvantaged sub-populations.** Residential sub-populations, children, the elderly and those who are mentally or physically disadvantaged have higher sensitivity to small changes in air quality. This may be due to age related susceptibility, pre-existing medical conditions and / or proximity to Site where there is the greatest risk of cumulative detriment due to localised changes and daily exposure. **Impacts to this determinant of health are scoped in for children, the elderly, mentally or physically disadvantaged and residential sub-population receptors.**
	Noise pollution and vibration	With the application of appropriate noise and vibration control measures through the CEMP, discernible changes in noise and vibration affecting amenity are likely to be limited in extent. **Impacts to this determinant of health are scoped out for the wider population, and materially disadvantaged sub-populations.**

Impact	Determinant of human health	Rationale
		Residential sub-populations, children, the elderly and those who are mentally or physically disadvantaged have higher sensitivity to small changes in the noise climate. This may be due to age related susceptibility, pre-existing medical conditions and / or proximity to Site where there is the greatest risk of cumulative detriment due to localised changes and daily exposure. **Impacts to this determinant of health are scoped in for children, the elderly, mentally or physically disadvantaged and residential sub-population receptors.**
	Landscape amenity	The wider population will most commonly experience landscape changes from the Scheme on a transient basis, while passing close to the Site. Such impacts are unlikely to be experienced on a differential basis by sensitive sub-populations associated with material disadvantage. **Impacts to this determinant of health are scoped out for the wider population, and materially disadvantaged sub-populations.** Residential sub-populations, children, the elderly and those who are mentally or physically disadvantaged have higher sensitivity to changes in landscape amenity. This may be due to a lower capacity to adapt to change, associated with age or pre-existing medical conditions. For residential sub-populations this is linked to proximity to Site and relatively greater prominence of the works as evolving features in the landscape, where there is the greatest risk of cumulative detriment due to localised changes and daily exposure. **Impacts to this determinant of health are scoped in for children, the elderly, mentally or physically disadvantaged and residential sub-population receptors.**
	Employment and income	In-combination changes in amenity have an indirect pathway to employment and income for sectors that rely on existing landscape characteristics, including agriculture and tourism. Taking a precautionary approach, there is potential for changes in amenity to reduce visitor spend and tourism appeal and, whether perceived or actual, this could contribute to stress and negative wellbeing outcomes for business owners and employees in these sectors. **Impacts to this determinant of health are scoped in for the wider population.** No notable differential effects for sensitive receptors or residential sub-populations are anticipated. **Impacts to this determinant of health are scoped out for all sub-populations.**

Impact	Determinant of human health	Rationale
Uncertainty	Employment and income	Major construction activities typically lead to speculation about how existing conditions will change. Uncertainty over works locations, durations, types and extent of disruptive impacts and how this might influence customers and general business activities can manifest as stress and anxiety, leading to negative wellbeing outcomes. Uncertainty can also impact business planning and may reduce job security. **Impacts to this determinant of health are scoped in for the wider population.** No notable differential effects for sensitive receptors or residential sub-populations are anticipated. **Impacts to this determinant of health are scoped out for all sub-populations.**
	Landscape amenity	The wider population will most commonly experience landscape changes from the Scheme on a transient basis, while passing close to the Site. The likelihood of uncertainty leading directly to negative wellbeing outcomes for the wider population is considered low. Such impacts are also unlikely to be experienced on a differential basis by sensitive sub-populations associated with material disadvantage. **Impacts to this determinant of health are scoped out for the wider population, and materially disadvantaged sub-populations.** Residential sub-populations, children, the elderly and those who are mentally or physically disadvantaged have higher sensitivity to changes in landscape amenity. This may be due to a lower capacity to adapt to change, associated with age or pre-existing medical conditions. For residential sub-populations this is linked to proximity to Site and relatively greater levels of concern about the prominence or transformational potential of the works as evolving features in the landscape, where there is also the greatest risk of cumulative detriment due to daily exposure over the construction phase. **Impacts to this determinant of health are scoped in for children, the elderly, mentally or physically disadvantaged and residential sub-population receptors.**
Land take	Access to green space and open space	Land take impacts have the potential to lead to a range of changes in determinants of human health, such as reductions in open space or green space, changes to WCH routes, temporary loss of land in employment/agricultural use, visible changes in the landscape and increased risk

Impact	Determinant of human health	Rationale
	Characteristics of the transport network	of soil loss or contaminant mobilisation affecting land and water. These impacts will be limited in their extent, occurring within the Site and subject to controls through provisions within the CEMP. The physical extent of temporary and permanent land take reduces the potential for receptors beyond the residential sub-populations to experience likely significant effects. **Impacts to this determinant of health are scoped in for residential sub-populations.** Indirect impacts arising from land take changes that could lead to changes to determinants of human health away from the Site are addressed through other pathways scoped into the assessment. **Impacts to these determinants of health are scoped out for the wider population and sensitive sub-populations.**
	Pollution of soils and water	
	Landscape amenity	
	Employment and income	
Changes in economic conditions	Employment and income	Changes in economic conditions in this context considers strategic transport impacts and opportunity to access employment and secure income. The connection to health and wellbeing outcomes is related to the role of employment and secure income in supporting a sense of self-worth, coupled with the ability to meet essential needs such as housing and nutrition. Impacts may be adverse (e.g. disruptions to access and customer base for existing employment) or beneficial (e.g. the creation of new job opportunities linked to construction activities). **Impacts to this determinant of health is scoped in for the wider population.** No notable differential effects for sensitive receptors or residential sub-populations are anticipated. **Impacts to this determinant of health are scoped out for all sub-populations.**
Changes in WCH access (across the Study Area)	Access to community, recreational and educational facilities	WCH network use for regular and purposeful trips will be typically associated with relatively short distance journeys between homes and local destinations. Consequently, impacts to this determinant of health are unlikely to lead to significant effects for the wider population, nor lead to differential effects for sensitive sub-populations within the wider population. **Impacts to this determinant of health are scoped out for the wider population and sensitive receptors within the wider population.** Close to the Site, the likelihood of changes in the WCH network leading to disruption to local trips is relatively greater. Disruption to journeys may deter attendance at some community

Impact	Determinant of human health	Rationale
		assets and, where they impact frequent journeys (e.g. walking to school or work), they could lead to stress and negative wellbeing outcomes. **Impacts to this determinant of health are scoped in for the residential sub-populations.**
	Access to green space and open space	Access in this context relates to the ability to use the WCH network as an element of the green space and open space available for receptors to enjoy, recognising its contribution to supporting recreation and mental wellbeing. The WCH network does not include promoted longer distance trails and is assumed to be of greatest value to local residents, recognising that the wider population has access to a broader range of WCH options and has relatively greater adaptability and lower sensitivity to change. **Impacts to this determinant of health are scoped out for the wider population and sensitive receptors within the wider population**. Close to the Site, the likelihood of changes in the WCH network leading to disruption to local recreational use is relatively greater. Disruption to routes and the user experience may deter use, which in turn could lead to negative physical health and wellbeing outcomes. **Impacts to this determinant of health are scoped in for the residential sub-populations.**
	Transport user safety	Transport user safety considers both modal conflict and hazards, as well as the experience of safety while using WCH routes affected by the Scheme. The WCH network does not include promoted longer distance trails and is assumed to be of greatest value to local residents, recognising that the wider population has access to a broader range of WCH options and has relatively greater adaptability and lower sensitivity to change. **Impacts to this determinant of health are scoped out for the wider population and sensitive receptors within the wider population**. Close to the Site, the likelihood of changes in the WCH network leading to increased modal conflict and changes to perceptions of user safety is relatively greater. Disruption to route safety (perceived and actual) and the user experience may deter use, which in turn could lead to negative physical health and wellbeing outcomes. **Impacts to this determinant of health are scoped in for the residential sub-populations.**

Impact Operation	Determinant of human health	Rationale
Evolving changes in amenity (in combination)	Access to green space and open space	Access in this context relates to the ability to continue to use and enjoy open and green spaces and is connected to their baseline qualities that support recreation and wellbeing, such as rural context and outlook, and, subjectively, tranquillity. Once operational, the Scheme will be a new and incongruent feature in the agricultural and rural setting that may be perceived as intrusive from a wide range of vistas and there may be permanent changes to WCH routes connecting green spaces and open spaces, affecting access. These changes have the potential to combine to lead to reductions in actual and/or perceived amenity. This could deter usage and reduce the value of existing open and green spaces for users. Sensitive groups and the closest residents may experience higher sensitivity; however, changes have the potential to affect all receptors. **Impacts to this determinant of health are scoped in for all receptors.**
	Air quality	With a combination of design measures and requirements to meet any imposed conditions, discernible changes in air quality affecting amenity are likely to be very limited in extent. There are not anticipated to be any differential effects for sensitive sub-populations. **Impacts to this determinant of health are scoped out for the wider population, and sensitive sub-populations.** Residential sub-populations have higher sensitivity to small changes in air quality due to proximity to Site where there is the greatest risk of cumulative detriment due to localised sources and daily exposure. **Impacts to this determinant of health are scoped in for the residential sub-population receptors.**
	Noise pollution and vibration	With the application of appropriate noise and vibration control measures in operation through design and to meet any imposed conditions, discernible changes in noise and vibration affecting amenity are likely to be limited in extent. There are not anticipated to be any differential effects for sensitive sub-populations. **Impacts to this determinant of health are scoped out for the wider population, and sensitive sub-populations.**

Impact	Determinant of human health	Rationale
		Residential sub-populations have higher sensitivity to changes in the noise climate. This is due to proximity to Site where there is the greatest risk of cumulative detriment due to localised changes to noise sources and daily exposure. **Impacts to this determinant of health are scoped in for residential sub-population receptors.**
	Landscape amenity	The wider population will most commonly experience landscape changes from the Scheme on a transient basis, while passing close to the Site. Such impacts are unlikely to be experienced on a differential basis by sensitive sub-populations associated with material disadvantage. **Impacts to this determinant of health are scoped out for the wider population, and materially disadvantaged sub-populations.** Residential sub-populations, children, the elderly and those who are mentally or physically disadvantaged have higher sensitivity to changes in landscape amenity. This may be due to a lower capacity to adapt to change, associated with age or pre-existing medical conditions. For residential sub-populations this is linked to proximity to Site and relatively greater prominence of the Scheme as a new and incongruent feature in the landscape, where there is the greatest risk of detriment due to localised changes and daily exposure. **Impacts to this determinant of health are scoped in for children, the elderly, mentally or physically disadvantaged and residential sub-population receptors.**
Evolving changes in economic conditions	Employment and income	Changes in economic conditions in this context considers strategic transport impacts and opportunity to access employment and secure income. The connection to health and wellbeing outcomes is related to the role of employment and secure income in supporting a sense of self-worth, coupled with the ability to meet essential needs such as housing and nutrition. Impacts may be adverse (e.g. disruptions to access and customer base for existing employment) or beneficial (e.g. the creation of new job opportunities linked to the Scheme and it supply chain). **Impacts to this determinant of health is scoped in for the wider population.** No notable differential effects for sensitive receptors or residential sub-populations are anticipated. **Impacts to this determinant of health are scoped out for all sub-populations.**

Impact	Determinant of human health	Rationale
Permanent changes to the WCH network	Access to community, recreational and educational facilities	WCH network use for regular and purposeful trips will be typically associated with relatively short distance journeys between homes and local destinations. Consequently, impacts to this determinant of health are unlikely to lead to significant effects for the wider population, nor lead to differential effects for sensitive sub-populations within the wider population. **Impacts to this determinant of health are scoped out for the wider population and sensitive receptors within the wider population.** Close to the Site, the likelihood of changes in the WCH network permanently altering local trips is relatively greater. Substantial changes to journeys, particularly if length is increased, may deter attendance at some community assets and, where they impact frequent journeys (e.g. walking to school or work), they could lead to changes in travel behaviours and negative wellbeing outcomes. **Impacts to this determinant of health are scoped in for the residential sub-populations.**
	Access to green space and open space	Access in this context relates to the ability to use the WCH network as an element of the green space and open space available for receptors to enjoy, recognising its contribution to supporting recreation and mental wellbeing. The WCH network does not include promoted longer distance trails and is assumed to be of greatest value to local residents, recognising that the wider population has access to a broader range of WCH options and has relatively greater adaptability and lower sensitivity to change. **Impacts to this determinant of health are scoped out for the wider population and sensitive receptors within the wider population**. Close to the Site, the likelihood of changes in the WCH network leading to changes to local recreational use is relatively greater. Permanent changes to routes, comprising alterations to routeing, length and the visual environment through which they pass may deter use, which in turn could lead to negative physical health and wellbeing outcomes. **Impacts to this determinant of health are scoped in for the residential sub-populations.**
	Transport user safety	Transport user safety considers both modal conflict and hazards, as well as the experience of safety while using WCH routes affected by the Scheme. The WCH network does not include promoted longer distance trails and is assumed to be of greatest value to local residents,

Impact	Determinant of human health	Rationale
		recognising that the wider population has access to a broader range of WCH options and has relatively greater adaptability and lower sensitivity to change. **Impacts to this determinant of health are scoped out for the wider population and sensitive receptors within the wider population**. Close to the Site, the likelihood of changes in the WCH network leading to new or amended modal conflict points (e.g. changed road crossing location) and changes to perceptions of user safety is relatively greater. Disruption to route safety (perceived and actual) and the user experience may deter use, which in turn could lead to negative physical health and wellbeing outcomes. **Impacts to this determinant of health are scoped in for the residential sub-populations.**

Appendix 15 Glint and Glare

A15.1 Glint and Glare Receptor Scoping and Methodology

Introduction

Overview

A15.1.1. Pager Power has been appointed to assess the potential effects of glint and glare from a ground-mounted solar photovoltaic development located in Warwickshire and Worcestershire.

A15.1.2. This receptor scoping and methodology document shows the identified receptors and the methodology which will be used to assess them in the glint and glare assessment, as the basis for the ES chapter. The included receptors relate to road safety, residential amenity, and aviation activity associated with Bidford Airfield, Home Farm Fields Airfield, Ebrington Airfield, and Arden Heath Farm Airfield. Cumulative impacts will also be considered where relevant.

A15.1.3. This report contains the following:

- Solar development details;
- Explanation of glint and glare;
- Overview of relevant guidance and studies;
- Assessment methodology;
- Identification of receptors;
- Glint and glare assessment for identified receptors;
- Results discussion;
- Overall conclusions and recommendations.

Pager Power's Experience

A15.1.4. Pager Power has undertaken over 1,800 Glint and Glare assessments in the UK and internationally. The studies have included assessment of civil and military aerodromes, railway infrastructure and other ground-based receptors including roads and dwellings.

Glint and Glare Definition

A15.1.5. The definition of glint and glare is as follows:

Glint – a momentary flash of bright light typically received by moving receptors or from moving reflectors;

Glare – a continuous source of bright light typically received by static receptors or from large reflective surfaces.

A15.1.6. These definitions are aligned with those presented within the National Policy Statement for Renewable Energy Infrastructure (EN-3)[29]. The term 'solar reflection' is used in this report to refer to both reflection types.

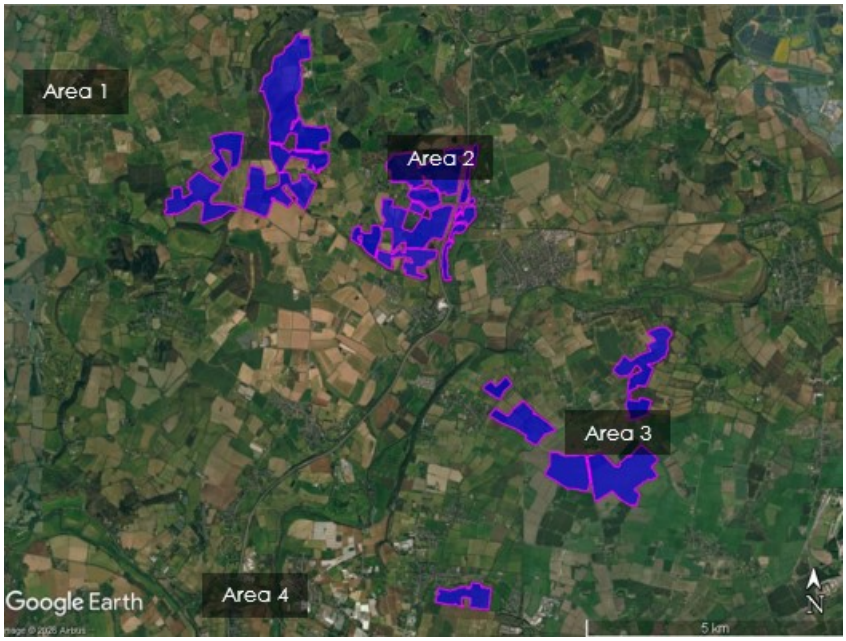
Solar Development Details

Proposed Development Site Layout

A15.1.7. The solar PV development areas are shown in Insert A 15-1 below, overlaid upon aerial imagery. The overall site is divided into four "Areas", which are labelled in Insert A 15-1 below, reference is made to these areas where applicable when describing receptors relative to the proposed development.

A15.1.8. Part of Area 1, which corresponds to Site 1(c) referenced in the wider Scoping Report, has been excluded from the solar PV development areas assessed with the expectation that the BESS and 400kV substation will be located here.

A15.1.9. For the other Sites, this assessment has been undertaken on the assumption that solar PV panels could be located on any part of any Site, whereas in reality this will not be the case. As the design of the Scheme progresses, the assessment will be revisited if necessary.



Insert A 15-1 Development areas, aerial image

[29] Department for Energy Security and Net Zero (2026) National Policy Statement for renewable energy infrastructure (EN-3), 2025. Available at: https://www.gov.uk/government/publications/national-policy-statement-for-renewable-energy-infrastructure-en-3-2025

Mounting System

A15.1.10. At the time of writing a panel mounting system (fixed south-facing or single axis tracking) has not been selected. Both scenarios have been considered within this report to capture all potential receptors.

Glint and Glare Assessment Methodology

Overview

A15.1.11. Annexes A and B present a review of relevant guidance and independent studies with regard to glint and glare issues from solar panels and glass. The overall conclusions from the available studies are as follows:

- Specular reflections of the Sun from solar panels and glass are possible;
- The measured intensity of a reflection from solar panels can vary from 2% to 30% depending on the angle of incidence;
- Published guidance shows that the intensity of solar reflections from solar panels are equal to or less than those from still water and similar to those from glass. It also shows that reflections from solar panels are significantly less intense than many other reflective surfaces, which are common in an outdoor environment, including steel[30].

Background

A15.1.12. Details of the Sun's movements and solar reflections are presented in Annex C.

Methodology

A15.1.13. Information regarding the methodology of Pager Power's and Sandia National Laboratories' methodology is presented below and on the following page.

Pager Power's Methodology

A15.1.14. The glint and glare assessment methodology has been derived from the information provided to Pager Power through consultation with stakeholders and by reviewing the available guidance, studies and Pager Power's practical experience. The methodology for this glint and glare assessment is as follows:

- Identify receptors in the area surrounding the proposed development;

[30] SunPower (2009) SunPower Solar Module Glare and Reflectance. Available at: https://www.rushcliffe.gov.uk/media/jebott3v/cd-1287.pdf

- Consider direct solar reflections from the proposed development towards the identified receptors by undertaking geometric calculations;
- Consider the visibility of the reflectors from the receptor's location. If the reflectors are not visible from the receptor then no reflection can occur;
- Based on the results of the geometric calculations, determine whether a reflection can occur, and if so, at what time it will occur;
- Consider the solar reflection intensity, if appropriate;
- Consider both the solar reflection from the proposed development and the location of the direct sunlight with respect to the receptor's position;
- Consider the solar reflection with respect to the published studies and guidance;
- Determine whether a significant detrimental impact is expected in line with Annex D.

A15.1.15. Within the Pager Power model, the reflector area is defined, as well as the relevant receptor locations. The result is a chart that states whether a reflection can occur, the duration and the panels that can produce the solar reflection towards the receptor.

Sandia National Laboratories' Methodology

A15.1.16. Sandia National Laboratories developed the Solar Glare Hazard Analysis Tool (SGHAT) which is no longer freely available however it is now developed by Forge Solar. Pager Power uses this model where required for aviation receptors. Whilst strictly applicable in the USA and to solar photovoltaic developments only, the methodology is widely used by aviation stakeholders internationally.

Assessment Methodology and Limitations

A15.1.17. Further technical details regarding the methodology of the geometric calculations and limitations are presented in Annexes E and F.

Identification of Receptors

Overview

A15.1.18. This section presents the receptors proposed for assessment within the glint and glare impact assessment. Receptors are subject to change from the time writing if the development areas change or consultation with stakeholders highlights alternative receptors.

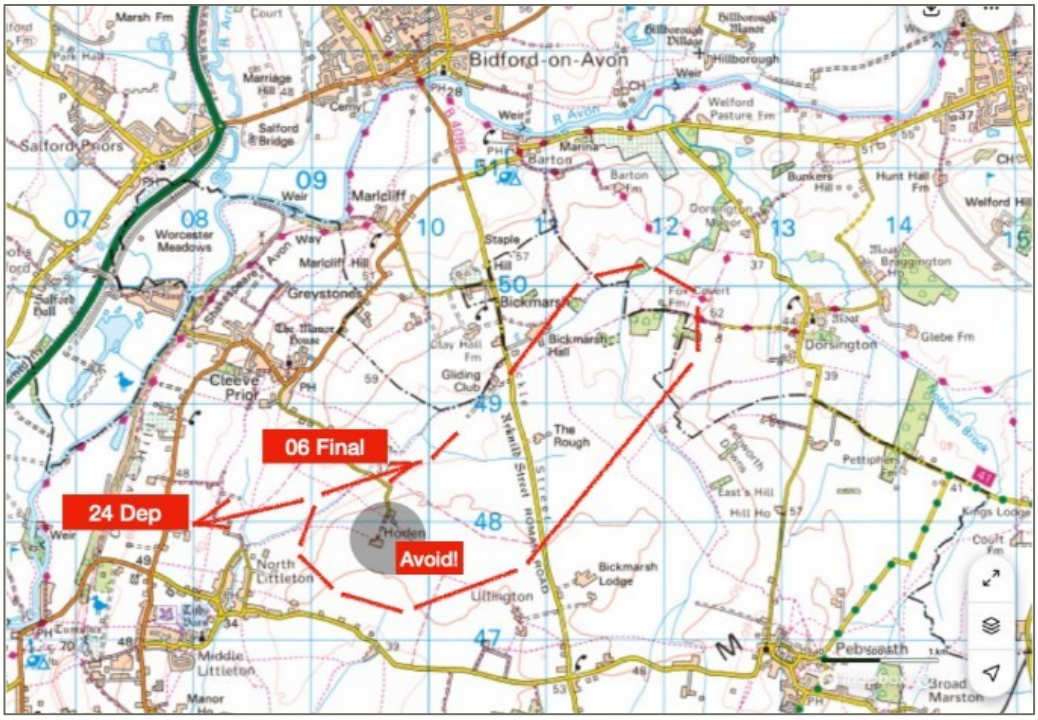
Aviation Receptors

Bidford Airfield

A15.1.19. The airfield is an unlicensed general aviation (GA) aerodrome, with one operational runway and is not understood to have an Air Traffic Control (ATC) Tower. The airfield is located between the development areas of area 3 of the development. Considering the distance, the airfield will be assessed using geometric modelling. Runway details[31] are presented below:

- 06/34 measuring 800 metres by 60 metres (grass).

A15.1.20. A circuit path has been published and available on the airfield's website[32]. The circuit map is shown in Insert A 15-2 below.



Insert A 15-2 Bidford Airfield – Circuit map

Arden Heath Farm Airfield

A15.1.21. The airfield is an unlicensed GA aerodrome, with one operational runway (09/27) and is not understood to have an ATC Tower. The airfield is located approximately 10.2km northeast of area 3. Considering the distance, the airfield will be assessed at a high-level without geometric modelling.

[31] Pooley's Flight Guide (2026)
[32] Bidford Flying and Gliding Club (2026) Available at: https://www.bidfordglidingandflyingclub.co.uk/visiting-pilots

Home Farm Fields Airfield

A15.1.22. The airfield is an unlicensed GA aerodrome, with one operational runway (02/20) and is not understood to have an ATC Tower. The airfield is located approximately 7.5km east of area 3. Considering the distance, the airfield will be assessed at a high-level without geometric modelling.

Ebrington Airfield

A15.1.23. The airfield is an unlicensed GA aerodrome, with one operational runway (03/21) and is not understood to have an ATC Tower. The airfield is located approximately 11.4km southeast of area 4. Considering the distance, the airfield will be assessed at a high-level without geometric modelling.

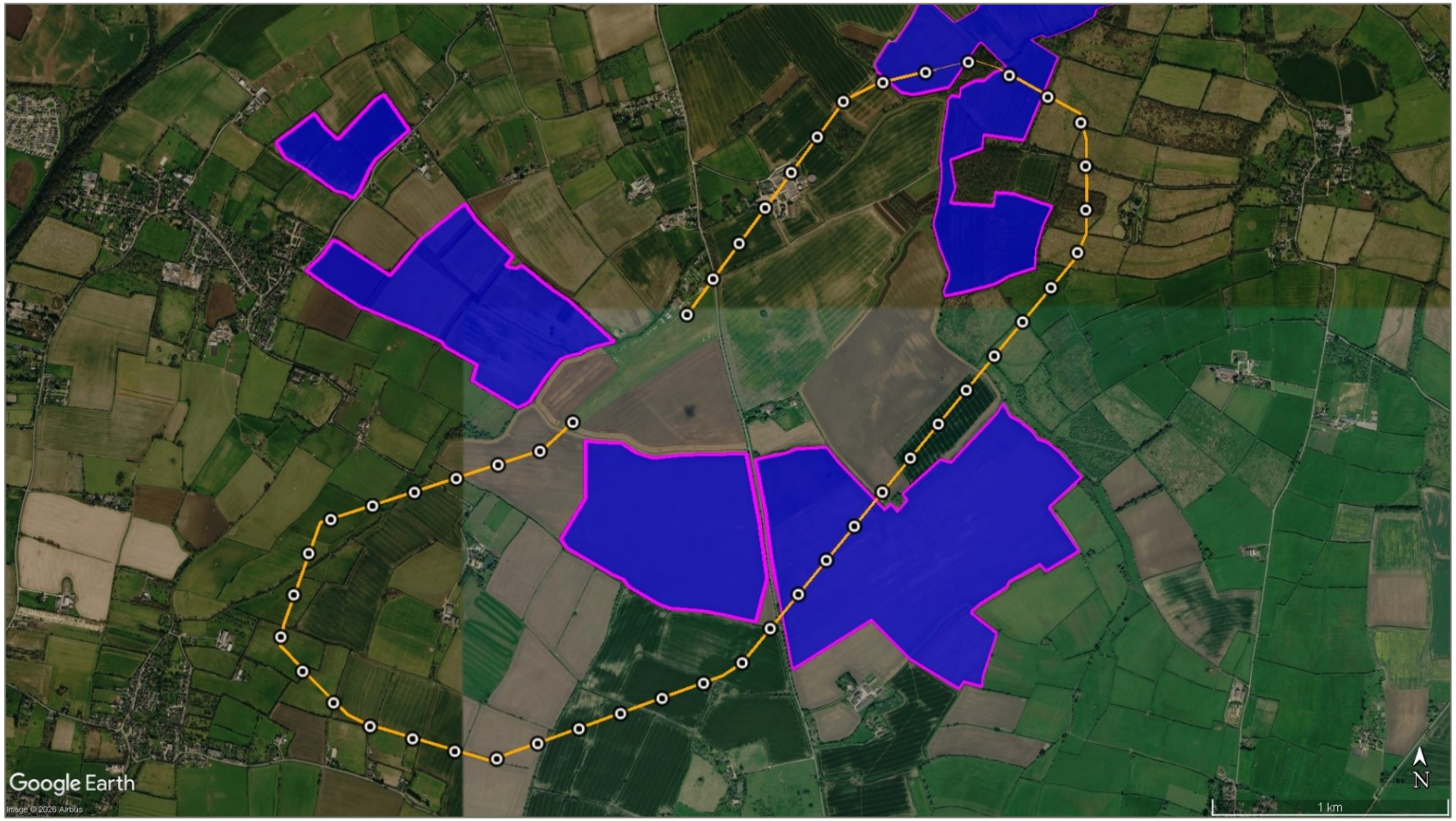
Runway Approach Paths and Visual Circuits

A15.1.24. The assessed aerodromes are general aviation airfields, where aviation activity is dynamic and does not necessarily follow the typical approaches / flight paths of a larger licensed aerodrome or airport. It is not possible to assess every single location of airspace that an aircraft travels in flight around an aerodrome; however, it is possible to assess the most frequently flown flight paths and the most critical stages of flight, which would cover most, or all, of the relevant locations.

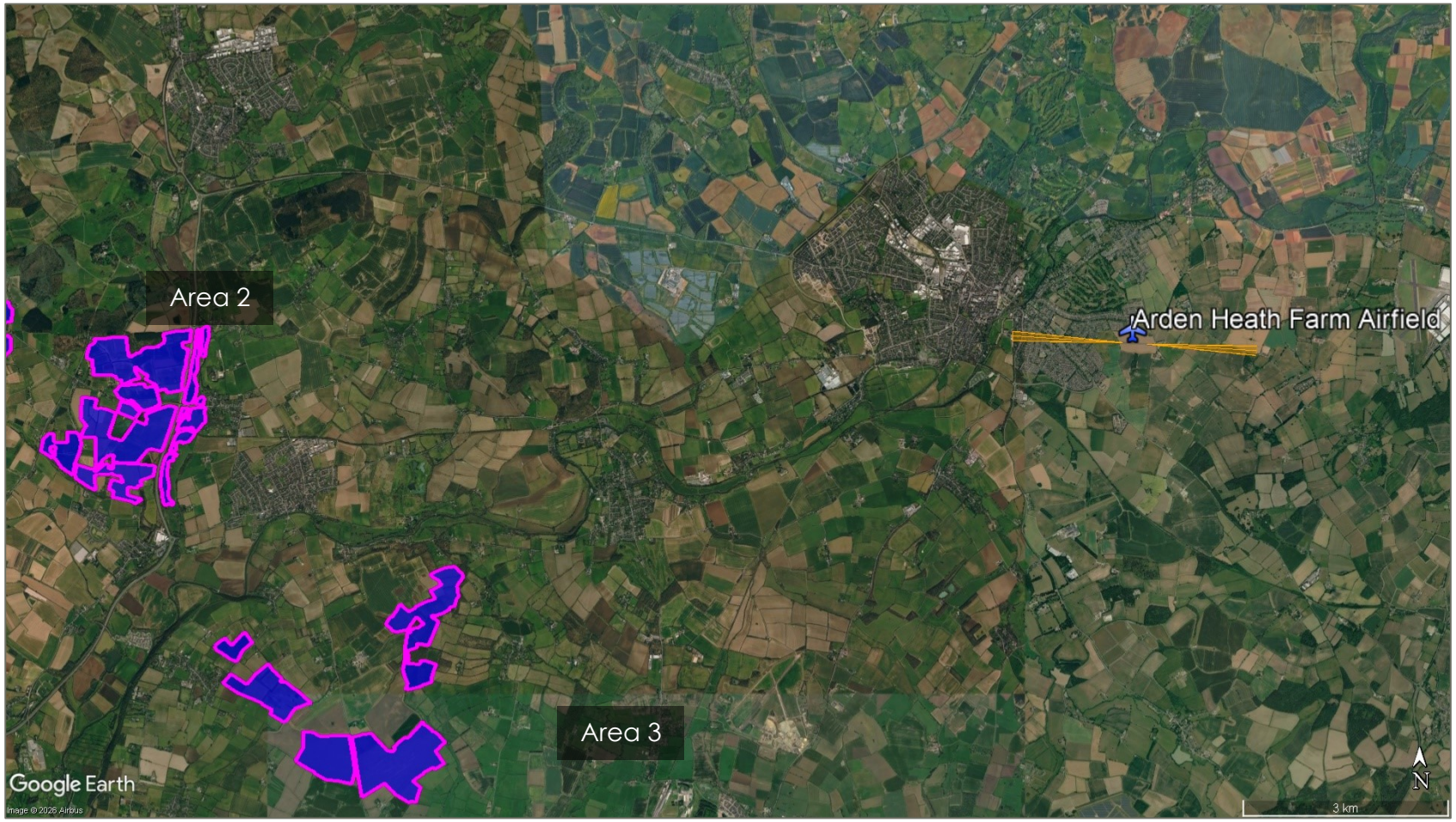
A15.1.25. As such, Pager Power's methodology is to assess whether a solar reflection can be experienced on a 5-degree splayed approach path based on the extended runway centreline, and the final sections of the visual circuits and joins on approach to the corresponding runway thresholds. Where a published circuit path is available, this is assessed as pilots are expected to most commonly follow the published path.

Receptor Visualisation

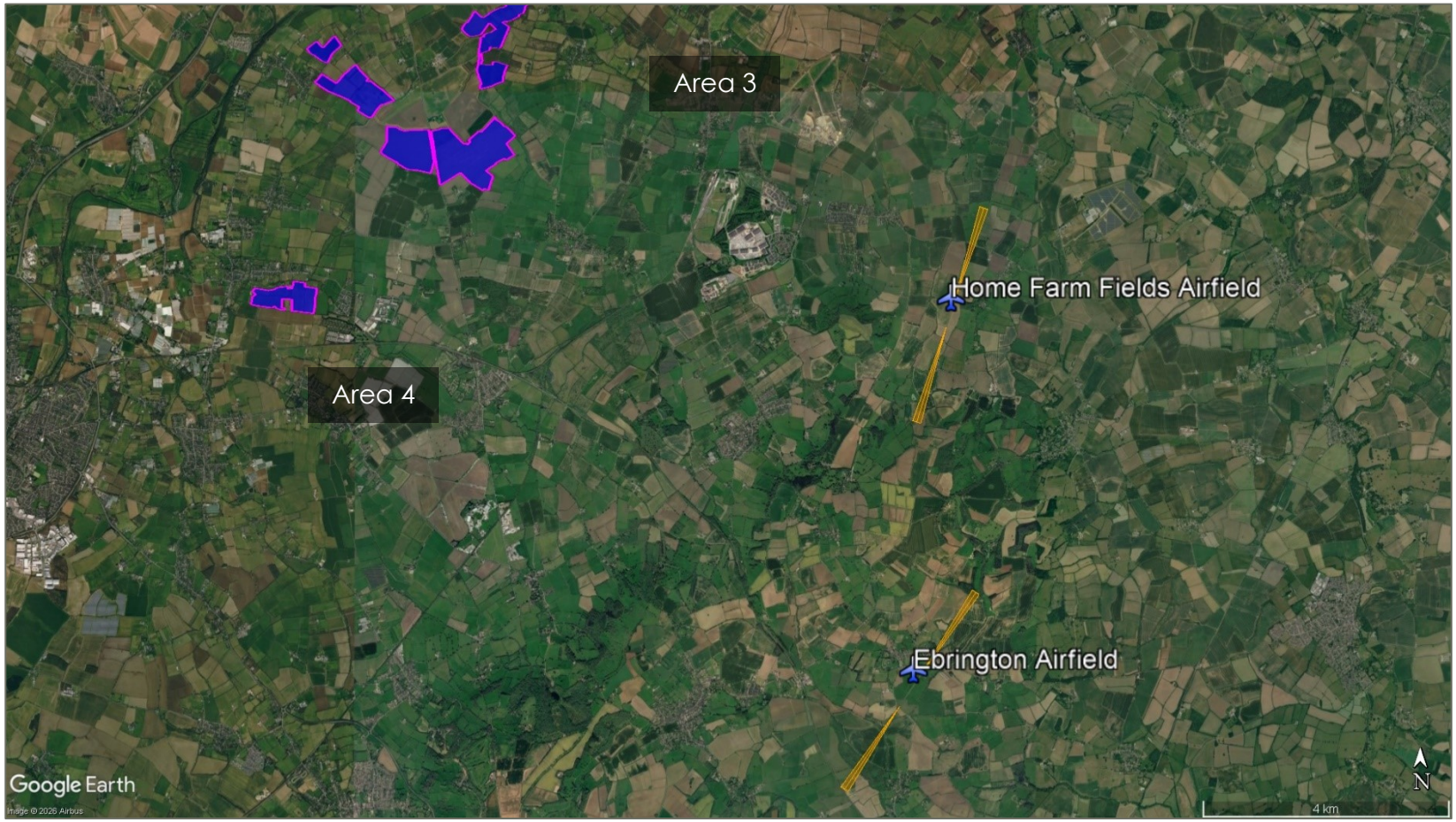
A15.1.26. Insert A 15-3 shows the assessed circuit receptors at Bidford Airfield. Insert A 15-4 and Insert A 15-5 show the final approach paths for the airfields to be assessed at a high-level.



Insert A 15-3 Bidford Airfield – Circuit path receptors



Insert A 15-4 Arden Heath Farm Airfield – Approach paths



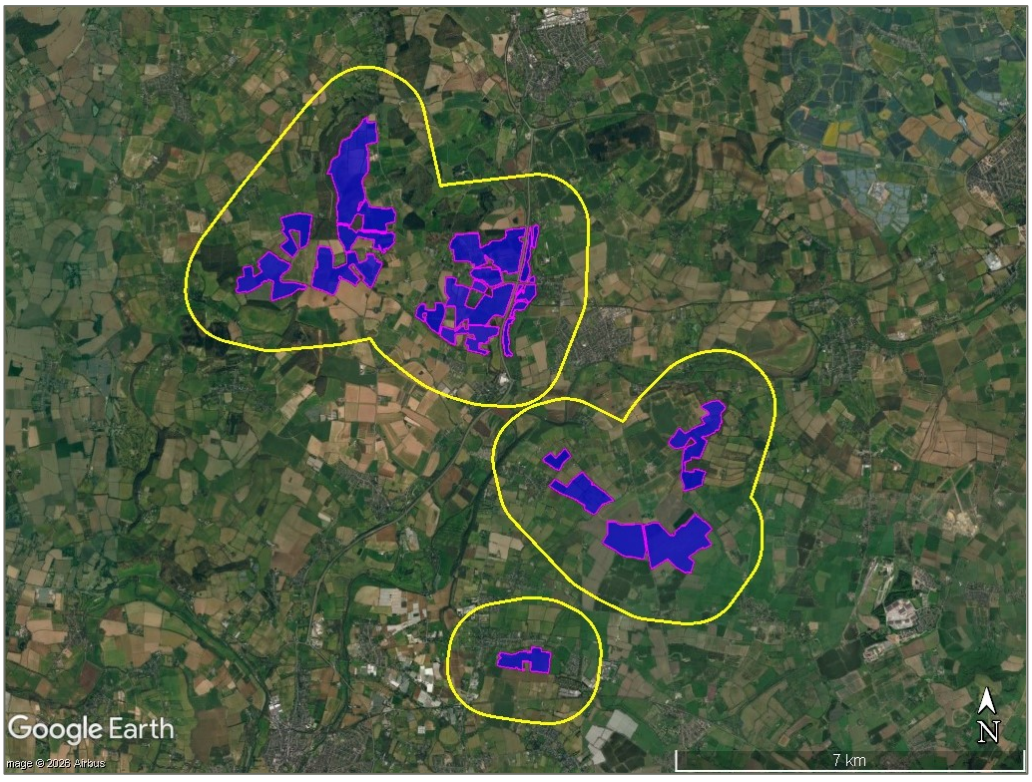
Insert A 15-5 Home Farm Fields Airfield and Ebrington Airfield – Approach paths

Ground-Based Receptors Overview

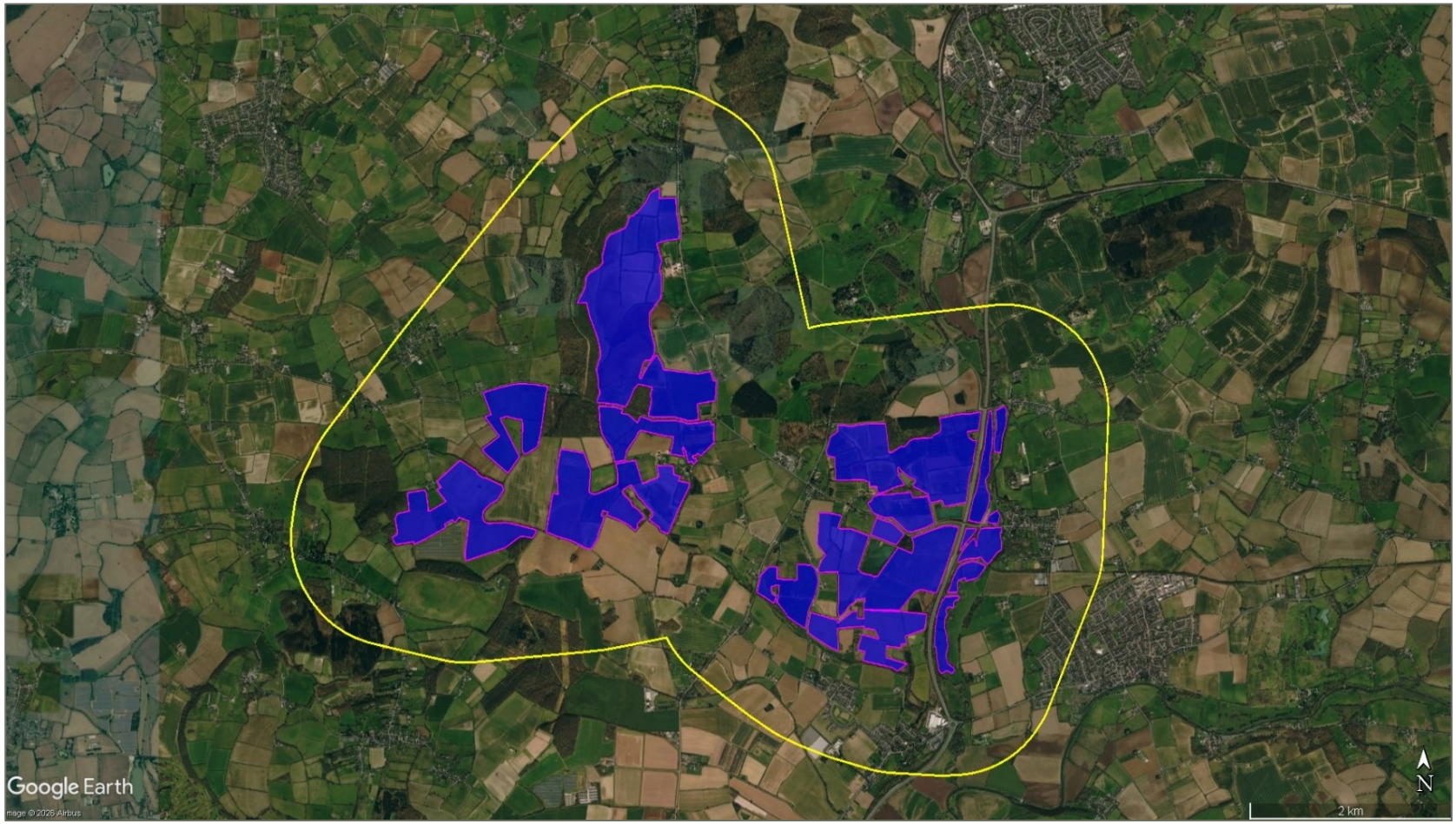
A15.1.27. There is no formal guidance with regard to the maximum distance at which glint and glare should be assessed. From a technical perspective, there is no maximum distance for potential reflections. The significance of a reflection however decreases with distance because the proportion of an observer's field of vision that is taken up by the reflecting area diminishes as the separation distance increases. Terrain and shielding by vegetation are also more likely to obstruct an observer's view at longer distances.

A15.1.28. A 1km assessment area is considered appropriate for glint and glare effects on ground-based receptors based on past project experience; any impacts outside of this assessment area would not be significant in EIA terms due to the factors above. Where fixed south-facing panels are proposed, the area to the north of the northern most panel may be excluded as reflections to the north towards ground-based receptors are not deemed possible. For single-axis tracking panels, this consideration does not apply. This report has considered an assessment consistent with that of single-axis tracking panels, as this provides the largest study area.

A15.1.29. Receptors within this distance are identified based on mapping and aerial photography of the region. The assessment areas are bounded by the yellow outline in Insert A 15-6 to Insert A 15-9 .



Insert A 15-6 1km Assessment Areas – Overview



Insert A 15-7 1km Assessment Area – Areas 1 and 2

Insert A 15-8 1km Assessment Area – Area 3

Insert A 15-9 1km Assessment Area – Area 4

Road Receptors

Road Receptors Overview

A15.1.30. Road types can generally be categorised as:

- Major National – Typically a road with a minimum of two carriageways with a maximum speed limit of up to 70mph. These roads typically have fast moving vehicles with busy traffic;
- National – Typically a road with one or more carriageways with a maximum speed limit 60mph or 70mph. These roads typically have fast moving vehicles with moderate to busy traffic density;
- Regional – Typically a single carriageway with a maximum speed limit of up to 60mph. The speed of vehicles will vary with a typical traffic density of low to moderate;
- Local – Typically roads and lanes with the lowest traffic densities. Speed limits vary.

A15.1.31. Technical modelling is not recommended for local roads, where traffic densities are likely to be relatively low. Any solar reflections from the proposed development that are experienced by a road user along a local road would be considered low impact in the worst case in accordance with the guidance presented in Annex D. The analysis has therefore considered major national, national, and regional roads that:

- Are within the one-kilometre assessment area;
- Have potential views of the panels.

Identified Road Receptors

A15.1.32. Multiple sections of road have been identified within the assessment area. The sections and associated receptors are summarised in Table A 15-1:

Table A 15-1 Identified roads summary

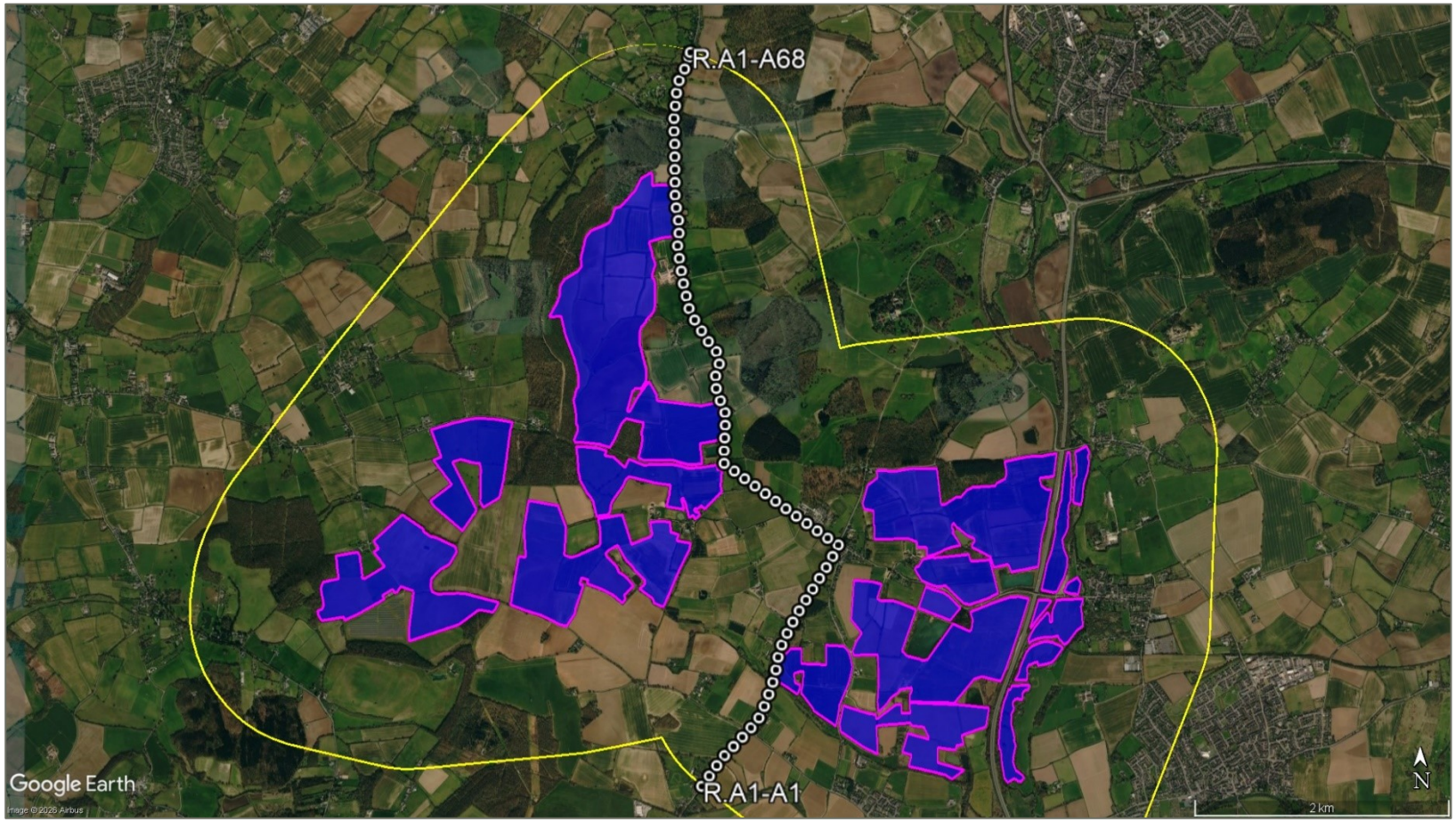
Area	Name	Length	Starting Receptor	Ending Receptor
1	B4088	6.6km	A1-A1	A1-A68
	Alcester Road	3.7km	A1-B1	A1-B38
	A422	2.0km	A1-C1	A1-C22
2	A46	4.8km	A2-A1	A2-A50
	Salford Road	2.0km	A2-B1	A2-B21
	Unnamed Road	3.2km	A2-C1	A2-C33
3	Buckle Street	4.1km	A3-A1	A3-A42
3	Cleeve Road	3.3km	A3-B1	A3-B34
4	Shinesmith Road	2.5km	A4-A1	A4-A26
	Blackminster Road	2.0km	A4-B1	A4-B21

A15.1.33. Receptors along each road are labelled using the nearest project area, followed by a letter denoting the road and a receptor number within that road. For example, receptor A3-B17 is he seventeenth receptor in the second road around area three.

A15.1.34. Receptors are placed approximately 100m apart. A height of 1.5 metres above ground level has been taken as the typical eye level of a road user[33].

A15.1.35. Insert A 15-10 to Insert A 15-19show the road section in blue, and the assessed road receptors.

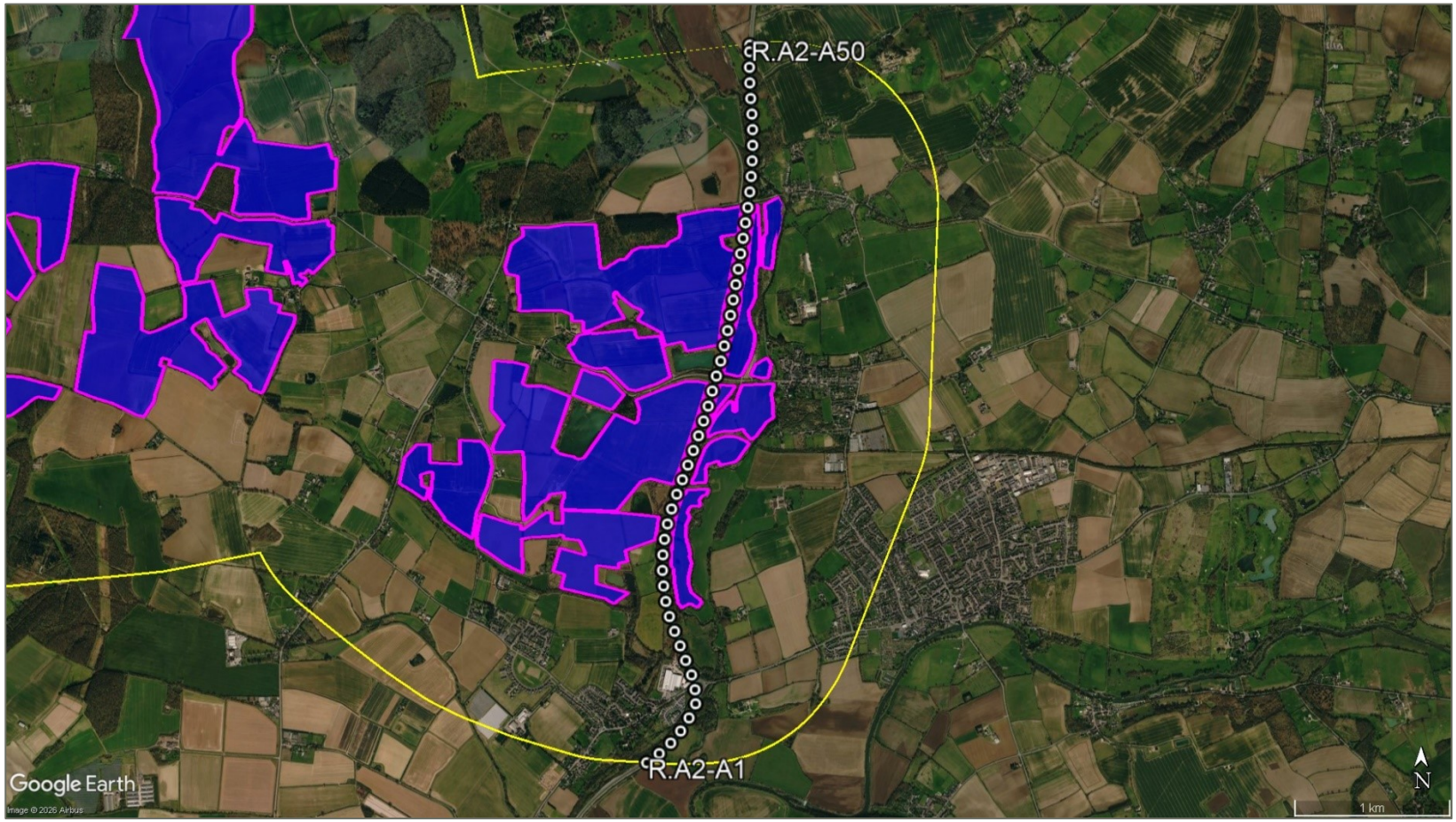
[33] This fixed height for the road receptors is for modelling purposes. Changes to the modelling height by a few metres is not expected to significantly change the modelling results. Views for elevated drivers are also considered in the results discussion, where appropriate.



Insert A 15-10 Road receptors – B4088

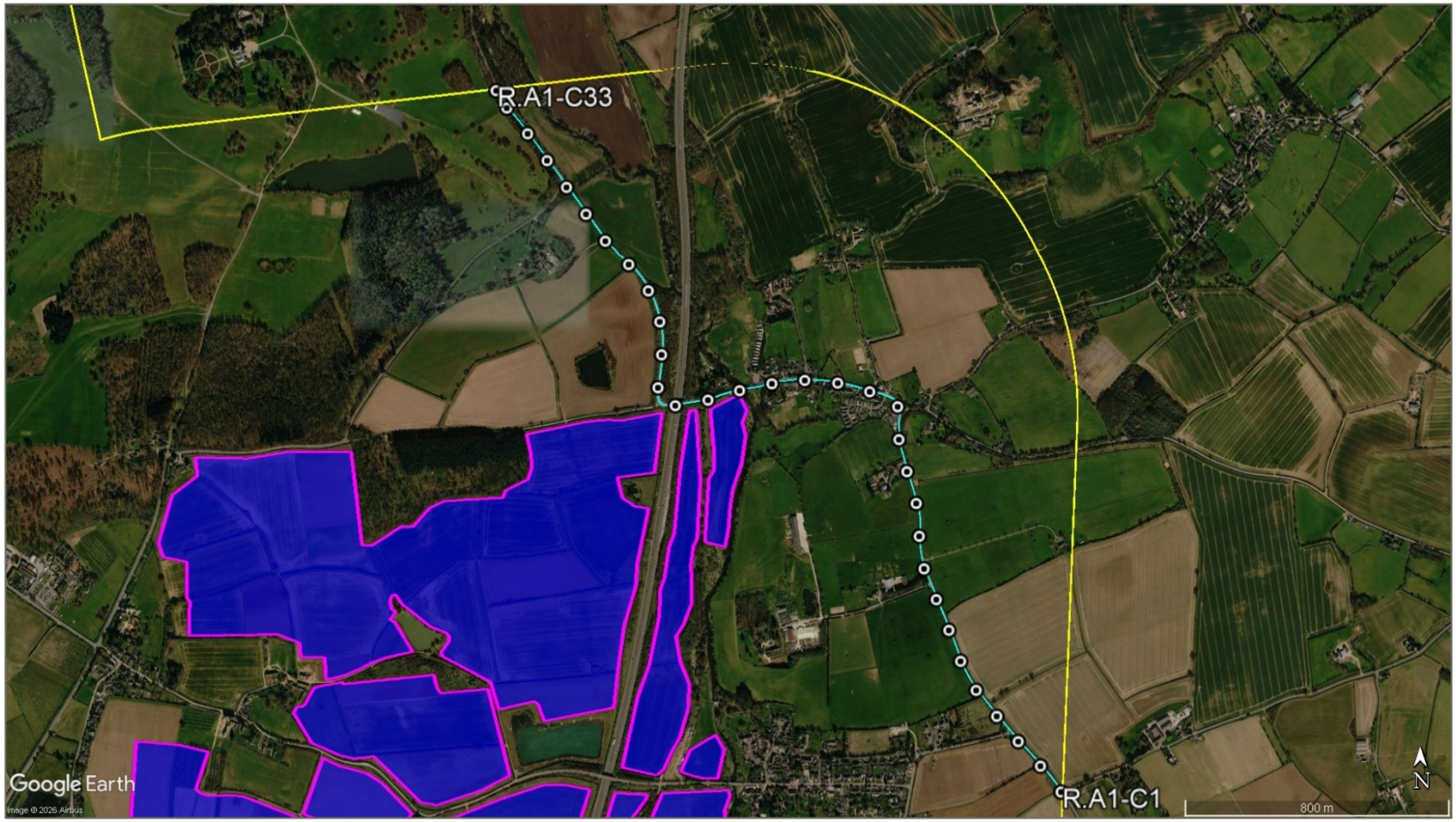
Insert A 15-11 Road receptors – Alcester Road

Insert A 15-12 Road receptors – A422

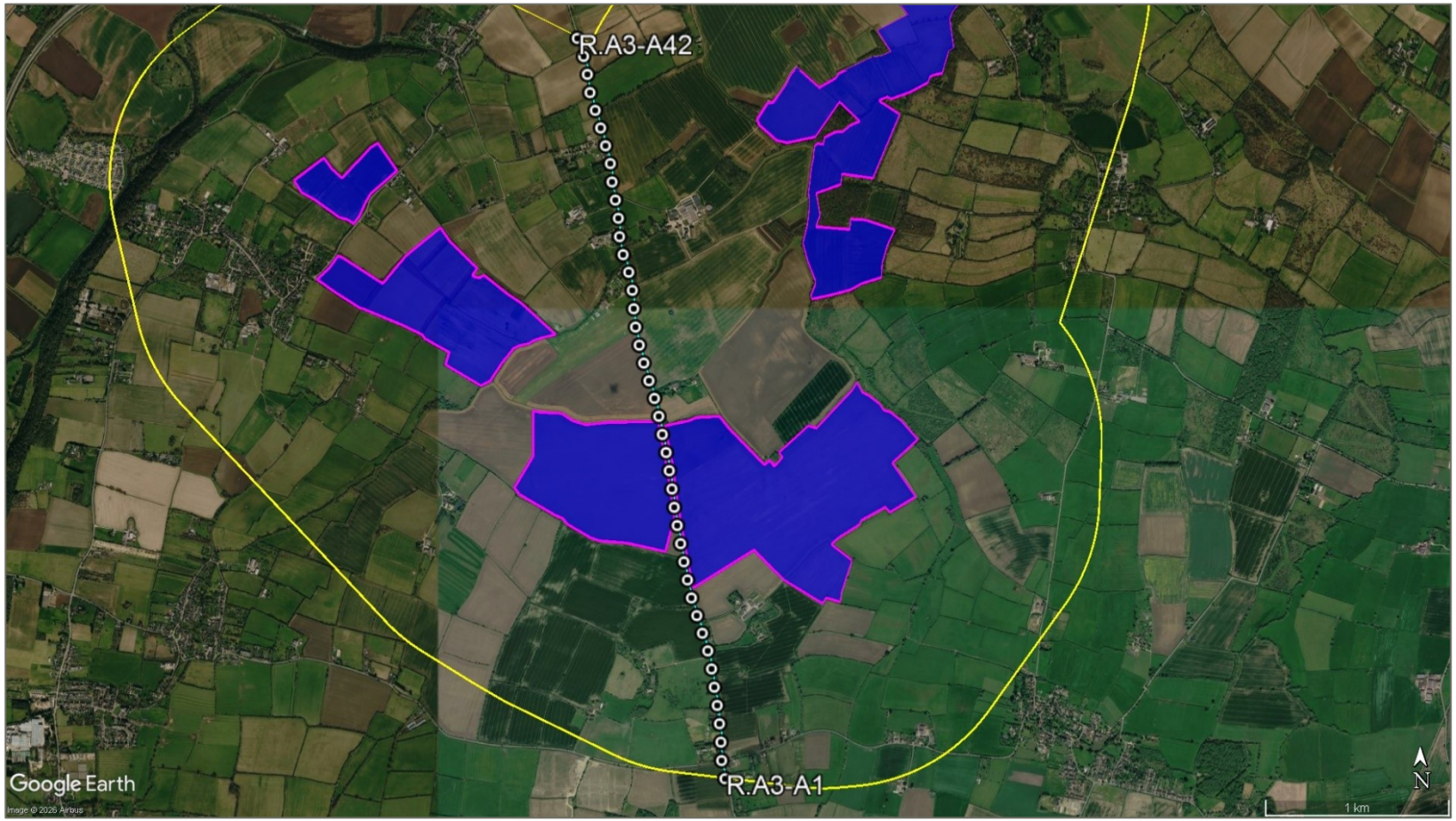


Insert A 15-13 Road receptors – A46

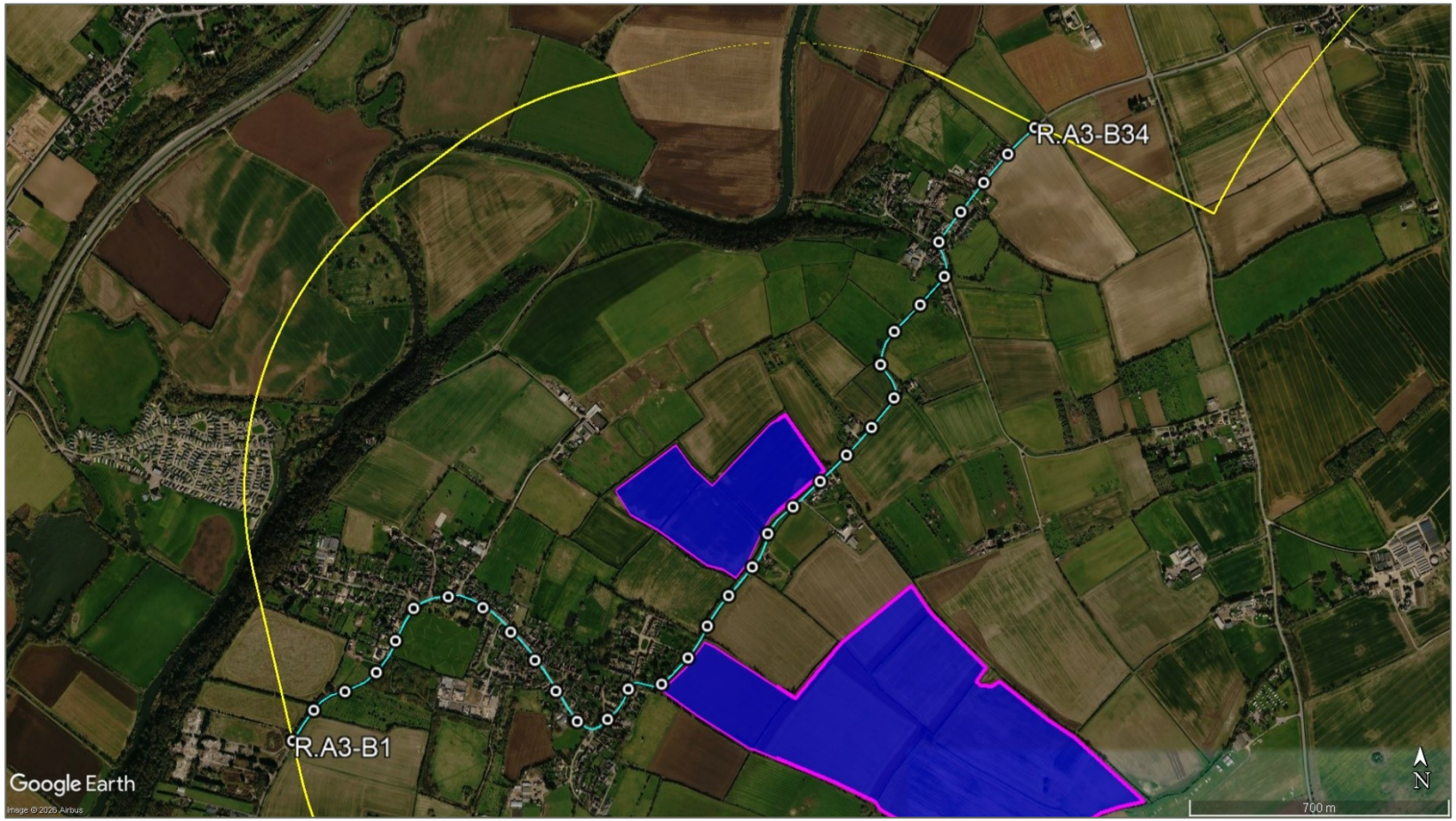
Insert A 15-14 Road receptors – Salford Road



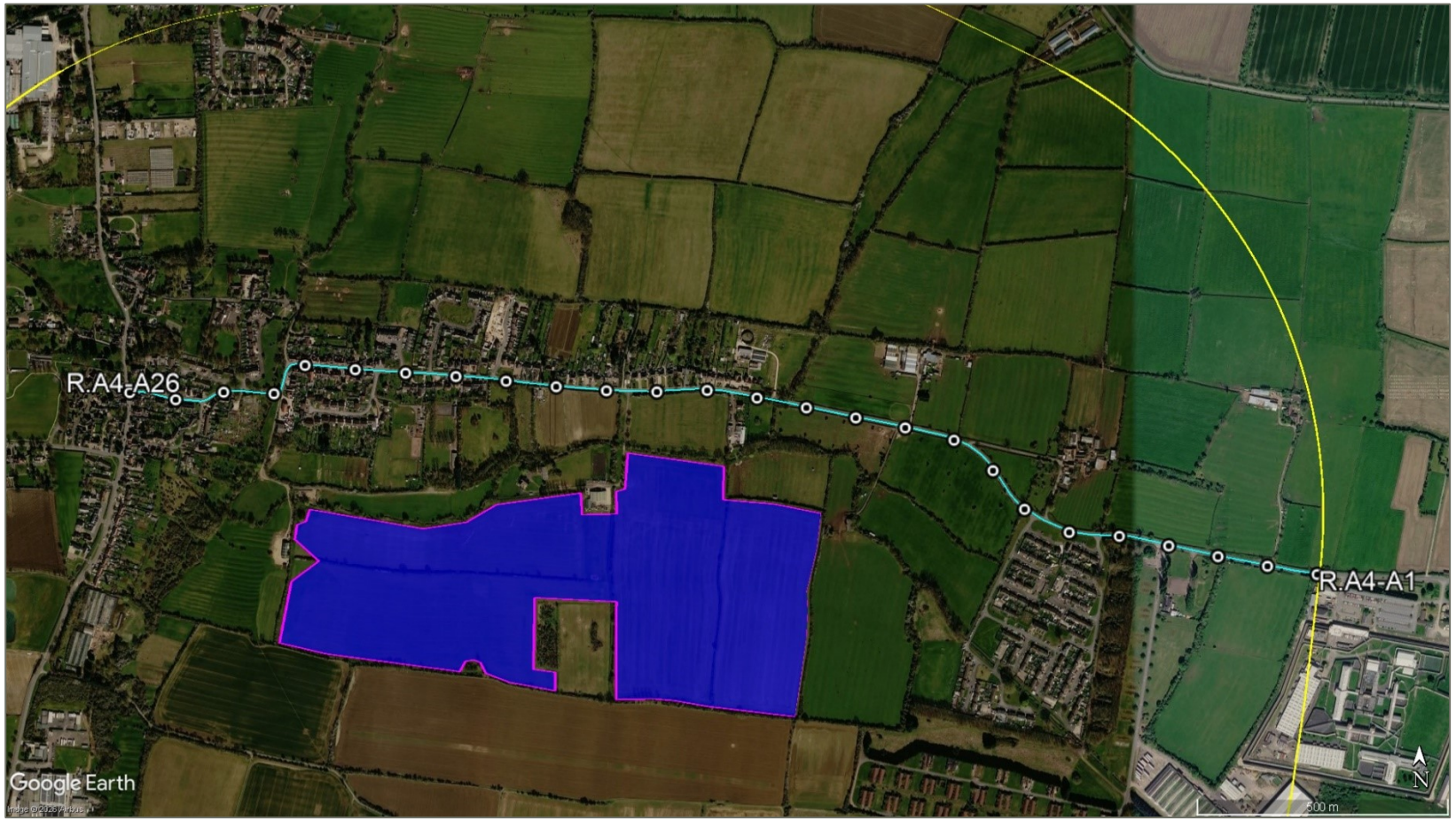
Insert A 15-15 Road receptors – Unnamed Road



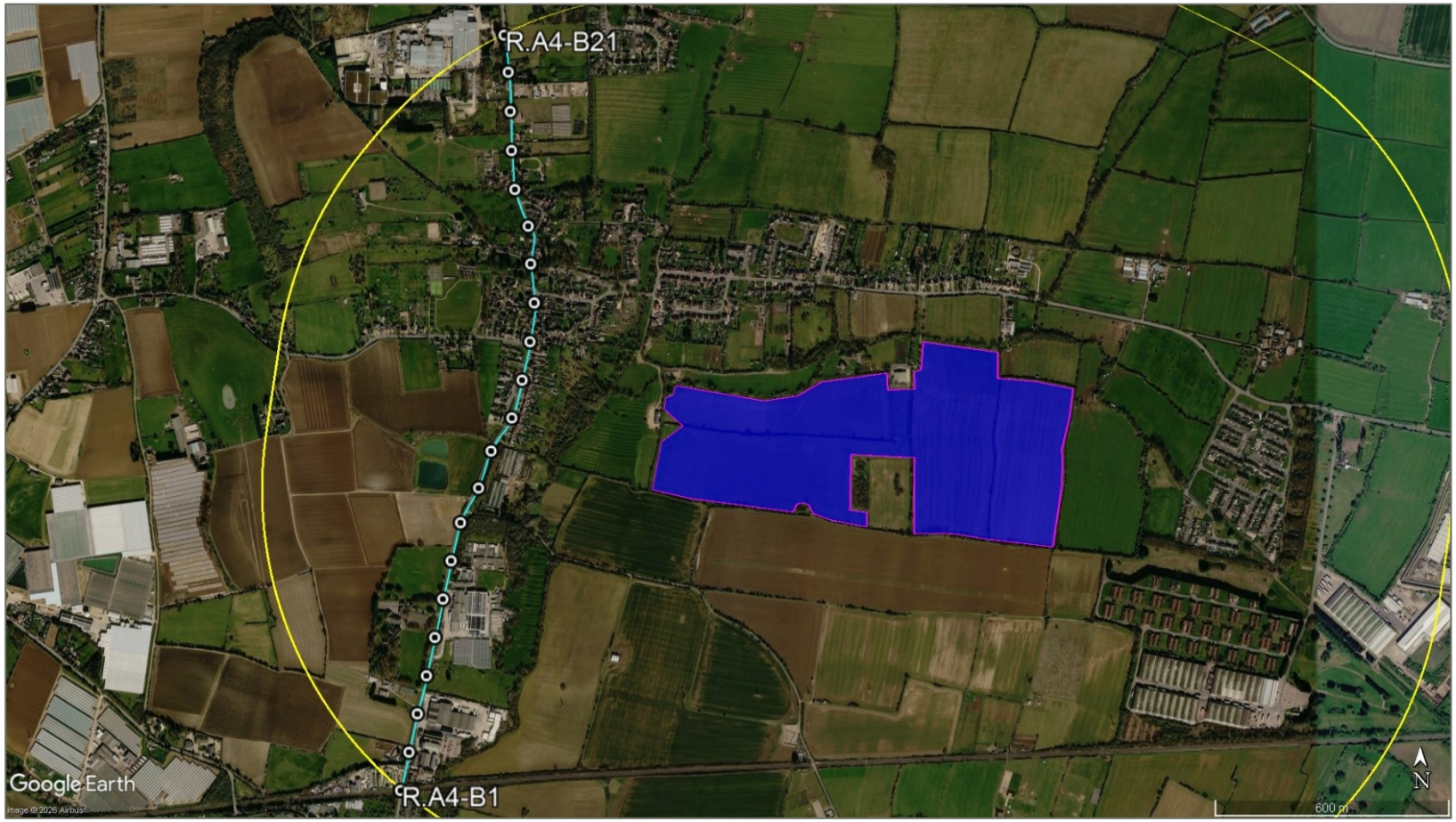
Insert A 15-16 Road receptors – Buckle Street



Insert A 15-17 Road receptors – Cleeve Road



Insert A 15-18 Road receptors – Shinesmith Road



Insert A 15-19 Road receptors – Blackminster Road

Dwelling Receptors

Dwelling Receptors Overview

A15.1.36. The analysis has considered dwellings that:

- Are within the 1km assessment area; and
- Have potential views of the panels.

A15.1.37. In residential areas with multiple layers of dwellings, only the outer dwellings have been considered for assessment. This is because they will mostly obscure views of the solar panels to the dwellings behind them, which will therefore not be impacted by the proposed development because line of sight will be removed, or they will experience comparable effects to the closest assessed dwelling.

A15.1.38. Additionally, in some cases, a single receptor point may be used to represent a small number of separate addresses. In such cases, the results for the receptor will be representative of the adjacent observer locations, such that the overall level of effect in each area is captured reliably.

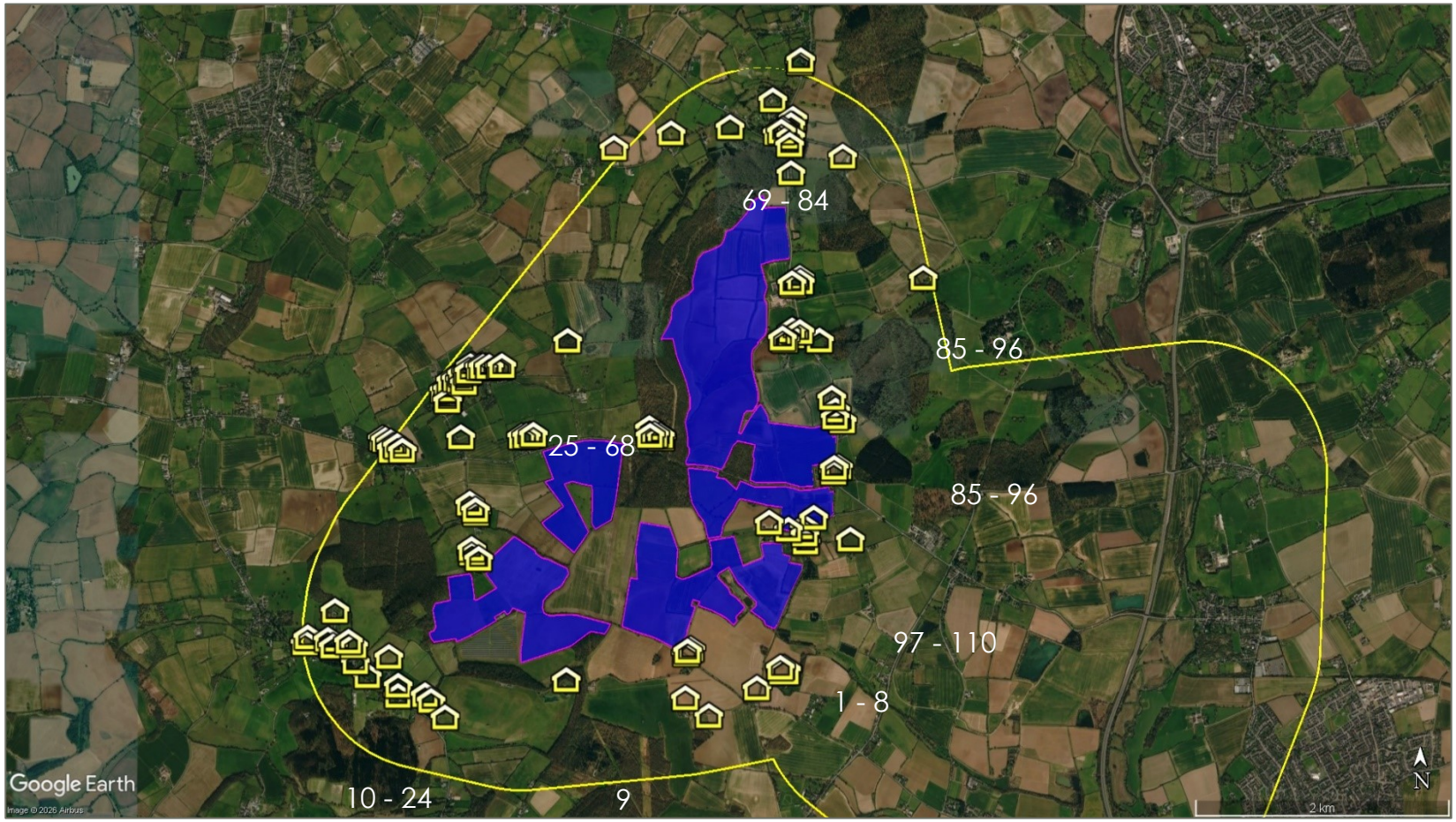
Identified Dwelling Receptors

A15.1.39. Across the four areas, a total of 729 dwelling receptors have been identified:

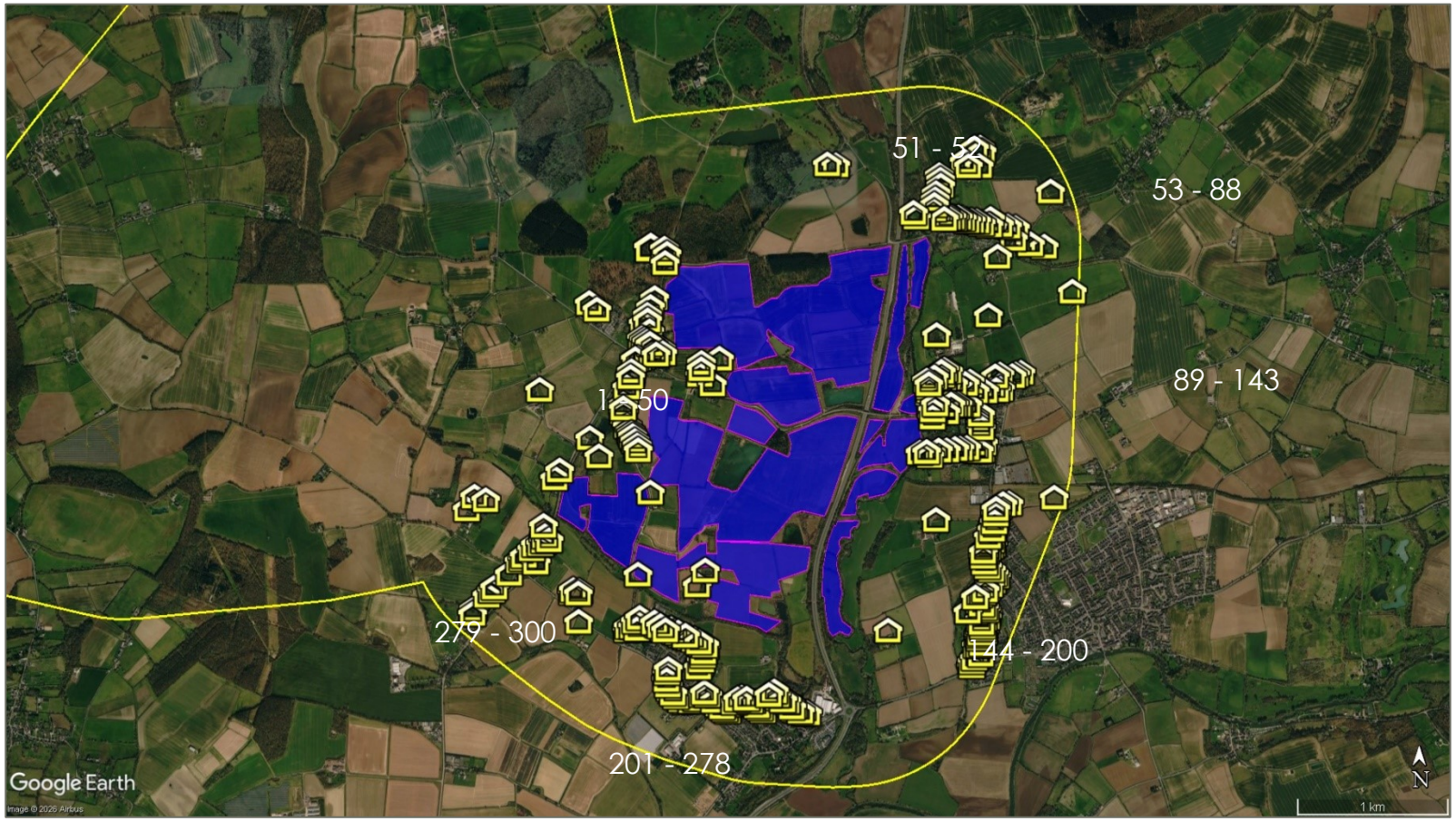
- Area 1 – 110 dwellings;
- Area 2 – 300 dwellings;
- Area 3 – 195 dwellings;
- Area 4 – 124 dwellings.

A15.1.40. The assessed dwelling receptors are shown in Insert A 15-20 to Insert A 15-23. An additional 1.8m height above ground is used in the modelling to simulate the typical viewing height of an observer on the ground floor[34].

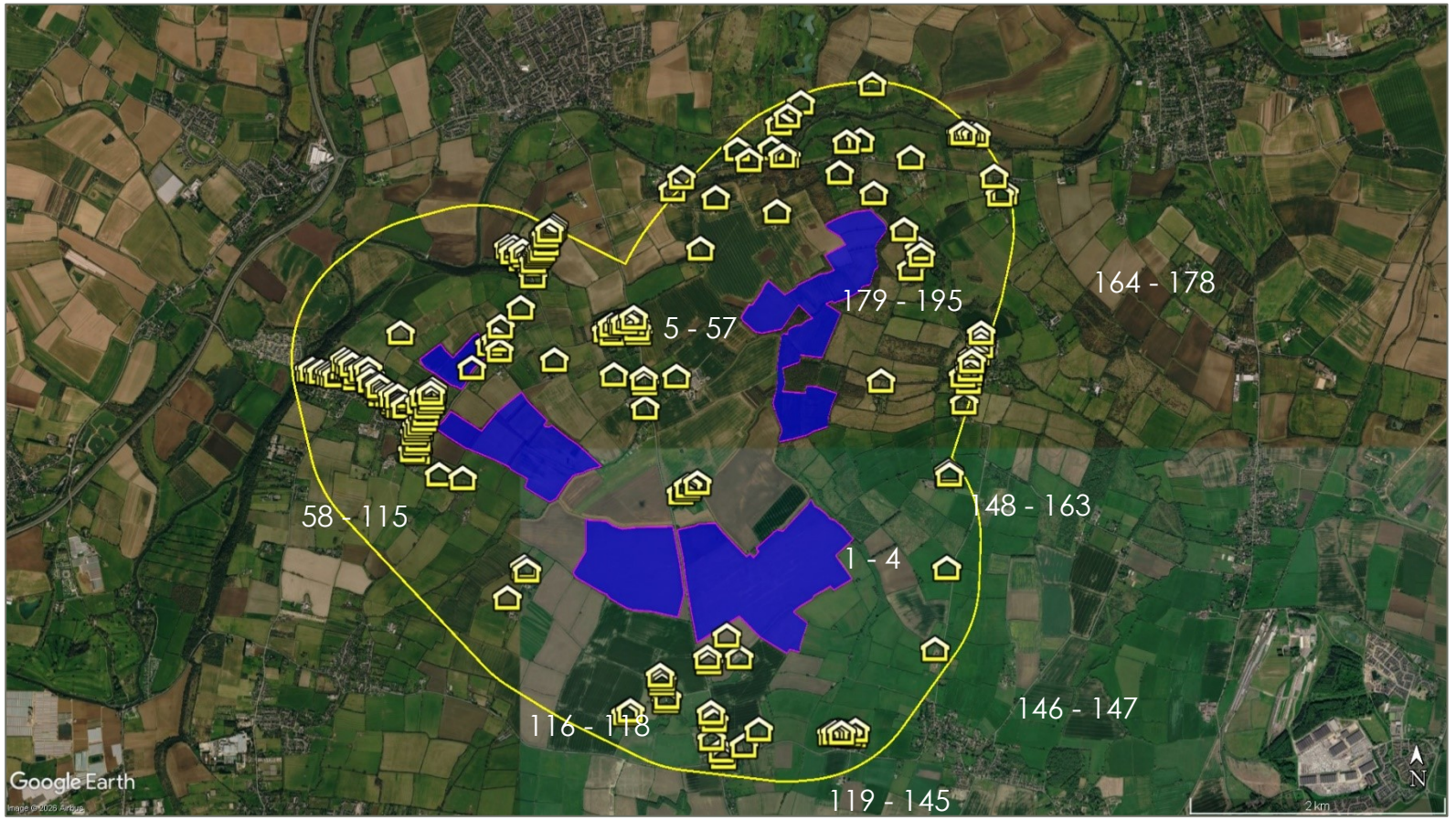
[34] This fixed height for the dwelling receptors is for modelling purposes. Changes to the modelling height by a few metres is not expected to significantly change the modelling results. Views above ground floor are considered in the results discussion where necessary.



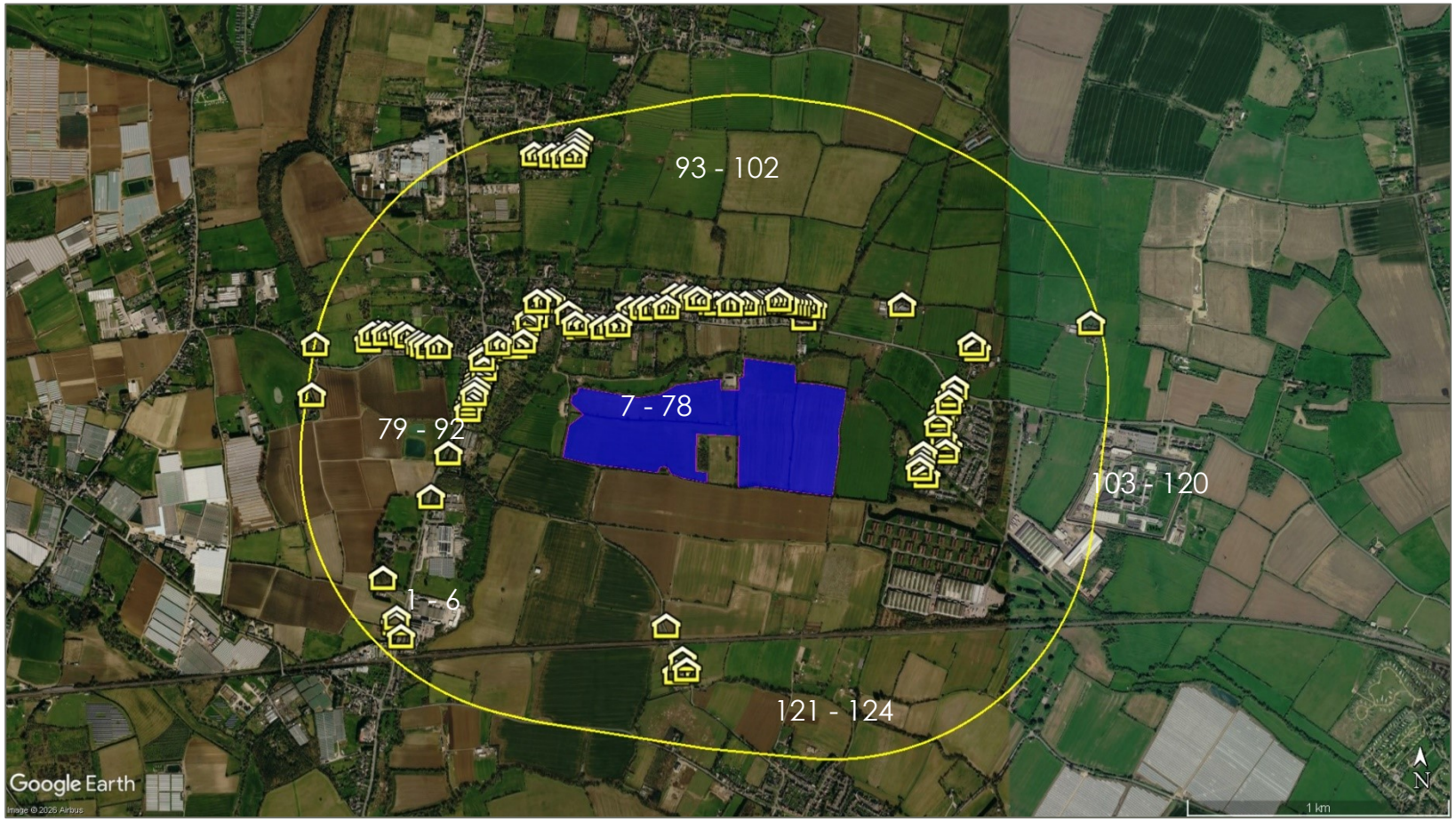
Insert A 15-20 Dwelling receptors – Area 1



Insert A 15-21 Dwelling receptors – Area 2



Insert A 15-22 Dwelling receptors – Area 3



Insert A 15-23 Dwelling receptors – Area 4

Railway Receptors

Railway Receptors Overview

A15.1.41. A railway stakeholder (such as Network Rail) may request further information regarding the potential effects of glint and glare from reflective surfaces when a development is located adjacent to a railway line (typically 50-100m from its infrastructure). The request may depend on the scale, percentage of reflective surfaces and the complexity of the nearby railway, for example.

A15.1.42. A 500m assessment area is considered appropriate for glint and glare effects on railway receptors, where a development is located in close proximity (within 50-100m) of a railway line. Receptors within this distance are identified based on mapping and aerial photography of the region.

A15.1.43. Railway receptors are typically considered where they:

- Are within the 500-metre assessment area; and
- Have potential views of the panels.

Identified Railway Receptors

A15.1.44. No railway receptors have been identified for assessment. The nearest section of railway is located approximately 515m from the nearest solar panel area (south of Area 4), which is outside of the assessment area and significant impacts are therefore not predicted.

Impact Significance Determination

Overview

A15.1.45. The following subsections present the significance of any predicted impact in the context of existing screening and the relevant criteria set out in each sub-section. The criteria are determined by the assessment process for each receptor, which are set out in Annex D.

A15.1.46. When determining the visibility of the reflecting panels for an observer, a conservative review of the available imagery has been undertaken, whereby it is assumed views of the panels are possible if it cannot be reliably determined that existing screening will remove effects.

Aviation Results

Glare Intensity Categorisation

A15.1.47. The Pager Power and Forge models have been used to determine whether reflections are possible for aviation receptors. Intensity

calculations (Forge Model) in line with the Sandia National Laboratories methodology have been undertaken. These calculations are routinely required for solar photovoltaic developments on or near aerodromes. The intensity model calculates the expected intensity of a reflection with respect to the potential for an after-image (or worse) occurring. The designation used by the model is presented in Table A 15-2 along with the associated colour coding.

Table A 15-2 Glare intensity designation

Coding Used	Intensity Key
Glare beyond 50°	'Glare occurs outside of a pilot's primary field of view (50 degrees horizontally either side of the direction of travel)'
'Green Glare'	'Low potential for temporary after-image'
'Yellow Glare'	'Potential for temporary after-image'
'Red Glare'	'Potential for permanent eye damage'

A15.1.48. This coding has been used in the table where a reflection has been calculated and is in accordance with Sandia National Laboratories' methodology. In addition, the intensity model allows for the assessment of a variety of solar panel surface materials. This assessment has considered solar panels with a surface material of 'smooth glass with an anti-reflective coating'. It is understood that this is the most commonly used solar panel surface material. Other surfaces that could be modelled include:

- Smooth glass without an anti-reflective coating;
- Light textured glass without an anti-reflective coating;
- Light textured glass with an anti-reflective coating; or
- Deeply textured glass.

Impact Significance Determination – Approach Paths and Visual Circuits

A15.1.49. The process for determining impact significance is defined in the report annexes. For the runway approach paths and visual circuits, the key considerations are:

- Whether a reflection is predicted to be experienced in practice;
- The location of glare relative to a pilot's primary field-of-view (50 degrees either side of the approach bearing);
- The intensity of glare for the solar reflections:
- Glare with 'low potential for temporary after-image' ('green' glare);
- Glare with 'potential for temporary after-image' ('yellow' glare);
- Glare with 'potential for permanent eye damage' ('red' glare).

- Whether a reflection is predicted to be operationally significant in practice or not.

A15.1.50. Where no solar reflections are geometrically possible or where solar reflections are predicted to be significantly screened, no impact is predicted, and mitigation is not required.

A15.1.51. Where solar reflections have an intensity no greater than 'low potential for temporary after-image' (green glare) or occur outside of a pilot's primary field-of-view (50 degrees either side of the approach bearing), the impact significance is low, and mitigation is not required.

A15.1.52. Glare with 'potential for a temporary after-image' (yellow glare) was formerly not permissible under the interim guidance provided by the Federal Aviation Administration in the USA[35] for on-airfield solar. Whilst this guidance was never formally applicable outside of the USA, it has been a common point of reference internationally. Pager Power recommends a pragmatic approach whereby instances of 'yellow' glare are evaluated in a technical and operational context. As per Pager Power's glint and glare guidance document[36], where solar reflections are of an intensity of 'potential for temporary after-image', expert assessment of the following relevant factors is required to determine the impact significance[37]:

- The likely traffic volumes and level of safeguarding at the aerodrome – licensed aerodromes typically have higher traffic volumes and are formally safeguarded. Unlicensed aerodromes have greater capacity for operational acceptance;
- The time of day at which glare is predicted and whether the aerodrome will be operational such that pilots can be on the approach at the time of day at which glare is predicted;
- The duration of any predicted glare – glare that occurs for low durations throughout the year is less likely to be experienced than glare that occurs for longer durations throughout a year;
- The location of the source of glare relative to a pilot's primary field-of-view;
- The relative size of the reflecting panel area and whether the reflecting area takes up a large percentage of a pilot's primary field-of-view;
- The location of the source of glare relative to the position of the Sun at the times and dates in which solar reflections are geometrically

[35] This FAA guidance from 2013 has since been superseded by the FAA guidance in 2021 whereby airports are tasked with determining safety requirements themselves.
[36] Pager Power Glint and Glare Guidance, Fourth Edition, September 2022.
[37] This approach taken is reflective of the changes made in the 2021 FAA guidance; however, it should be noted that this guidance states that it is up to the airport to determine the safety requirements themselves. Therefore, an airport may not accept any yellow glare towards approach paths.

possible – effects that coincide with direct sunlight appear less prominent than those that do not;
- The intensity of the predicted glare;
- The level of predicted effect relative to existing sources of glare – a solar reflection is less noticeable by pilots when there are existing reflective surfaces in the surrounding environment.

A15.1.53. Following consideration of these relevant factors, where the solar reflection is deemed not significant, a low impact is predicted, and mitigation is not recommended; however, consultation with the aerodrome is recommended to understand their position along with any feedback or comments regarding the proposed development. Where the solar reflection is deemed significant, the impact significance is moderate, and mitigation is recommended.

A15.1.54. Where solar reflections have an intensity of 'potential for permanent eye damage', the impact significance is high, and mitigation is required.

Road Results

A15.1.55. The process for quantifying the impact significance concerning road safety is outlined in Annex D. The key considerations for road users along major national, national, and regional roads are:

A15.1.56. Whether a reflection is predicted to be experienced in practice; and

A15.1.57. The location of the reflecting panel relative to a road user's direction of travel.

A15.1.58. Where reflections are geometrically possible but expected to be screened, no impact is predicted, and mitigation is not required.

A15.1.59. Where reflections originate from outside of a road user's primary horizontal field-of-view (50 degrees either side of the direction of travel), or the closest reflecting panel is over 1km from the road user, the impact significance is low, and mitigation is not recommended.

A15.1.60. Where reflections are predicted to be experienced from inside of a road user's primary field-of-view, expert assessment of the following relevant factors is required to determine the impact significance and mitigation requirement:

A15.1.61. Whether visibility is likely for elevated drivers (relevant to dual carriageways and motorways[38]);

[38] There is typically a higher density of elevated drivers (such as HGVs) along dual carriageways and motorways compared to other types of roads.

A15.1.62. Whether the solar reflection originates from directly in front of a road user. Solar reflections that are directly in front of a road user are more hazardous;

A15.1.63. The separation distance to the reflecting panel area. Larger separation distances reduce the proportion of an observer's field-of-view that is affected by glare;

A15.1.64. The position of the Sun. Effects that coincide with direct sunlight appear less prominent than those that do not. The Sun is a far more significant source of light.

A15.1.65. Following consideration of these relevant factors, where the solar reflection is not deemed significant, a low impact is predicted, and mitigation is not recommended. Where the solar reflection is deemed significant, the impact significance is moderate, and mitigation is recommended. Where reflections originate from directly in front of a road user and there are no further mitigating factors, the impact significance is high, and mitigation is required.

Dwelling Results

A15.1.66. The process for quantifying the impact significance concerning residential amenity is outlined in Annex D. The key considerations for residential dwellings are:

- Whether a reflection is predicted to be experienced in practice;
- The duration of the predicted effects, relative to thresholds of:
    - 3 months per year;
    - 60 minutes on any given day.

A15.1.67. Where reflections are geometrically possible but expected to be screened, no impact is predicted, and mitigation is not required.

A15.1.68. Where effects occur for less than 3 months per year and less than 60 minutes on any given day, or the closest reflecting panel is over 1km from the dwelling, the impact significance is low, and mitigation is not recommended.

A15.1.69. Where reflections are predicted to be experienced for more than 3 months per year **and/or** for more than 60 minutes on any given day, expert assessment of the following relevant factors is required to determine the impact significance and mitigation requirement:

- The separation distance to the reflecting panel area[39]. Larger separation distances reduce the proportion of an observer's field-of-view that is affected by glare;
- The position of the Sun. Effects that coincide with direct sunlight appear less prominent than those that do not. The Sun is a far more significant source of light;
- Whether solar reflections will be experienced from all storeys. The ground floor is typically considered the main living space and therefore has a greater significance with respect to residential amenity;
- Whether the dwelling appears to have windows facing the reflecting areas. An observer may need to look at an acute angle to observe the reflecting areas.

A15.1.70. Following consideration of these relevant factors, where the solar reflection is not deemed significant, a low impact is predicted, and mitigation is not recommended. Where the solar reflection is deemed significant, the impact significance is moderate, and mitigation is recommended.

A15.1.71. If there are no mitigating factors and the effects last for more than three months per year **and** for more than 60 minutes on any given day, the impact significance is high, and mitigation is required.

[39] Which is often greater than the nearest panel boundary, because not all areas of the site cause specular reflections towards particular receptor locations.

A15.2 ANNEX A – Overview of Glint and Glare Guidance

Overview

A15.2.1. This section presents details regarding the relevant guidance and studies with respect to the considerations and effects of solar reflections from solar panels, known as 'Glint and Glare'.

A15.2.2. This is not a comprehensive review of the data sources and is limited to the UK; however, it is relevant from a technical and planning perspective. The section is intended to give an overview of the important parameters and considerations that have informed this assessment.

UK Planning Policy

Renewable and Low Carbon Energy

A15.2.3. The National Planning Policy Framework under the planning practice guidance for Renewable and Low Carbon Energy[40] (specifically regarding the consideration of solar farms, paragraph 013) states:

> *'What are the particular planning considerations that relate to large scale ground-mounted solar photovoltaic Farms?*

A15.2.4. The deployment of large-scale solar farms can have a negative impact on the rural environment, particularly in undulating landscapes. However, the visual impact of a well-planned and well-screened solar farm can be properly addressed within the landscape if planned sensitively.

A15.2.5. Particular factors a local planning authority will need to consider include:

> *the proposal's visual impact, the effect on landscape of glint and glare (see guidance on landscape assessment) and on **neighbouring uses and aircraft safety**;*
>
> *the extent to which there may be additional impacts if solar arrays follow the daily movement of the sun;*

A15.2.6. The approach to assessing cumulative landscape and visual impact of large-scale solar farms is likely to be the same as assessing the impact of wind turbines. However, in the case of ground-mounted solar panels it should be noted that with effective screening and appropriate land topography the area of a zone of visual influence could be zero.

[40] Ministry of Housing, Communities & Local Government (2015). Renewable and Low Carbon Energy. Available at: https://www.gov.uk/guidance/renewable-and-low-carbon-energy

National Policy Statement for Renewable Energy Infrastructure (2025)

A15.2.7. The National Policy Statement for Renewable Energy Infrastructure (EN-3)[2] sets out the primary policy for decisions by the Secretary of State for nationally significant renewable energy infrastructure. Sections 2.10.94-98 state:

> *'2.10.94 Solar panels are specifically designed to absorb, not reflect, irradiation.41 However, solar panels may reflect the sun's rays at certain angles, causing glint and glare. Glint is defined as a momentary flash of light that may be produced as a direct reflection of the sun in the solar panel. Glare is a continuous source of excessive brightness experienced by a stationary observer located in the path of reflected sunlight from the face of the panel. The effect occurs when the solar panel is stationed between or at an angle of the sun and the receptor.*
>
> *2.10.95 Applicants should map receptors to qualitatively identify potential glint and glare issues and determine if a glint and glare assessment is necessary as part of the application.*
>
> *2.10.96 When a quantitative glint and glare assessment is necessary, applicants are expected to consider the geometric possibility of glint and glare affecting nearby receptors, and provide an assessment of potential impact and impairment based on the angle and duration of incidence and the intensity of the reflection.*
>
> *2.10.97 The extent of reflectivity analysis required to assess potential impacts will depend on the specific project site and design. This may need to account for 'tracking' panels if they are proposed as these may cause differential diurnal and/or seasonal impacts.*
>
> *2.10.98 When a glint and glare assessment is undertaken, the potential for solar PV panels, frames and supports to have a combined reflective quality may need to be assessed, although the glint and glare of the frames and supports is likely to be significantly less than the panels.'*

A15.2.8. EN-3 does not state which receptors should be considered as part of a quantitative glint and glare assessment. Based on Pager Power's extensive project experience, typical receptors include residential dwellings, road users, aviation infrastructure, and railway infrastructure.

[41] 'Most commercially available solar panels are designed with anti-reflective glass or are produced with anti-reflective coating and have a reflective capacity that is generally equal to or less hazardous than other objects typically found in the outdoor environment, such as bodies of water or glass buildings.'

A15.2.9. Sections 2.10.126-128 state:

> *'2.10.126 Applicants should consider using, and in some cases the Secretary of State may require, solar panels to comprise of (or be covered with) anti-glare/anti-reflective coating with a specified angle of maximum reflection attenuation for the lifetime of the permission.*
>
> *2.10.127 Applicants may consider using screening between potentially affected receptors and the reflecting panels to mitigate the effects.*
>
> *2.10.128 Applicants may consider adjusting the azimuth alignment of or changing the elevation tilt angle of a solar panel, within the economically viable range, to alter the angle of incidence. In practice this is unlikely to remove the potential impact altogether but in marginal cases may contribute to a mitigation strategy.'*

A15.2.10. The mitigation strategies listed within the EN-3 are relevant strategies that are frequently utilised to eliminate or reduce glint and glare effects towards surrounding observers. The most common form of mitigation is the implementation of screening along the site boundary.

A15.2.11. Sections 2.10.158-159 state:

> *2.10.158 Solar PV panels are designed to absorb, not reflect, irradiation. However, the Secretary of State should assess the potential impact of glint and glare on nearby homes, motorists, public rights of way, and aviation infrastructure (including aircraft departure and arrival flight paths).*
>
> *2.10.159 Whilst there is some evidence that glint and glare from solar farms can be experienced by pilots and air traffic controllers in certain conditions, there is no evidence that glint and glare from solar farms results in significant impairment on aircraft safety. Therefore, unless a significant impairment can be demonstrated, the Secretary of State is unlikely to give any more than limited weight to claims of aviation interference because of glint and glare from solar farms.*

Assessment Process – Ground-Based Receptors

A15.2.12. No process for determining and contextualising the effects of glint and glare has been determined when assessing the impact of solar reflections upon surrounding roads and dwellings. Therefore, the Pager Power approach is to determine whether a reflection from the proposed solar development is geometrically possible and then to compare the results against the relevant guidance/studies to determine whether the reflection is significant. The Pager Power approach has been informed by the policy presented above, current studies (presented in Annex B) and stakeholder consultation. Further information can be found in Pager Power's Glint and Glare Guidance document39 which was produced due

to the absence of existing guidance and a specific standardised assessment methodology.

Aviation Assessment Guidance

A15.2.13. The UK Civil Aviation Authority (CAA) issued interim guidance relating to Solar Photovoltaic Systems (SPV) on 17 December 2010 and was subject to a CAA information alert 2010/53. The formal policy was cancelled on September 7th, 2012[42] however the advice is still applicable[43] until a formal policy is developed. The relevant aviation guidance from the CAA is presented in the section below.

CAA Interim Guidance

A15.2.14. This interim guidance makes the following recommendations (p.2-3):

> *'8. It is recommended that, as part of a planning application, the SPV developer provide safety assurance documentation (including risk assessment) regarding the full potential impact of the SPV installation on aviation interests.*
>
> *9. Guidance on safeguarding procedures at CAA licensed aerodromes is published within CAP 738 Safeguarding of Aerodromes and advice for unlicensed aerodromes is contained within CAP 793 Safe Operating Practices at Unlicensed Aerodromes.*
>
> *10. Where proposed developments in the vicinity of aerodromes require an application for planning permission the relevant LPA normally consults aerodrome operators or NATS when aeronautical interests might be affected. This consultation procedure is a statutory obligation in the case of certain major airports, and may include military establishments and certain air traffic surveillance technical sites. These arrangements are explained in Department for Transport Circular 1/2003 and for Scotland, Scottish Government Circular 2/2003.*
>
> *11. In the event of SPV developments proposed under the Electricity Act, the relevant government department should routinely consult with the CAA. There is therefore no requirement for the CAA to be separately consulted for such proposed SPV installations or developments.*
>
> *12. If an installation of SPV systems is planned on-aerodrome (i.e. within its licensed boundary) then it is recommended that data on the reflectivity of the solar panel material should be included in any assessment before installation approval can be granted. Although*

[42] Archived at Pager Power
[43] Reference email from the CAA dated 19/05/2014

approval for installation is the responsibility of the ALH[44], as part of a condition of a CAA Aerodrome Licence, the ALH is required to obtain prior consent from CAA Aerodrome Standards Department before any work is begun or approval to the developer or LPA is granted, in accordance with the procedures set out in CAP 791 Procedures for Changes to Aerodrome Infrastructure.

13. During the installation and associated construction of SPV systems there may also be a need to liaise with nearby aerodromes if cranes are to be used; CAA notification and permission is not required.

14. The CAA aims to replace this informal guidance with formal policy in due course and reserves the right to cancel, amend or alter the guidance provided in this document at its discretion upon receipt of new information.

15. Further guidance may be obtained from CAA's Aerodrome Standards Department via aerodromes@caa.co.uk.'

FAA Guidance

A15.2.15. The most comprehensive guidelines available for the assessment of solar developments near aerodromes were produced initially in November 2010 by the United States Federal Aviation Administration (FAA) and updated in 2013.

A15.2.16. The 2010 document is entitled 'Technical Guidance for Evaluating Selected Solar Technologies on Airports'[45] and the 2013 update is entitled 'Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports'[46]. In April 2018 the FAA released a new version (Version 1.1) of the 'Technical Guidance for Evaluating Selected Solar Technologies on Airports'[47].

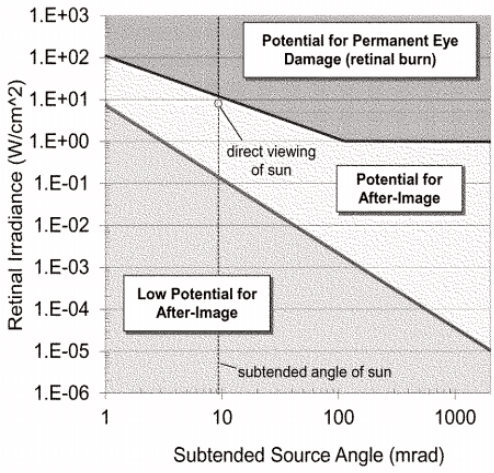
A15.2.17. An overview of the methodology presented within the 2013 interim guidance and adopted by the FAA is presented below. This methodology is not presented within the 2018 guidance.

- Solar energy systems located on an airport that is not federally-obligated or located outside the property of a federally-obligated airport are not subject to this policy.

[44] Aerodrome Licence Holder
[45] Archived at Pager Power
[46] Department of Transportation, Federal Aviation Administration (FAA) (2013) Interim Policy, FAA Review of Solar Energy System Projects on Federally Obligated Airports. Available at: https://www.govinfo.gov/content/pkg/FR-2013-10-23/pdf/2013-24729.pdf
[47] FAA (2018) Technical Guidance for Evaluating Selected Solar Technologies on Airports. Available at: https://www.faa.gov/airports/environmental/policy_guidance/media/FAA-Airport-Solar-Guide-2018.pdf

- Proponents of solar energy systems located off-airport property or on non-federally-obligated airports are strongly encouraged to consider the requirements of this policy when siting such system.
- FAA adopts the Solar Glare Hazard Analysis Plot…. as the standard for measuring the ocular impact of any proposed solar energy system on a federally-obligated airport. This is shown in the figure below.

Figure 1



Solar Glare Ocular Hazard Plot: The potential ocular hazard from solar glare is a function of retinal irradiance and the subtended angle (size/distance) of the glare source. It should be noted that the ratio of spectrally weighted solar illuminance to solar irradiance at the earth's surface yields a conversion factor of ~100 lumens/W. Plot adapted from Ho et al., 2011.

Chart References: Ho, C.K., C.M. Ghanbari, and R.B. Diver, 2011, Methodology to Assess Potential Glint and Glare Hazards from Concentrating Solar Power Plants: Analytical Models and Experimental Validation, J. Solar Energy Engineering, August 2011, Vol. 133, 031021-1 – 031021-9.

Insert A 15-24 Solar Glare Hazard Analysis Plot (FAA)

- To obtain FAA approval to revise an airport layout plan to depict a solar installation and/or a ''no objection'' … the airport sponsor will be required to demonstrate that the proposed solar energy system meets the following standards:
- No potential for glint or glare in the existing or planned Airport Traffic Control Tower (ATC) cab, and
- No potential for glare or ''low potential for after-image'' … along the final approach path for any existing landing threshold or future landing thresholds (including any planned interim phases of the landing thresholds) as shown on the current FAA-approved Airport Layout Plan (ALP). The final approach path is defined as two (2) miles from fifty (50) feet above the landing threshold using a standard three (3) degree glidepath.
- Ocular impact must be analysed over the entire calendar year in one (1) minute intervals from when the sun rises above the horizon until the sun sets below the horizon.

A15.2.18. The bullets highlighted above state there should be 'no potential for glare' at that ATC Tower and 'no' or 'low potential for glare' on the approach paths.

A15.2.19. Key points from the 2018 FAA guidance are presented below.

- Reflectivity refers to light that is reflected off surfaces. The potential effects of reflectivity are glint (a momentary flash of bright light) and glare (a continuous source of bright light). These two effects are referred to hereinafter as "glare," which can cause a brief loss of vision, also known as flash blindness[48].
- The amount of light reflected off a solar panel surface depends on the amount of sunlight hitting the surface, its surface reflectivity, geographic location, time of year, cloud cover, and solar panel orientation.
- As illustrated in A15.3 – Annex B, flat, smooth surfaces reflect a more concentrated amount of sunlight back to the receiver, which is referred to as specular reflection. The more a surface is polished, the more it shines. Rough or uneven surfaces reflect light in a diffused or scattered manner and, therefore, the light will not be received as bright.
- Because the FAA has no specific standards for airport solar facilities and potential glare, the type of glare analysis may vary. Depending on site specifics (e.g., existing land uses, location and size of the project) an acceptable evaluation could involve one or more of the following levels of assessment:
    - A qualitative analysis of potential impact in consultation with the Control Tower, pilots and airport officials;
    - A demonstration field test with solar panels at the proposed site in coordination with FAA Tower personnel;
    - A geometric analysis to determine days and times when an impact is predicted.
- The extent of reflectivity analysis required to assess potential impacts will depend on the specific project site and system design.
- **1. Assessing Baseline Reflectivity Conditions** – Reflection in the form of glare is present in current aviation operations. The existing sources of glare come from glass windows, auto surface parking, rooftops, and water bodies. At airports, existing reflecting surfaces may include hangar roofs, surface parking, and glassy office buildings. To minimize unexpected glare, windows of air traffic control towers and airplane cockpits are coated with anti-reflective glazing. Operators also wear

[48] Flash Blindness, as described in the FAA guidelines, can be described as a temporary visual interference effect that persists after the source of illumination has ceased. This occurs from many reflective materials in the ambient environment

polarized eye wear. Potential glare from solar panels should be viewed in this context. Any airport considering a solar PV project should first review existing sources of glare at the airport and the effectiveness of measures used to mitigate that glare.

- **2. Tests in the Field** – Potential glare from solar panels can easily be viewed at the airport through a field test. A few airports have coordinated these tests with FAA Air Traffic Controllers to assess the significance of glare impacts. To conduct such a test, a sponsor can take a solar panel out to proposed location of the solar project, and tilt the panel in different directions to evaluate the potential for glare onto the air traffic control tower. For the two known cases where a field test was conducted, tower personnel determined the glare was not significant. If there is a significant glare impact, the project can be modified by ensuring panels are not directed in that direction.
- **3. Geometric Analysis** – Geometric studies are the most technical approach for reflectivity issues. They are conducted when glare is difficult to assess through other methods. Studies of glare can employ geometry and the known path of the sun to predict when sunlight will reflect off of a fixed surface (like a solar panel) and contact a fixed receptor (e.g., control tower). At any given site, the sun moves across the sky every day and its path in the sky changes throughout year. This in turn alters the destination of the resultant reflections since the angle of reflection for the solar panels will be the same as the angle at which the sun hits the panels. The larger the reflective surface, the greater the likelihood of glare impacts.
- Facilities placed in remote locations, like the desert, will be far from receptors and therefore potential impacts are limited to passing aircraft. Because the intensity of the light reflected from the solar panel decreases with increasing distance, an appropriate question is how far you need to be from a solar reflected surface to avoid flash blindness. It is known that this distance is directly proportional to the size of the array in question[49] but still requires further research to definitively answer.
- **4. Experiences of Existing Airport Solar Projects** – Solar installations are presently operating at a number of airports, including megawatt-sized solar facilities covering multiple acres. Air traffic control towers have expressed concern about glint and glare from a small number of solar installations. These were often instances when solar installations were sited between the tower and airfield, or for installations with inadequate or no reflectivity analysis. Adequate reflectivity analysis and alternative siting addressed initial issues at those installations.

[49] Ho, Clifford, Cheryl Ghanbari, and Richard Diver (2009). Hazard Analysis of Glint and Glare From Concentrating Solar Power Plants. SolarPACES 2009, Berlin Germany. Sandia National Laboratories

Air Navigation Order (ANO) 2016

A15.2.20. In some instances, an aviation stakeholder can refer to the ANO 2016[50] with regard to safeguarding. Key points from the document are presented below.

A15.2.21. Lights liable to endanger

224. (1) A person must not exhibit in the United Kingdom any light which—

(a) by reason of its glare is liable to endanger aircraft taking off from or landing at an aerodrome; or

(b) by reason of its liability to be mistaken for an aeronautical ground light is liable to endanger aircraft.

(2) If any light which appears to the CAA to be a light described in paragraph (1) is exhibited, the CAA may direct the person who is the occupier of the place where the light is exhibited or who has charge of the light, to take such steps within a reasonable time as are specified in the direction—

(a) to extinguish or screen the light; and

(b) to prevent in the future the exhibition of any other light which may similarly endanger aircraft.

(3) The direction may be served either personally or by post, or by affixing it in some conspicuous place near to the light to which it relates.

(4) In the case of a light which is or may be visible from any waters within the area of a general lighthouse authority, the power of the CAA under this article must not be exercised except with the consent of that authority.

Lights which dazzle or distract

225. A person must not in the United Kingdom direct or shine any light at any aircraft in flight so as to dazzle or distract the pilot of the aircraft.'

The document states that no 'light', 'dazzle' or 'glare' should be produced which will create a detrimental impact upon aircraft safety.

Endangering safety of an aircraft

[50] The Air Navigation Order 2016. Available at: https://www.legislation.gov.uk/uksi/2016/765/contents/made

240. A person must not recklessly or negligently act in a manner likely to endanger an aircraft, or any person in an aircraft.

Endangering safety of any person or property

241. A person must not recklessly or negligently cause or permit an aircraft to endanger any person or property.

Civil Aviation Authority Consolidation of UK Regulation 139/2014

A15.2.22. The Civil Aviation Authority (CAA) published a consolidating document[51] of UK regulations, (Implementing Rules, Acceptable Means of Compliance and Guidance Material), in 2023. A summary of material relevant to aerodrome safeguarding is presented below:

A15.2.23. (a) The aerodrome operator should have procedures to monitor the changes in the obstacle environment, marking and lighting, and in human activities or land use on the aerodrome and the areas around the aerodrome, as defined in coordination with the CAA. The scope, limits, tasks and responsibilities for the monitoring should be defined in coordination with the relevant air traffic services providers, and with the CAA and other relevant authorities.

A15.2.24. (b) The limits of the aerodrome surroundings that should be monitored by the aerodrome operator are defined in coordination with the CAA and should include the areas that can be visually monitored during the inspections of the manoeuvring area.

A15.2.25. (c) The aerodrome operator should have procedures to mitigate the risks associated with changes on the aerodrome and its surroundings identified with the monitoring procedures. The scope, limits, tasks, and responsibilities for the mitigation of risks associated to obstacles or hazards outside the perimeter fence of the aerodrome should be defined in coordination with the relevant air traffic services providers, and with the CAA and other relevant authorities.

A15.2.26. (d) The risks caused by human activities and land use which should be assessed and mitigated should include:

- Obstacles and the possibility of induced turbulence;
- The use of hazardous, confusing, and misleading lights;
- The dazzling caused by large and highly reflective surfaces;
- Sources of non-visible radiation, or the presence of moving, or fixed objects which may interfere with, or adversely affect, the

[51] Civil Aviation Authority (2025) UK Regulation (EU) 139/2014. Available at: https://regulatorylibrary.caa.co.uk/139-2014-pdf/PDF.pdf

performance of aeronautical communications, navigation and surveillance systems; and

- Non-aeronautical ground light near an aerodrome which may endanger the safety of aircraft and which should be extinguished, screened, or otherwise modified so as to eliminate the source of danger.

A15.3 ANNEX B – Overview of Glint and Glare Studies

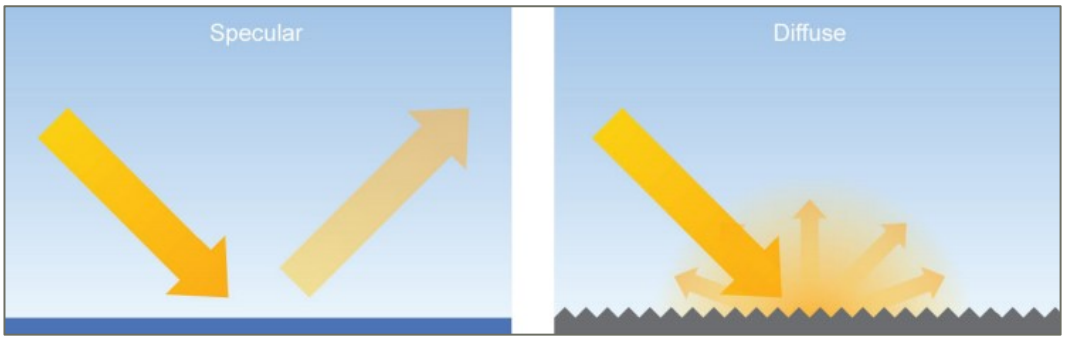
Overview

A15.3.1. Studies have been undertaken assessing the type and intensity of solar reflections from various surfaces including solar panels and glass. An overview of these studies is presented below.

A15.3.2. The guidelines presented are related to aviation safety. The results are applicable for the purpose of this analysis.

Reflection Type from Solar Panels

A15.3.3. Based on the surface conditions reflections from light can be specular and diffuse. A specular reflection has a reflection characteristic similar to that of a mirror; a diffuse will reflect the incoming light and scatter it in many directions. The figure below, taken from the FAA guidance[52], illustrates the difference between the two types of reflections. Because solar panels are flat and have a smooth surface most of the light reflected is specular, which means that incident light from a specific direction is reradiated in a specific direction.



Insert A 15-25 Specular and diffuse reflections

Solar Reflection Studies

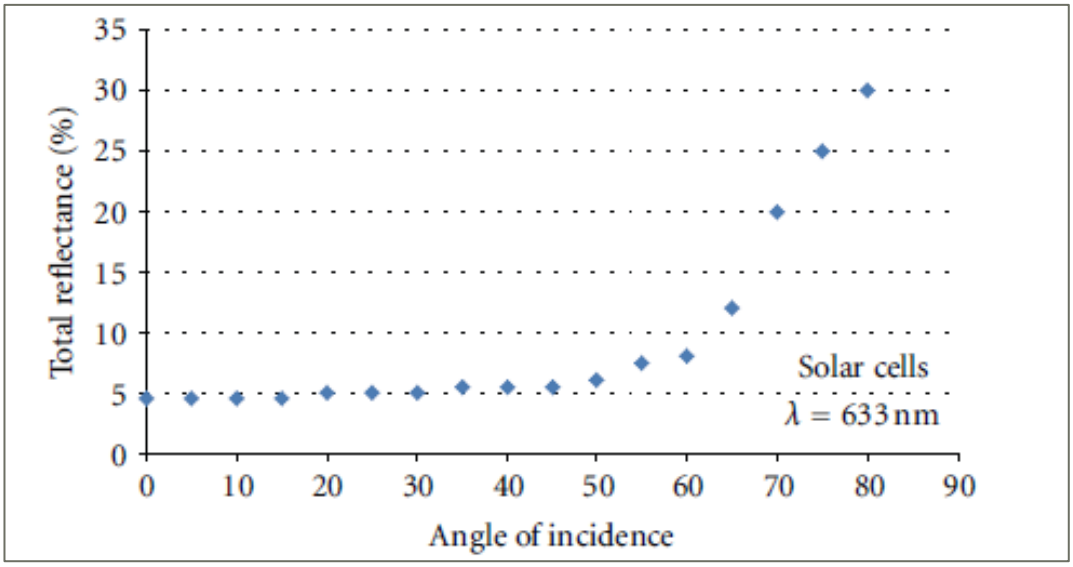
A15.3.4. An overview of content from identified solar panel reflectivity studies is presented in the subsections below.

Evan Riley and Scott Olson, "A Study of the Hazardous Glare Potential to Aviators from Utility-Scale Flat-Plate Photovoltaic Systems"

A15.3.5. Evan Riley and Scott Olson published in 2011 their study titled: *A Study of the Hazardous Glare Potential to Aviators from Utility-Scale Flat-Plate Photovoltaic Systems*[52]". They researched the potential glare that a pilot could experience from a 25 degree fixed tilt PV system located outside of Las Vegas, Nevada. The theoretical glare was estimated using published

[52] Evan Riley and Scott Olson (2011) A Study of the Hazardous Glare Potential to Aviators from Utility-Scale Flat-Plate Photovoltaic Systems. ISRN Renewable Energy

ocular safety metrics which quantify the potential for a postflash glare after-image. This was then compared to the postflash glare after-image caused by smooth water. The study demonstrated that the reflectance of the solar cell varied with angle of incidence, with maximum values occurring at angles close to 90 degrees. The reflectance values varied from approximately 5% to 30%. This is shown on the figure below.



Insert A 15-26 Total reflectance % when compared to angle of incidence

A15.3.6. The conclusions of the research study were:

- The potential for hazardous glare from flat-plate PV systems is similar to that of smooth water;
- Portland white cement concrete (which is a common concrete for runways), snow, and structural glass all have a reflectivity greater than water and flat plate PV modules.

FAA Guidance – "Technical Guidance for Evaluating Selected Solar Technologies on Airports"[52]

A15.3.7. The 2010 FAA Guidance included a diagram which illustrates the relative reflectance of solar panels compared to other surfaces. The figure shows the relative reflectance of solar panels compared to other surfaces. Surfaces in this figure produce reflections which are specular and diffuse. A specular reflection (those made by most solar panels) has a reflection characteristic similar to that of a mirror. A diffuse reflection will reflect the incoming light and scatter it in many directions. A table of reflectivity values, sourced from the figure within the FAA guidance, is presented below.

Table A 15-3 Relative reflectivity of various surfaces

Surface	Approximate Percentage of Light Reflected[53]
Snow	80
White Concrete	77
Bare Aluminium	74
Vegetation	50
Bare Soil	30
Wood Shingle	17
Water	5
Solar Panels	5
Black Asphalt	2

A15.3.8. Note that the data above does not appear to consider the reflection type (specular or diffuse).

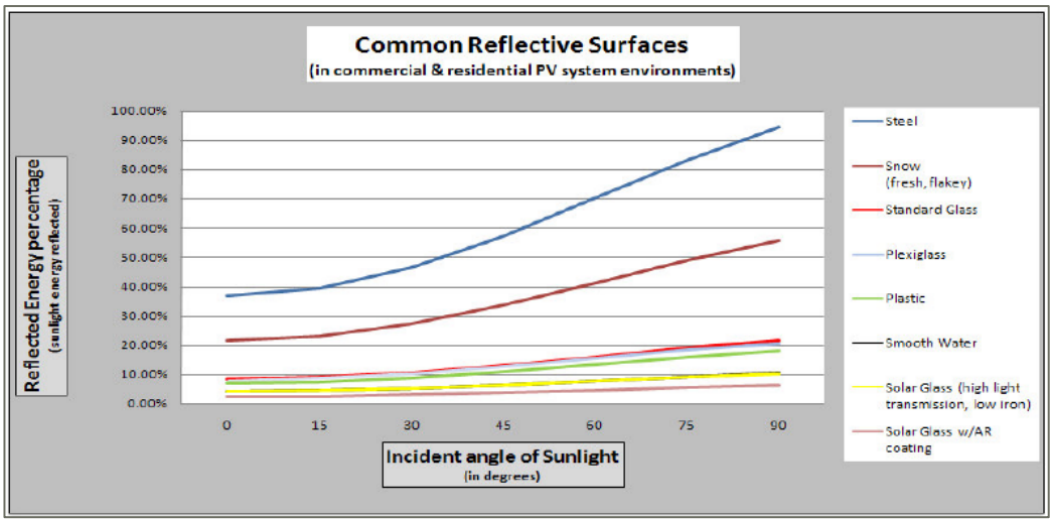
A15.3.9. An important comparison in this table is the reflectivity compared to water which will produce a reflection of very similar intensity when compared to that from a solar panel. The study by Riley and Olsen study (2011) also concludes that still water has a very similar reflectivity to solar panels.

SunPower Technical Notification (2009)

A15.3.10. SunPower published a technical notification[33] to 'increase awareness concerning the possible glare and reflectance impact of PV Systems on their surrounding environment'.

A15.3.11. The figure presented below shows the relative reflectivity of solar panels compared to other natural and manmade materials including smooth water, standard glass and steel.

[53] Extrapolated data, baseline of 1,000 W/m^2 for incoming sunlight



Insert A 15-27 Common reflective surfaces

A15.3.12. The results, similarly to those from Riley and Olsen study (2011) and the FAA (2010), show that solar panels produce a reflection that is less intense than those of '*standard glass and other common reflective surfaces*'.

A15.3.13. With respect to aviation and solar reflections observed from the air, SunPower has developed several large installations near airports or on Air Force bases. It is stated that these developments have all passed FAA or Air Force standards with all developments considered "No Hazard to Air Navigation". The note suggests that developers discuss any possible concerns with stakeholders near proposed solar farms.

A15.4 ANNEX C – Overview of Sun Movements and Relative Reflections

A15.4.1. The Sun's position in the sky can be accurately described by its azimuth and elevation. Azimuth is a direction relative to true north (horizontal angle i.e. from left to right) and elevation describes the Sun's angle relative to the horizon (vertical angle i.e. up and down).

A15.4.2. The Sun's position can be accurately calculated for a specific location. The following data being used for the calculation:

- Time;
- Date;
- Latitude;
- Longitude.

A15.4.3. The following is true at the location of the solar development:

- The Sun is at its highest around midday and is to the south at this time;
- The Sun rises highest on 21 June (longest day);
- On 21 December, the maximum elevation reached by the Sun is at its lowest (shortest day).

A15.4.4. The combination of the Sun's azimuth angle and vertical elevation will affect the direction and angle of the reflection from a reflector.

A15.5 ANNEX D – Glint and Glare Impact Significance

Overview

A15.5.1. The significance of glint and glare will vary for different receptors. The following section presents a general overview of the significance criteria with respect to experiencing a solar reflection.

Impact Significance Definition

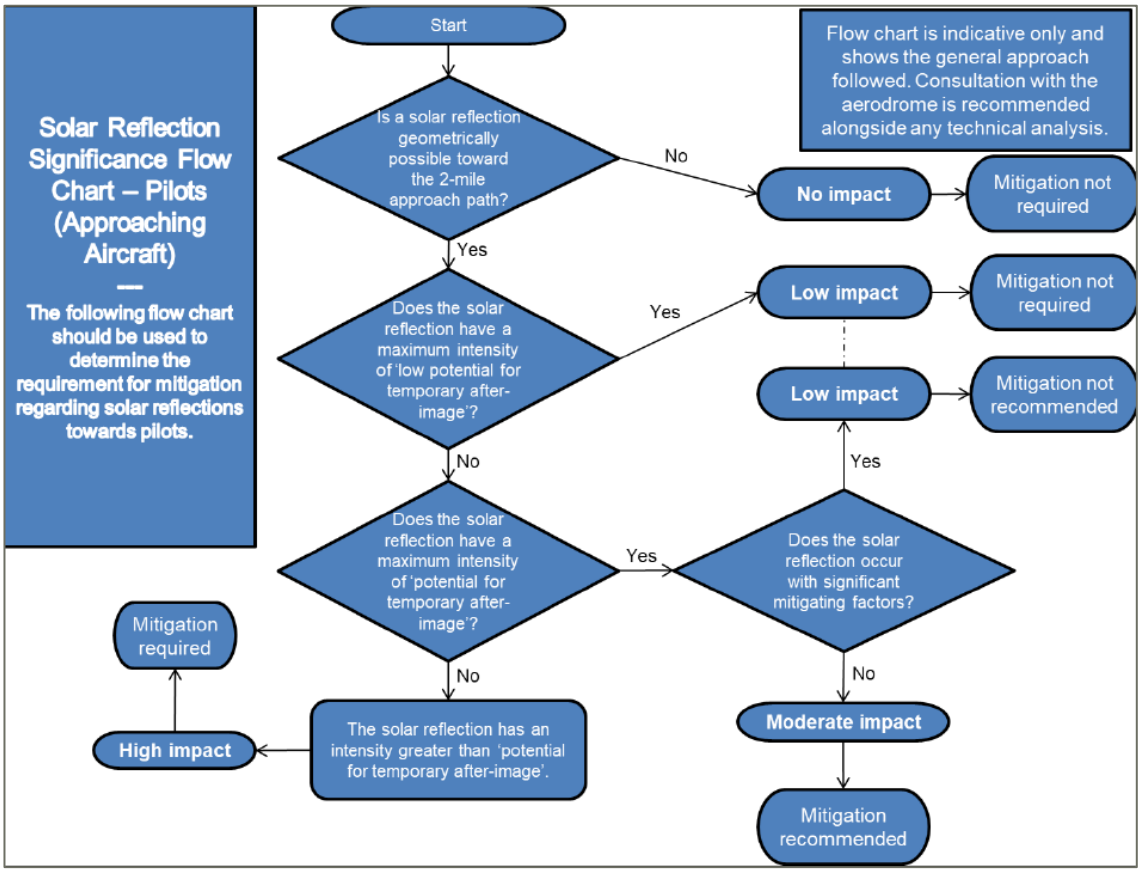
A15.5.2. The table below presents the recommended definition of 'impact significance' in glint and glare terms and the requirement for mitigation under each.

Table A 15-4 Impact significance definition

Impact Significance	Definition	Mitigation Requirement
No Impact	A solar reflection is not geometrically possible or will not be visible from the assessed receptor.	No mitigation required.
Low	A solar reflection is geometrically possible however any impact is considered to be small such that mitigation is not required e.g. intervening screening will limit the view of the reflecting solar panels significantly.	No mitigation recommended.
Moderate	A solar reflection is geometrically possible and visible however it occurs under conditions that do not represent a worst-case given individual receptor criteria.	Mitigation recommended.
High	A solar reflection is geometrically possible and visible under worst-case conditions that will produce a significant impact given individual receptor criteria	Mitigation will be required if the proposed development is to proceed.

Impact Significance Determination for Approaching Aircraft

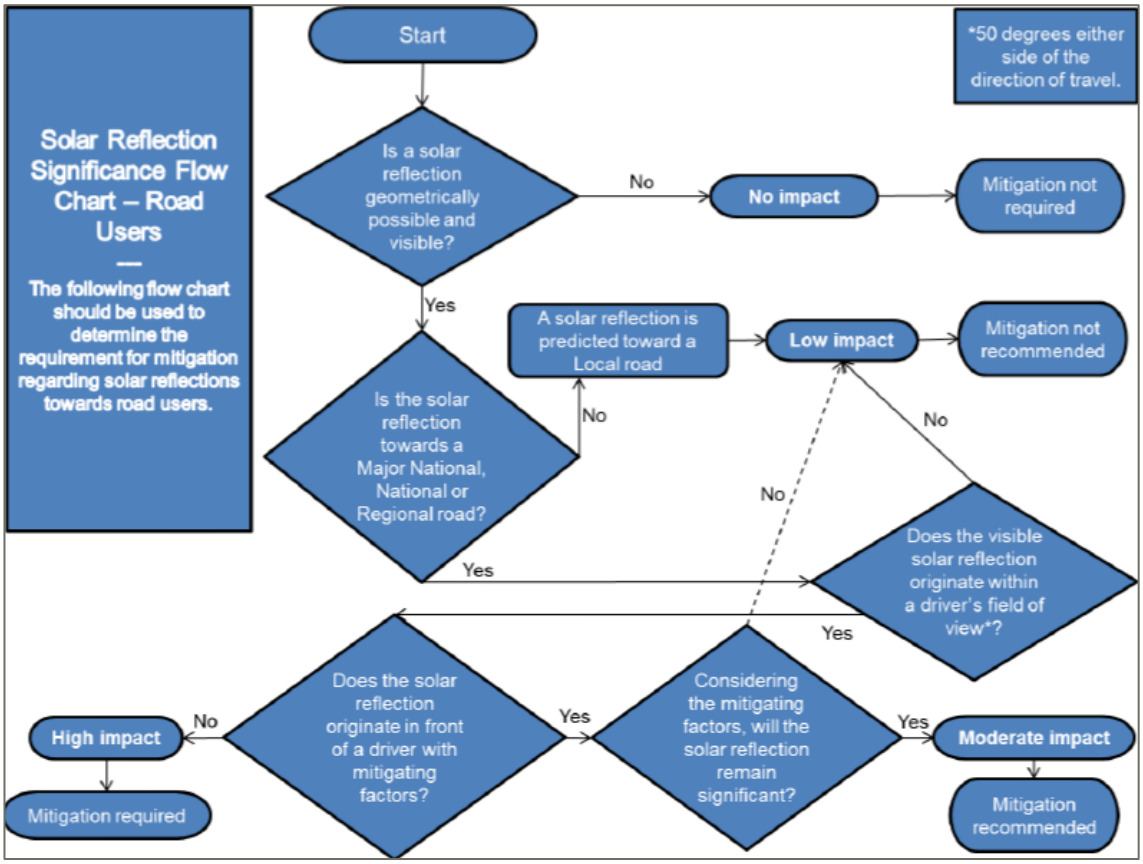
A15.5.3. The flow chart presented below has been followed when determining the impact significance and mitigation requirement for approaching aircraft.



Insert A 15-28 Approach path receptor mitigation requirement flow chart

Impact Significance Determination for Road Receptors

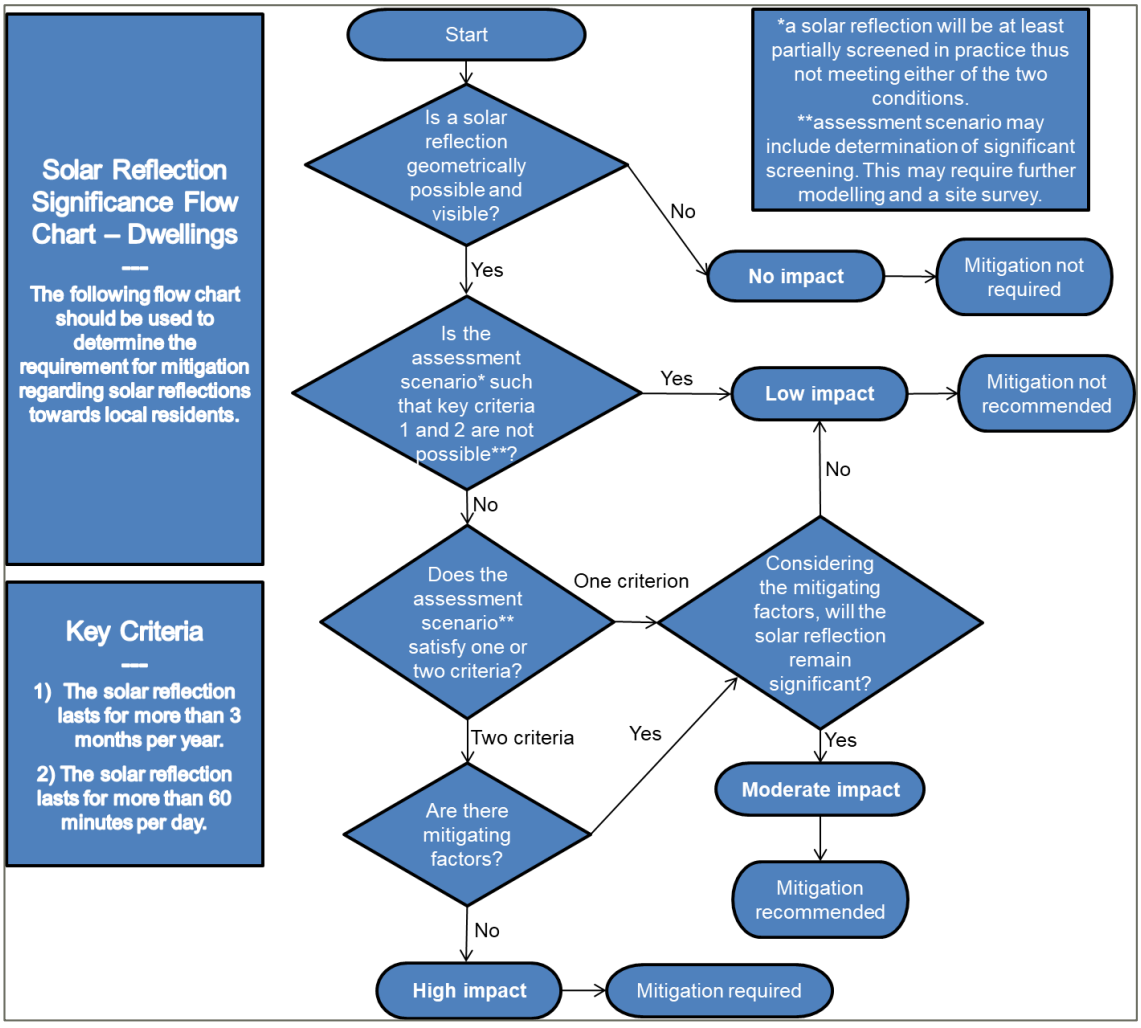
A15.5.5. The flow chart presented below has been followed when determining the impact significance for road receptors.



Insert A 15-29 Road receptor impact significance flow chart

Impact Significance Determination for Dwelling Receptors

A15.5.7. The flow chart presented below has been followed when determining the impact significance for dwelling receptors.



Insert A 15-30 Dwelling receptor impact significance flow chart

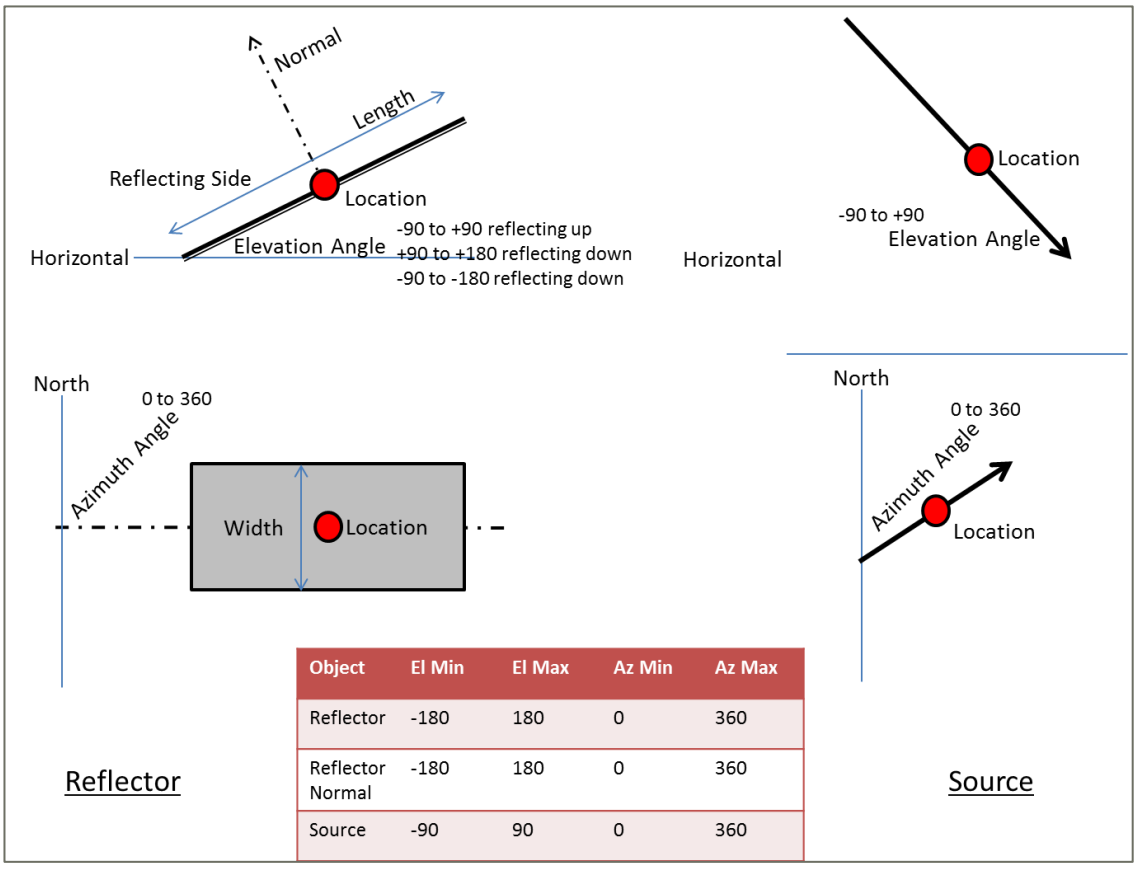
A15.6 ANNEX E – Reflection Calculations Methodology

Pager Power Methodology

A15.6.1. The calculations are three dimensional and complex, accounting for:

- The Earth's orbit around the Sun;
- The Earth's rotation;
- The Earth's orientation;
- The reflector's location;
- The reflector's 3D Orientation.

A15.6.2. Reflections from a flat reflector are calculated by considering the normal which is an imaginary line that is perpendicular to the reflective surface and originates from it. The diagram below may be used to aid understanding of the reflection calculation process.



Object	El Min	El Max	Az Min	Az Max
Reflector	-180	180	0	360
Reflector Normal	-180	180	0	360
Source	-90	90	0	360

Insert A 15-31 Reflection calculation process

A15.6.3. The following process is used to determine the 3D Azimuth and Elevation of a reflection:

- Use the Latitude and Longitude of reflector as the reference for calculation purposes;
- Calculate the Azimuth and Elevation of the normal to the reflector;
- Calculate the 3D angle between the source and the normal;

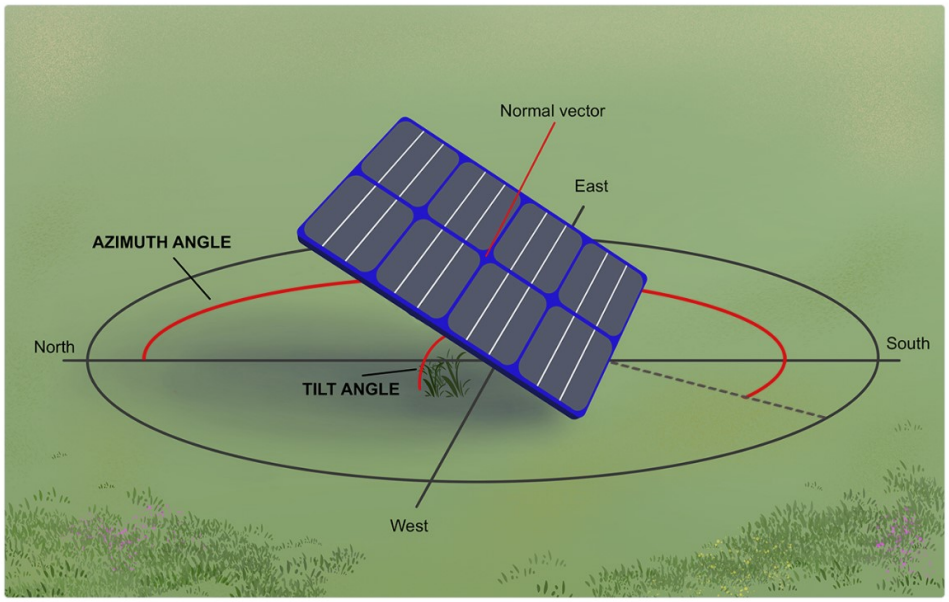
- If this angle is less than 90 degrees a reflection will occur. If it is greater than 90 degrees no reflection will occur because the source is behind the reflector;
- Calculate the Azimuth and Elevation of the reflection in accordance with the following:
- The angle between source and normal is equal to angle between normal and reflection;
- Source, Normal and Reflection are in the same plane.

Forge Reflection Calculations Methodology

A15.6.4. Extracts taken from the Forge Solar Model are shown in the figures below and on the following page.

Fixed-Mount Parameters

Fixed-mount PV panels are described by a tilt and orientation. These parameters are referred to as the **module configuration** of the PV array.



PV module orientation/azimuth and tilt. Sample illustrates south-facing module typical in northern hemisphere

Module orientation/azimuth (°)
The azimuthal facing or direction toward which the PV panels are positioned. Orientation is measured clockwise from true north. Panels which face north, which is typical in the southern hemisphere, have an orientation of 0°. Panels which face south, which is typical in the northern hemisphere, have an orientation of 180°. If a known orientation is based on magnetic north, the location-specific declination must be used to determine the orientation from true north.

Module tilt (°)
The elevation angle of the panels, measured up from flat ground. Panels lying flat on the ground (facing up) have a tilt of 0°. Tilt values between 0° and 40° are typical.

Insert A 15-32 Fixed System Parameters

A15.7 ANNEX F – Assessment Limitations and Assumptions

Pager Power's Model

A15.7.1. The model considers 100% sunlight during daylight hours which is highly conservative.

A15.7.2. The model does not account for terrain between the reflecting solar panels and the assessed receptor where a solar reflection is geometrically possible.

A15.7.3. The model considers terrain between the reflecting solar panels and the visible horizon (where the sun may be obstructed from view of the panels)[54].

A15.7.4. It is assumed that the panel elevation angle assessed represents the elevation angle for all of the panels within each solar panel area defined.

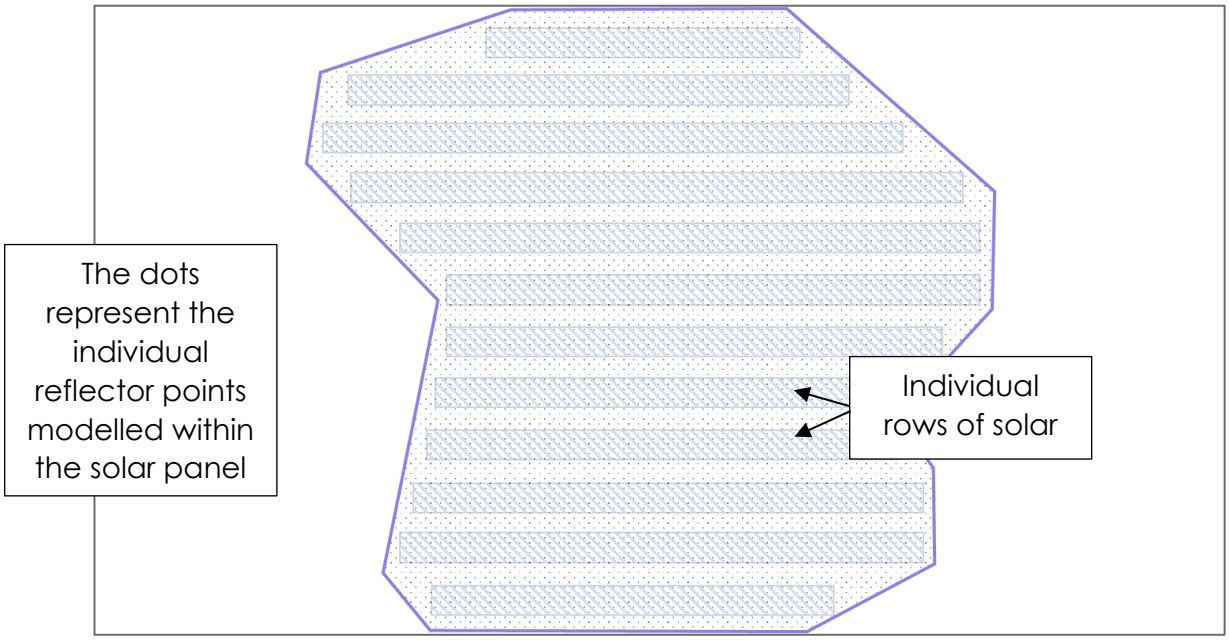
A15.7.5. It is assumed that the panel azimuth angle assessed represents the azimuth angle for all of the panels within each solar panel area defined.

A15.7.6. Only a reflection from the face of the panel has been considered. The frame or the reverse or frame of the solar panel has not been considered.

A15.7.7. The model assumes that a receptor can view the face of every panel (point, defined in the following paragraph) within the development area whilst in reality this, in the majority of cases, will not occur. Therefore any predicted solar reflection from the face of a solar panel that is not visible to a receptor will not occur in practice.

A15.7.8. A finite number of points within each solar panel area defined is chosen based on an assessment resolution so that a comprehensive understanding of the entire development can be formed. This determines whether a solar reflection could ever occur at a chosen receptor. The model does not consider the specific panel rows or the entire face of the solar panel within the development outline, rather a single point is defined every 'x' metres (based on the assessment resolution) with the geometric characteristics of the panel. A panel area is however defined to encapsulate all possible panel locations. See the figure below which illustrates this process.

[54] UK only



Insert A 15-33 Solar panel area modelling overview

A15.7.9. A single reflection point is chosen for the geometric calculations. This suitably determines whether a solar reflection can be experienced at a receptor location and the time of year and duration of the solar reflection. Increased accuracy could be achieved by increasing the number of heights assessed however this would only marginally change the results and is not considered significant.

A15.7.10. The available street view imagery, satellite mapping, terrain and any site imagery provided by the developer has been used to assess line of sight from the assessed receptors to the modelled solar panel area, unless stated otherwise. In some cases, this imagery may not be up to date and may not give the full perspective of the installation from the location of the assessed receptor.

A15.7.11. Any screening in the form of trees, buildings etc. that may obstruct the Sun from view of the solar panels is not within the modelling unless stated otherwise. The terrain profile at the horizon is considered if stated.

Summary of assumptions and abstractions required by the SGHAT/ForgeSolar analysis methodology

1. Times associated with glare are denoted in Standard time. For Daylight Savings, add one hour.
2. Result data files and plots are now retained for two years after analysis completion. Files should be downloaded and saved if additional persistence is required.
3. The algorithm does not rigorously represent the detailed geometry of a system; detailed features such as gaps between modules, variable height of the PV array, and support structures may impact actual glare results. However, we have validated our models against several systems, including a PV array causing glare to the air-traffic control tower at Manchester-Boston Regional Airport and several sites in Albuquerque, and the tool accurately predicted the occurrence and intensity of glare at different times and days of the year.
4. Several calculations utilize the PV array centroid, rather than the actual glare spot location, due to algorithm limitations. This may affect results for large PV footprints. Additional analyses of array sub-sections can provide additional information on expected glare. This primarily affects analyses of path receptors.
5. Random number computations are utilized by various steps of the annual hazard analysis algorithm. Predicted minutes of glare can vary between runs as a result. This limitation primarily affects analyses of Observation Point receptors, including ATCTs. Note that the SGHAT/ForgeSolar methodology has always relied on an analytical, qualitative approach to accurately determine the overall hazard (i.e. green vs. yellow) of expected glare on an annual basis.
6. The subtended source angle (glare spot size) is constrained by the PV array footprint size. Partitioning large arrays into smaller sections will reduce the maximum potential subtended angle, potentially impacting results if actual glare spots are larger than the sub-array size. Additional analyses of the combined area of adjacent sub-arrays can provide more information on potential glare hazards. (See previous point on related limitations.)
7. The algorithm assumes that the PV array is aligned with a plane defined by the total heights of the coordinates outlined in the Google map. For more accuracy, the user should perform runs using minimum and maximum values for the vertex heights to bound the height of the plane containing the solar array. Doing so will expand the range of observed solar glare when compared to results using a single height value.
8. The algorithm does not consider obstacles (either man-made or natural) between the observation points and the prescribed solar installation that may obstruct observed glare, such as trees, hills, buildings, etc.
9. The variable direct normal irradiance (DNI) feature (if selected) scales the user-prescribed peak DNI using a typical clear-day irradiance profile. This profile has a lower DNI in the mornings and evenings and a maximum at solar noon. The scaling uses a clear-day irradiance profile based on a normalized time relative to sunrise, solar noon, and sunset, which are prescribed by a sun-position algorithm and the latitude and longitude obtained from Google maps. The actual DNI on any given day can be affected by cloud cover, atmospheric attenuation, and other environmental factors.
10. The ocular hazard predicted by the tool depends on a number of environmental, optical, and human factors, which can be uncertain. We provide input fields and typical ranges of values for these factors so that the user can vary these parameters to see if they have an impact on the results. The speed of SGHAT allows expedited sensitivity and parametric analyses.
11. The system output calculation is a DNI-based approximation that assumes clear, sunny skies year-round. It should not be used in place of more rigorous modeling methods.
12. Hazard zone boundaries shown in the Glare Hazard plot are an approximation and visual aid. Actual ocular impact outcomes encompass a continuous, not discrete, spectrum.
13. Glare locations displayed on receptor plots are approximate. Actual glare-spot locations may differ.
14. Glare vector plots are simplified representations of analysis data. Actual glare emanations and results may differ.
15. PV array tracking assumes the modules move instantly when tracking the sun, and when reverting to the rest position.

Insert A 15-34 Forge's Sandia National Laboratories' (SGHAT) Model[55]

[55] Forge Solar (2025) SGHAT Model. Available at: https://www.forgesolar.com/accounts/login/?next=/help/#assumptions

Appendix 16 Cumulative Effects

A16.1 Reasonably Foreseeable Future Projects

Initial RFFP long-list

A16.1.1. The RFFP long-list, based on searches completed in March 2026, is provided at Table A 16-1.

A16.1.2. Figure 16-1 in Volume II illustrates where each of the RFFPs is located, relative to the Site.

Table A 16-1 Initial RFFP long-list

#	Planning Ref/Name	Location	Development details	CEA Assumptions	Planning Status	Local Authority	Distance from Scheme
Planning applications							
1	W/25/01580/OUT	Land At (OS 1103 4392) Bretforton Road Honeybourne	Outline planning application for the erection of up to 24 dwellings with detailed access and all other matters reserved (appearance, landscaping, layout and scale).	Will have to apply for approval of reserved matters before development can commence. Reserved matters applications must be made within three years of grant (10/11/2025).	Approval (10/11/2025)	Wychavon District Council	3km (South East of Site 4)
2	W/24/00632/FUL	Land At (OS 0835 4940) Evesham Road Cleeve Prior	Full Planning Application for the erection of 61 dwellings with associated public open space, landscaping, vehicular access off Evesham Road and associated works.	The development hereby permitted shall be begun before the expiration of three years from the date of this permission (09/04/2025).	Approval (17/07/2025)	Wychavon District Council	0.5km (West of Site 3a)
3	W/23/00894/FUL	Harden Huish Shinehill Lane South Littleton Evesham WR11 8TP	Erection of 12 affordable dwellings and associated earthworks to facilitate surface water drainage, landscaping, car parking and other ancillary works.	The development hereby permitted shall be begun before the expiration of three years from the date of this permission. (25/11/24).	Approval (25/11/2025)	Wychavon District Council	0.2km (North of Site 4)
4	W/23/01662/OUT	Land At (Os 0871 4611) Shinehill Lane South Littleton	Outline application for residential development for up to 25 First Homes, associated works including infrastructure, ancillary facilities, open space, landscaping, pumping station and construction of new vehicular access off Shinehill Lane, with all matters reserved.	Details of the access, appearance, landscaping, layout, and scale (hereinafter called "the Reserved Matters") shall be submitted in writing to the Local Planning Authority before the expiration of three years from the date of this permission. Development shall be carried out as approved in writing by the Local Planning Authority. (29/05/2025) The development shall be begun before the expiration from the date of this permission.	Approved on appeal (02/08/2024)	Wychavon District Council	0m (North of Site 4)
5	W/25/00046/OUT	Land At (OS 0582 4619) Three Cocks Lane Offenham	Outline application for the erection of up to 35 dwellings.	Consultations Ends - 19/08/2025.	Pending (Validated 22/01/2025)	Wychavon District Council	2km (West of Site 4)
6	W/24/02258/FUL	Land At (OS 0569 4604) Three Cocks Lane Offenham	Full application for 42 dwellings including formation of access, landscaping, public open space and associated works	Development shall begin no later than three years from the date of permission - 13/02/2026.	Approval (13/02/2026)	Wychavon District Council	2km (West of Site 4)
7	W/24/00656/FUL	Land Rear Of Sefton Station Road Harvington	Erection of up to 55 residential dwellings with associated open space, landscaping and infrastructure.	Committee meeting - 18/09/2025.	Pending (Validated 29/04/2024)	Wychavon District Council	2km (West of Site 3b)

#	Planning Ref/Name	Location	Development details	CEA Assumptions	Planning Status	Local Authority	Distance from Scheme
8	W/24/02415/FUL	Land at (OS 0591 4577) Laurels Avenue Offenham Evesham	A residential proposal for 23 dwellings, Public Open Space, SuDS basin and associated infrastructure.	Committee meeting - 18/09/2025.	Pending (Validated 28/01/2025)	Wychavon District Council	2.1km (West of Site 4)
9	25/00415/OUT	Land North Of Salford Road Bidford-on-Avon	Outline Planning application with all matters reserved except access to the site, for up to 122 dwellings and associated green space, biodiversity enhancements and associated works; and demolition of properties related to Marriage Hill Farm and No. 26 Salford Road.	Revised Target Date for Determination - 18/12/2025.	Pending (Validated 10/04/2025)	Stratford-on-Avon District Council	1.6km (East of Site 2)
Development Plan allocations							
10	Stratford-on-Avon Local Plan	Long Marston Airfield Garden Village	New settlement for up to 3,500 homes (outside of study area but major development).	Allocated site in the Stratford-on-Avon Local Plan. Will be a new garden village with works on local highways and rail lines. The level of extensive works could have an impact with the Scheme.	Stratford-on-Avon Local Plan.	Stratford-on-Avon District Council	6km (East of Site 3c)
Cable Route Corridor Search Area Applications							
11	25/00628/FUL	Land South Of Salt Way The Saltway Feckenham Worcestershire	Battery Energy Storage System with access and associated infrastructure	Determination deadline - 26/08/2025	Pending (Validated 25/05/2025)	Redditch Borough Council	0m
12	25/00888/FUL	Land At Wheaten Hill Farm Astwood Lane Astwood Bank Worcestershire	Installation of Battery Energy Storage System (BESS) including access tracks and service roads, underground cable route, on-site substation, other ancillary electrical infrastructure, security fencing and CCTV, on-site car parking, drainage and water supply features, temporary construction compound, new landscaping and biodiversity enhancements.	Scheme connects into Feckenham Substation	Pending	Bromsgrove District Council & Redditch Borough Council	0m
13	25/00415/OUT	Land north of Salford Road, Bidford-on-Avon	Outline Planning application with all matters reserved except access to the site, for up to 110 dwellings and associated green space, biodiversity enhancements and associated works; and demolition of properties related to Marriage Hill Farm and No. 26 Salford Road.	Awaiting further decision.	Pending (Validated 10/04/2025)	Stratford-on-Avon District Council	235m East of Cable Route

Arrow Valley Solar