



EQUANS

BARKHAM FARMS SOLAR FARM

Construction Environmental Management Plan
(CEMP)





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Construction Environmental Management Plan (CEMP)

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 2024UK31126

OUR REF. NO. BFSF-WSPC-ZZ-RP-Z-0001

DATE: SEPTEMBER 2024

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft for Comment	Final for Submission	Update	
Date	September 2024	September 2024	September 2024	
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Signature				
Project number	2024UK31126			
Report number	BFSF-WSPC-ZZ-RP-Z-0001			
File reference	https://wsponlinegbr.sharepoint.com/:w:/r/sites/GB-2024UK31126---Ba/Shared%20Documents/03%20WIP/CEMP/Barkham%20Farms%20Solar%20Farm%20CEMP-Template.docx?d=w5e434c9280c6489b9c57d66d6e449346&csf=1&web=1&e=SI3mw0			

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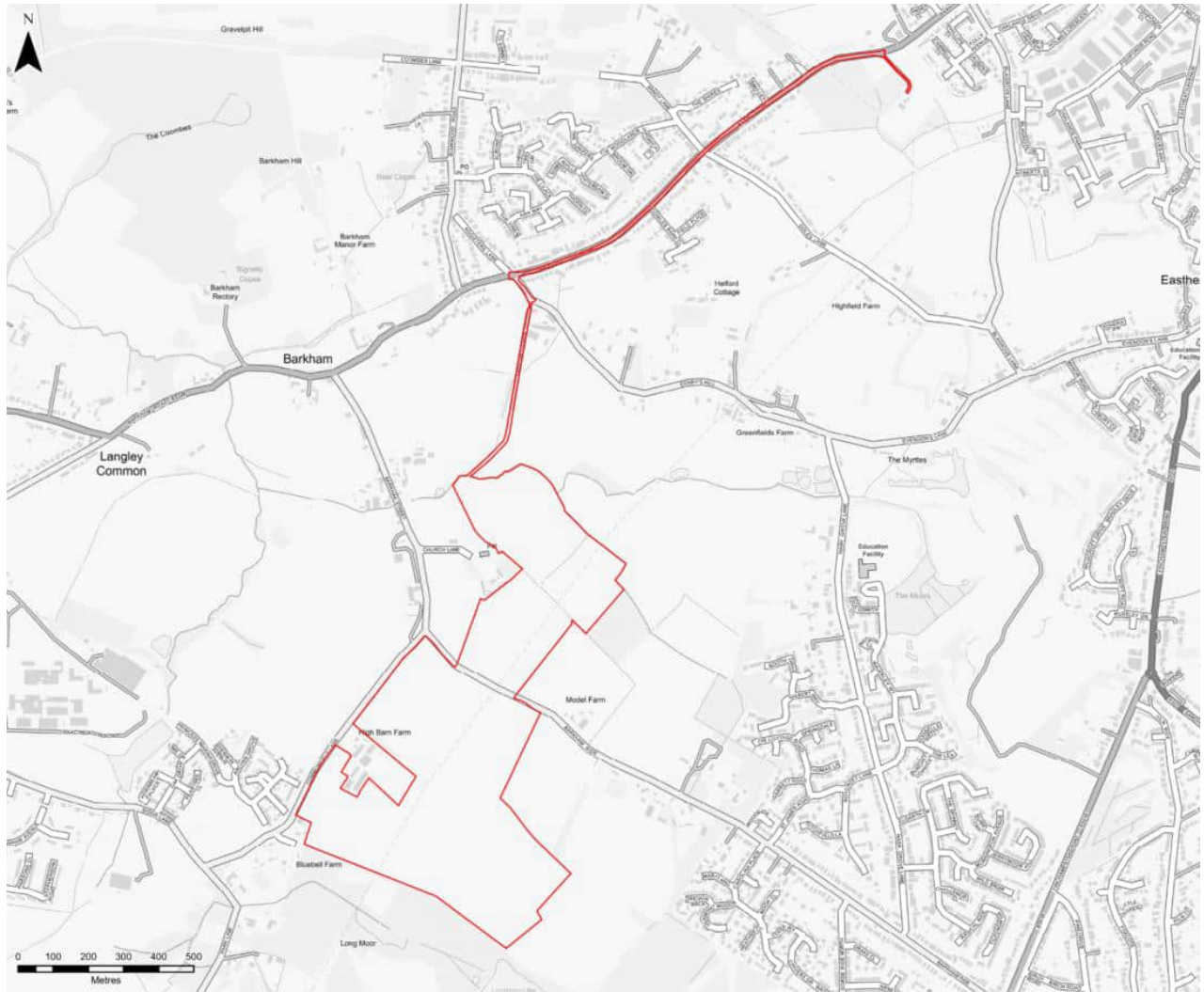
1. INTRODUCTION

- 1.1.1. WSP UK Ltd have been commissioned by Equans to prepare a Construction Environmental Management Plan (CEMP) in relation to Condition 14 of planning permission 211081 for the development of a 52 hectare (ha) solar farm, associated infrastructure and landscaping (hereafter referred to as the 'Proposed Scheme'). Condition 14 states that the CEMP should include:
- Details contained within the draft CEMP dated March 2021;
 - Additional information contained within the updated and approved Construction Traffic Management Plan (CTMP) as required by Condition 13; and
 - Details of the avoidance and mitigation measures for protected species as set out in the Environmental Statement Addendum.
- 1.1.2. The Proposed Scheme is located 5km south west of Wokingham, within the administrative area of Wokingham Borough Council (WBC), and was granted planning permission on 21 January 2022.

1.2. BACKGROUND TO THE PROJECT

- 1.2.1. The Proposed Scheme will consist of a 52ha solar farm with approximately 44,000 solar photovoltaic (PV) panels, which will generate energy outputs up to 30MW peak (MWp); an underground grid connection between the solar farm and an Electricity Distribution Centre; laying of internal access road; the erection of a substation building; security fencing; and associated planting and landscaping, including 3.4ha of tree planting for carbon sequestration, at Barkham Farms in Wokingham (hereafter referred to as the 'Site'). Planning permission (Ref. 211081) was granted for the Proposed Scheme on 21 January 2022.
- 1.2.2. A Non-Material Amendment (NMA) has been carried out. The predominant change proposed is the relocation of the electrical housing from Barkham Ride to the north of the Site, together with a reduction in the overall area of the solar panels. The other changes from the originally approved layout are in response to the explicit requirements of the conditions and thus could have been agreed/approved separately under the discharge of condition applications; but are nevertheless included on the drawings now for completeness. The changes proposed, in the context of the overall development, are not of a nature or scale that would materially alter what has been granted planning permission nor the impacts of such upon surrounding receptors.
- 1.2.3. The proposed planning application boundary is shown in **Figure 1-1**. This CEMP covers the entire area within the planning application boundary.
- 1.2.4. An Environmental Impact Assessment (EIA) Scoping Request was submitted to WBC as the Local Planning Authority (LPA) in January 2021 under Section 5 of the Town and Country Planning (EIA) (England and Wales) Regulations 2017 ("The 2017 Regs") for the Proposed Scheme.

Figure 1-1 - Planning Application Site Boundary (Planning Application Reference 211081)



1.3. PURPOSE OF THIS CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

- 1.3.1. Following consultation with WBC, it was advised that a CEMP would be required as supporting documentation for a full planning submission. This is in line with the EIA Scoping Request submitted in January 2021. A CEMP (Ref. 70074897/EN/004/01) was submitted to support the planning application for which consent was granted on 21 January 2022. Condition 14 of the planning consent outlines that a CEMP should be submitted and approved by the planning authority prior to the commencement of works.
- 1.3.2. This CEMP has been prepared to discharge Condition 14 and details the measures and initiatives proposed to manage and mitigate anticipated environmental risks due to the construction of the Proposed Scheme. Specifically, the purpose of this CEMP is to provide the following:
- Effective planning, management and control during construction;
 - Ensure that the mitigation measures set out in the Application Reports to be submitted as part of the full planning application are implemented during construction;

- Ensure that any additional mitigation measures relating to the works covered by this CEMP as part of the construction are adhered to; and
- Ensure that the construction industry best practice standards are adopted throughout the construction of the Proposed Scheme.

1.3.3. The content of the CEMP will be agreed with the WBC Development Team. As this is stage 1 of the JCT Design and Build contract, whereby the contractor carries out both the design and the construction work, and the construction part of the contract has not been commissioned, some elements will not be determined until the construction stage. A Principal Contractor has not yet been appointed; however, they will be required to comply with the requirements of the CEMP. Some elements of this CEMP have been based on assumptions given that the Principal Contractor has not been selected, however, updates will be required following Principal Contractor selection or during the construction stage, and will need to be agreed with WBC.

1.4. LEGAL COMPLIANCE

1.4.1. Considerable environmental legislation applies to the works to be undertaken. The expectation is that all relevant legislation, including requirements for licences, permits and / or consents shall be identified and the appointed Principal Contractor will be required to provide details of how compliance is to be achieved, as part of the construction process.

1.4.2. This CEMP is a requirement for Planning Permission. Relevant legislation considerations for the Proposed Scheme include:

- National Planning Policy Framework (NPPF);
- WBC Core Strategy 2010;
- WBC Managing Development Delivery Local Plan 2014 (MDD) and associated policies;
- Arborfield and Newland Village Design Statement;
- Arborfield and Barkham Neighbourhood Plan;
- Borough Design Guide supplementary planning document;
- Sustainable Design and Construction supplementary planning document; and
- CIL guidance.

1.4.3. This document is considered 'live' and will be updated as appropriate when further details of the Proposed Scheme are approved.

SCHEDULE OF ENVIRONMENTAL LEGISLATION

1.4.4. For each significant environmental aspect, the relevant applicable environmental legislation and regulations will be identified from, but not limited to the list provided in **Appendix A**. The list of relevant legislation and its applicability to the Scheme and the construction works will be reviewed and updated where necessary.

1.5. ACCOMPANYING INFORMATION

1.5.1. This CEMP should be read in conjunction with the following information, which is referenced where appropriate throughout the document:

- Barkham Farms Solar Farm – Environmental Statement (70074897/EN/003/01) March 2021;
- Barkham Farms Solar Farm - Construction Traffic Management Plan (BFSF-WSP-ZZ-RP-Z-0002) September 2024; and
- Barkham Farms - Preliminary Ecological Appraisal (No. 001) March 2021.

1.6. STRUCTURE OF THE CEMP

The CEMP is based on established good management practice and the structure and content is as follows:

- **Site Information and Description of the Proposed Scheme**: including management structure, roles and responsibilities, location of any potentially sensitive receptors such as protected species, watercourses, etc;
- **Construction Information**: a description of the works, construction programme, proposed working hours, equipment to be used etc;
- **Key Environmental issues**: a summary of the potentially significant environmental issues identified from environmental assessments for the Scheme;
- **Environmental Control Measures**: details of the audit trail for this CEMP, methods for managing environmental risks and reducing effects, emergency procedures, waste and hazardous materials storage procedures and liaison with the local neighbourhood, in addition to detailing key environmental receptors and consideration requirements relating to biodiversity, cultural heritage, landscape and visual impacts, traffic and transport, dust and air quality, noise and vibration, climate change, ground conditions, hydrology and flood risk, and arboriculture.
- **Monitoring**: procedures for recording and reporting monitoring results and taking remedial action in the event of any non-compliance, details of receptors, threshold values and analysis methods; and
- **Summary**: a summary of the CEMP.

2. SITE INFORMATION AND DESCRIPTION OF THE PROPOSED SCHEME

2.1. SITE AND SURROUNDING AREA

- 2.1.1. The solar farm site is located approximately 500m south of the town of Barkham, 5km south-west of Wokingham, and 14km to the south-east of Reading Town Centre. The entire boundary falls within the administrative boundary of WBC (see **Figure 1-1**).
- 2.1.2. The land use within the solar farm site is currently agricultural land, which is owned by WBC and leased by tenant farmers. The site consists of three farmsteads; High Barn Farm and part of Brook Farm and Rook's Nest Farm. An overhead power line runs diagonally across the Site in a south-west to north-east direction.
- 2.1.3. The solar farm site is well located for access to the strategic and local highway network and has existing access to the public highway.
- 2.1.4. The grid connection route runs from the solar farm, under WBC owned land, before meeting the public highway at Edney's Hill. It then follows Edney's Hill and Barkham Road to the point of connection at Wokingham Sub-station.
- 2.1.5. Public Rights of Way (PROW) are located within and adjacent to the solar farm site. Footpaths (WBC References BARK FP 10 and FP 10A) pass through the northern part of the site and join footpaths (References BARK FP 8 and 9) outside the red line boundary. A bridleway (BARK BR 11) runs adjacent to the west boundary of the site north of Barkham Ride.
- 2.1.6. Land uses surrounding the Site include agricultural land, residential dwellings and retail uses. The solar farm site is bounded by residential dwellings along Commonfield Lane and Archer Grove. The site is also bounded by properties along Church Lane to the north-west of the Site, which include Barkham Village Hall and The Parish Church of Saint James which is Grade II Listed. The rest of the site is bounded by agricultural land and the woodland to the south is designated as a Site of Special Scientific Interest (SSSI) and Local Nature Reserve (LNR); Longmoor Bog. Barkham Ride divides the site in two, from east-to-west. Plans identifying environmental features can be found in **Appendix B**.
- 2.1.7. There is one internationally designated nature conservation site within 10km of the Site, and 14 further non-statutory designated sites within 2km of the Site.
- 2.1.8. The Site is located adjacent to a Scheduled Monument; the Moated site and associated enclosure at Church Farm. The Site does not fall within a Conservation Area. Within the 1km study area there are 18 listed buildings, two other Scheduled Monuments and a Registered Park and Garden (see **Appendix B**).
- 2.1.9. There is a collection of small ditches which run across the solar farm site in multiple locations. In the southern part of the site, the network of ditches appear to drain existing paths and tracks. The network of ditches in the northern part of the site ultimately flow into Barkham Brook at the Site boundary.
- 2.1.10. Barkham Brook statutory main river is located to the north-west of the Site and is a tributary of the River Loddon. Barkham Brook continues eastwards in the northern part of the Site but is not classified as a statutory main river to the east of Barkham Street. The northern part of the Site is

located within Flood Zone 2 (medium probability¹) and does not lie within a Groundwater Source Protection Zone.

- 2.1.11. The Site is not located within an Air Quality Management Area (AQMA) or Noise Important Area (NIA).

2.2. KEY ENVIRONMENTAL RECEPTORS

A map showing key environmental receptors can be found in **Appendix B**.

Table 2-1 - Key Environmental Receptors

Topic	Key environmental receptors
Biodiversity	- Habitat suitable for supporting Protected Species and notable species including roosting and foraging and commuting bats, badger, hazel dormouse, breeding birds, wintering birds, reptiles, great crested newt (and other amphibians), terrestrial invertebrates, aquatic invertebrates, and fish. - Designated Sites of International or National importance including: - Thames Basin Heath a Special Protection Area (SPA) 3.3km south-west; and - Longmoor Bog Site of Special Scientific Interest SSSI and Local Nature Reserve (LNR) Site directly adjacent to the south. - Non-statutory Designated Sites: 15 Local Wildlife Sites (LWS) within 2km, the closest of which is Brook Farm Meadow located directly adjacent east of the Site.
Cultural Heritage	- The Moated site and associated enclosure at Church Farm is a Scheduled Monument, located adjacent to the Site boundary; 18 listed buildings, two further Scheduled Ancient Monuments and a Registered Park and Garden are located within 1km; - Buried heritage assets, including those previously unrecorded; and 'Important' hedgerows.
Landscape and Visual	- Surrounding visual receptors (including residents, users of public rights of way, road users etc.); and - Landscape character.
Traffic and Transport	- Increase in traffic during the anticipated 10-month construction period will impact existing road users; and - Users of the PROW network.
Air Quality	Existing residential areas bound the Site, along Commonfield Lane and Archer Grove.

¹ "Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding." (Ref 2-1).

Topic	Key environmental receptors
Noise and vibration	- Several Noise Important Areas (NIAs) are located within 2km. The closest is on Finchampstead Road, approximately 1.1km to the east; - Users of the PROW and surround access routes; and - Residential properties, the closest along Commonfield Lane and Archer Grove.
Ground Conditions	- Residents; - Site operatives; - Users of the PROW network; - Farm owners and Site visitors; and - Surrounding waterbodies including a Secondary A aquifer, groundwater bodies, a Nitrate Vulnerability Zone and Barkham Brook.
Water Resources, Flood Risk and Drainage	- Barkham Brook (an Environment Agency designated Main River); - Site operatives; - Drainage ditches; - Groundwater bodies; - Secondary A aquifer and Nitrate Vulnerability Zone; and - Longmoor Bog Site of Special Scientific Interest.
Arboriculture	Several notable/veteran trees are located within and adjacent to the Site.

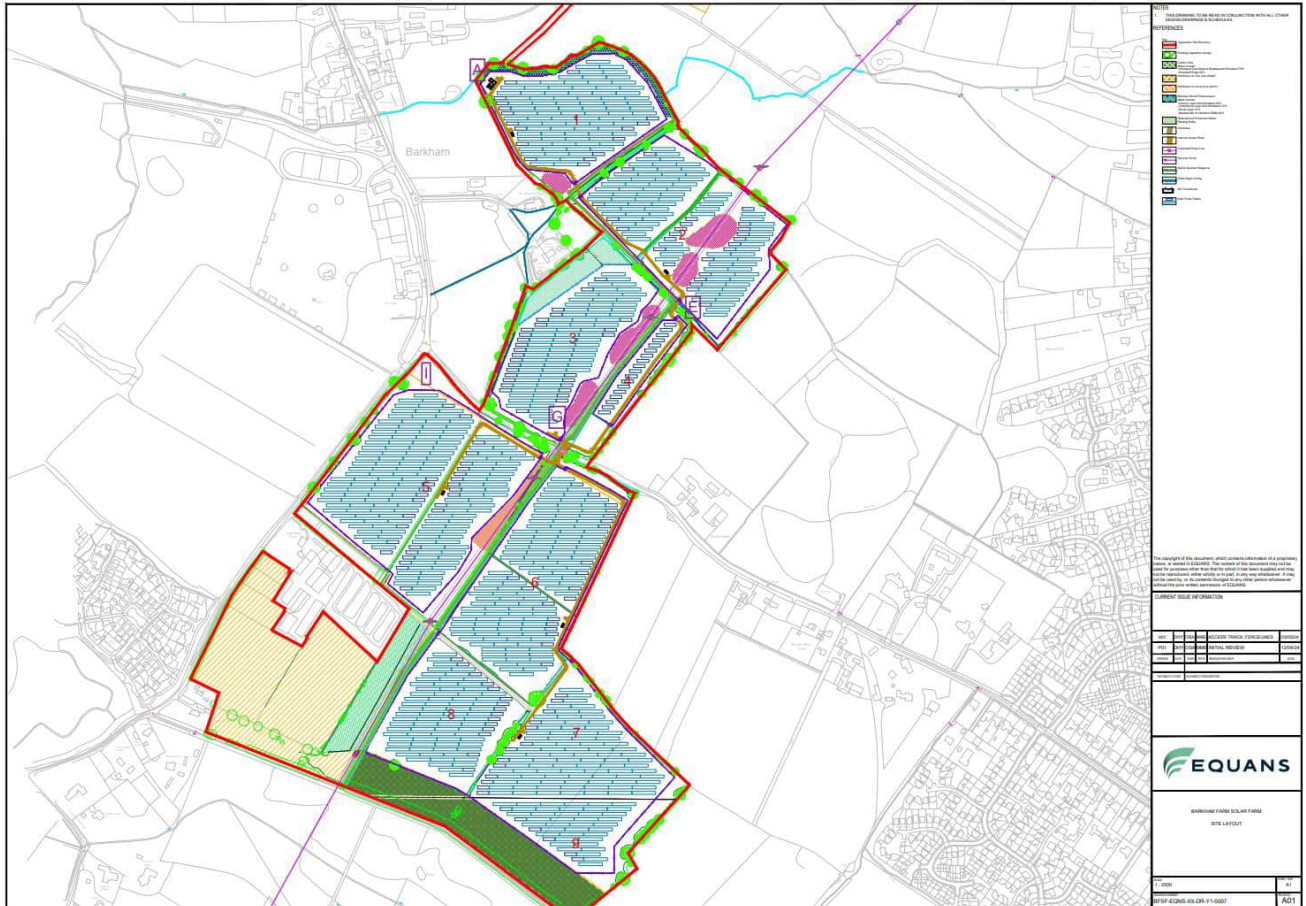
2.3. SCHEME DESCRIPTION

2.3.1. The Proposed Scheme that has been granted planning consent is for a 52ha solar farm development. It is proposed to generate energy outputs up to 30MWp and will consist of:

- Up to 44,000 solar photovoltaic panels;
- Transformers and cabins;
- A sub-station; and
- Vehicle access and fencing.

2.3.2. Approximately 3.4ha of the Proposed Scheme will be allocated for tree planting (approximately 15,093 trees) to contribute to WBC's target of planting 250,000 trees. The remaining area will be landscaped. Lighting will be included on Site for use during maintenance etc. only; the Site will not be permanently lit. The proposed layout is shown in **Figure 2-1** and is included in **Appendix C** for greater detail.

Figure 2-1 - Proposed Layout



- 2.3.3. Details relating to the traffic management measures are contained within the CTMP in **Appendix D**.
- 2.3.4. At the time of writing this CEMP, the exact methodology of the construction works is unknown. Therefore, the information outlined in Section 3 is based on the available information.

2.4. MANAGEMENT STRUCTURE

- 2.4.1. The anticipated roles and responsibilities of the parties involved in the construction works associated with the Proposed Scheme are set out below. However, it should be noted that all members of the project are responsible for ensuring the requirements of the CEMP are met.

THE DEVELOPER

- 2.4.2. The Developer (WBC Development Team) will be responsible for providing all works including foul and surface water drainage, structural landscaping and associated ecological mitigation and landscaping.
- 2.4.3. In order to achieve this, the Developer will appoint a Principal Contractor and a Project Manager and ensure that they are suitably qualified for the activities required to be completed.

PRINCIPAL CONTRACTOR

- 2.4.4. The Principal Contractor will be responsible for the day to day management of Health and Safety, and Environmental and Quality performance during construction. The Principal Contractor will be

responsible for implementing the CEMP, including, monitoring the performance of sub-contractors and maintaining records to demonstrate compliance with and implementation of this CEMP.

PROJECT MANAGER

- 2.4.5. The Project Manager will be responsible for directing the Principal Contractor on the delivery of the CEMP. This will include checking that the Principal Contractor has allocated sufficient resources to allow delivery of the CEMP, participating in communication with the LPA and other third parties e.g. Environment Agency as required and arranging for the periodic review and update of the CEMP. The Project Manager will regularly review the findings of the monitoring programme and direct the Principal Contractor as necessary.

ENVIRONMENTAL MANAGER/ADVISOR

- 2.4.6. The Environmental Manager would carry out environmental duties including:
- Producing documentation;
 - Liaison with third parties;
 - Inspections and audits;
 - Checking the systems are in place to ensure that a Site Waste Management Plan (SWMP) is in operation at all times;
 - Delivering environmental training and toolbox talks;
 - Investigation of incidents and non-conformances are corrected, and preventative action implemented;
 - Reporting environmental performance to the Client, Principal Contractor and Site Manager;
 - Providing help and advice to the Site Manager; and
 - Reviewing and inputting into risk assessments and EMS.

WASTE MANAGEMENT COORDINATOR

- 2.4.7. The Waste Management Coordinator will be appointed by the Principal Contractor and will be responsible for the management and removal of waste from the Site. They will ensure the targeted recovery rate for the recycling regime for materials and packaging set by the Principal Contractor is met, and report on materials recovered.

ALL STAFF AND SUBCONTRACTORS

- 2.4.8. All staff and subcontractors have the responsibility to:
- Work to agreed plans, methods and procedures to minimise environmental effects and nuisance to receptors during construction;
 - Understand the importance of avoiding pollution on-site, including noise and dust, and how to respond in the event of an incident to avoid or limit environmental effects;
 - Report all incidents immediately to their line manager (or equivalent);
 - Monitor the workplace for potential environmental risks and alert their line manager if any are observed; and
 - Co-operate as required during site inspections and audits.

3. CONSTRUCTION INFORMATION

3.1. CONSTRUCTION WORKS

- 3.1.1. It is understood that the current programme for the Proposed Scheme is scheduled to be constructed over a 10-month period with works programmed to start in April 2025 and completed in January 2026. Testing and commissioning are anticipated to begin in October 2025 and finish in November 2026, with the Proposed Scheme anticipated to be completed in January 2027. The indicative construction programme will follow the schedule as shown in **Table 3-1**.
- 3.1.2. Once a Principal Contractor is appointed the construction programme will be reviewed and updated.



Table 3-1 - Proposed Construction Programme

Activity	2025										2026												2027
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Site mobilisation																							
Pre-construction works																							
CCTV installation																							
Solar PV array installation																							
Installation and termination of combiner boxes																							
Trenching																							
Inverters and main switch installation																							
Installation of meteo station																							
Customer substation installation																							
Testing and commissioning																							
Demobilisation																							
ICP works (completed by others)																							
Project completion																							

3.2. CONSTRUCTION EQUIPMENT

- 3.2.1. The type of plant typically needed for each type of construction activity is indicated in **Table 3-2** (Note: This will be revised and confirmed once the Principal Contractor is appointed).

Table 3-2 - Likely Plant Required for Proposed Works

Plant
Bobcat Tracked Digger
Tipper truck
Vibrating Roller
Piling Machine
Telehandler
Crane
Cement Mixer
16.5m articulated lorry
Low loader
10m rigid lorry
Panel vans
Skip Lorry

- 3.2.2. The plant listed in **Table 3-2** will be either self-propelled or delivered and removed from the Site using standard sized vehicles that would not result in an abnormal load. Abnormal load deliveries will be required to transport the transformer and main substation to Site, which will be transported by specialist hauliers as detailed in the CTMP. Any departure from this would require notification to / agreement from the relevant highway authority.

3.3. HOURS OF WORK

- 3.3.1. The Proposed Works will take place within normal working hours, as agreed as part of condition 26 of the planning consent and as set out below:
- 08:00 – 18:00 Monday – Friday,
 - 08:00 – 13:00 on Saturdays (if required).
- 3.3.2. No work should occur on Site on Sundays, Bank Holidays or Public Holidays. Any change to working hours will be agreed in advance with WBC.
- 3.3.3. These hours will be strictly adhered to unless or in the event of:

- An emergency demands continuation of works on the grounds of safety; and
- Completion of an operation that would otherwise cause greater interference with the environment / general public if left unfinished.

3.3.4. Any works that are required outside of these hours, would require the permission of WBC, prior to the works being undertaken.

3.4. CONSTRUCTION TRAFFIC MANAGEMENT PLAN

3.4.1. A CTMP has been produced in relation to Condition 13 of the planning permission which sets out:

- Details of the proposed construction access to the Site;
- The proposed routing of construction vehicles from the strategic highway network;
- The forecast construction vehicle and delivery volumes including employee trips to / from the Site;
- The level of traffic associated with the operational and de-commissioning phases of the Proposed Scheme; and
- Details of the proposed mitigation measures.

3.5. PUBLIC RIGHT OF WAY IMPACTS

3.5.1. Existing Public Rights of Way (PROW) located in close proximity to the Site comprise:

- Footpaths (WBC References BARK FP 10 and FP 10A) pass through the northern part of the solar farm site and join footpaths (References BARK FP 8 and 9) outside the red line boundary; and
- A bridleway (BARK BR 11) runs adjacent to the west boundary of the solar farm site north of Barkham Ride and part of this bridleway (from the point south of Church Cottages to Barkham Ride) is included within the Site boundary.

3.5.2. The Proposed Scheme will primarily impact the PROW in the north of the Site (WBC Reference BARK FP 10), which is likely to need to be suspended until the upgrade and expansion of the PROW by the delivery of the new Greenway is completed as part of the Proposed Scheme. Condition 10 of the planning permission requires details of any closures to the PROW to be outlined. The details of the closure will therefore form part of the discharge of Condition 10 prior to commencement of the development. The section of the PROW BARK FP 10 that will need to close during the main works between April 2025 and January 2026 is identified in the CTMP.

3.5.3. For those PROWs that remain open during construction, there will be a need to cross the PROW network with construction traffic. Where this is required, measures will be put in place to manage the flow of construction traffic and users of the PROW network. The measures will include:

- Matting and protection across the PROW for construction vehicles;
- Flow management of vehicles, workers and the public when using the PROW;
- Potential PROW diversion to divert around areas that are in use during the construction phase; and
- Potential PROW closure to prevent access during the construction phase.

3.5.4. Further information will be provided when a Principal Contractor has been instated, and the construction programme approved and be submitted as part of condition 10.

3.6. SITE COMPOUND AND MATERIALS

SITE COMPOUND

There will be one temporary construction compound, located to the north of Barkham Ride. The location and indicative layout of the construction compound is shown in **Appendix E**. Further details relating to these can be found in Section 6 of the CTMP.

3.6.1. The temporary construction compound will include the following:

- A temporary hardstanding with security fencing and access gates;
- Porta-cabins including offices, welfare and toilet facilities;
- Containers for storage materials;
- Parking for construction workers and construction vehicles used on site (parking for a minimum of 60 spaces);
- Parking area for four minibuses;
- Turning area for deliveries; and
- Wheel washing facilities.

PLANT AND MATERIAL STORAGE AREAS

3.6.2. The materials storage area will be provided in a secure location for the duration of the construction period, which will need to be determined by the Principal Contractor.

3.6.3. Following appointment of the Principal Contractor, the CEMP will be updated to include details on the location of the compound. Lockable material storage containers will be provided within this area along with mortar / silo areas. Additional fencing will be provided around a lockable diesel storage area located on concrete hardstanding and situated within the materials area. All compounds and storage areas will be located at least 5m from perimeter fencing and will aim to be at least 20m from trees, hedgerows, Barkham Brook and drainage ditches, to prevent spillages damaging these features. Further details are outlined in **Section 5.9**.

3.6.4. Plant and equipment will be stored in areas that are less susceptible to pollution incidents (i.e. away from watercourses), and in dedicated areas of hardstanding. Spill kits will be available for use within the storage areas and site personnel trained in their use in the event of an incident.

ON-SITE MATERIALS HANDLING

3.6.5. All deliveries will be dealt with at the designated materials handling locations. All deliveries will be supervised by a responsible and adequately trained person. Any fuel deliveries will take precautions to ensure that the fuel storage tanks are checked before and during delivery to prevent overfilling.

LIGHTING

3.6.6. Temporary construction lighting to be minimal in extent and use. The lighting is to be highly directional and seek to minimise light spill and glare into the surrounding landscape. During operation no permanent lighting is expected to be required. Sensor activated lighting will be implemented as best practice on inverter stations and three other buildings. The lighting will be used for emergency maintenance visits only. Further details of this will be provided when the Principal Contractor is appointed, including the need for a Sensitive Lighting Plan.

3.7. WASTE AND MATERIALS MANAGEMENT

- 3.7.1. The Principal Contractor will establish a dedicated Waste Management Coordinator who will be tasked with the management and removal of all waste from Site. The Principal Contractor will specify a targeted recovery rate for the recycling regime for materials and packaging. The waste management coordinator will compile a report quantifying the materials recovered.
- 3.7.2. It is planned that site waste will be reduced through segregation and recycling.
- 3.7.3. Dedicated skips will be provided for the collection of materials within specific site locations. A materials list will be provided when detailed design is finalised. Skips are anticipated to be placed within the compounds.
- 3.7.4. All contractors working on the Site will be supplied with refuse bins by the waste management coordinator. Once the bins are filled the waste management team will consolidate the waste and remove it from the Site.
- 3.7.5. The consolidated waste will be collected from site by licensed waste carrier. Waste materials fall into three categories for management, these are:
- Reuse;
 - Recycle; and
 - Landfill (disposal).
- 3.7.6. Reuse – If surplus materials can be used in the permanent works they are classified as materials. If they are surplus to requirements and need to be removed from the Site but can be further used offsite in their present form, they can leave the site for beneficial reuse.
- 3.7.7. Recycling – if a surplus material cannot be reused in its present form but could be used in a different form, it is sent for recycling. An example is recycled timber to make chipboard.
- 3.7.8. Landfill – If either of the above cannot be satisfied then the only option left is to send the waste materials to landfill. Landfill is only to be utilised as a last resort.
- 3.7.9. Waste certificates will be collated for all waste deposited at Environmentally Controlled Waste Reception Centres. Copies of all waste transfer notes will be kept for two years. Records will be kept about the waste gathered on-site including volume, type and cost including how it was packaged, when it was transferred, where it went to and who it was transferred to. These are all requirements of the duty of care.
- 3.7.10. Any hazardous waste that is removed from the Site will be monitored and tracked to record compliance with the Duty of Care provisions.
- 3.7.11. Site Security - The Principal Contractor will take reasonable steps to ensure site security measures are in place to prevent the illegal disposal of waste at the Site.
- 3.7.12. Monitoring - Skips will be monitored continuously to ensure that contamination of segregated waste does not occur. During this monitoring how the waste management system is working will also be monitored.
- 3.7.13. A record will be kept to continually review the type and amount of surplus material being produced and where possible/practical alter the Site set up to maximise material reuse or recycling and to ensure that disposal to landfill is a last resort.

- 3.7.14. The plan shall be communicated to the whole project team (including the client) prior to commencement and at every revision stage. Business wide updates including the KPIs will be communicated and discussed at management meetings.
- 3.7.15. The Principal Contractor will aim to reduce the amount of waste generated, both through product design and on-site management. Any waste that is produced will be carefully segregated and reused/recycled wherever possible and where it cannot be reused/recycled it will be disposed of in the correct manner in accordance with their duty of care.

3.8. GOOD PRACTICE GUIDANCE FOR POLLUTION PREVENTION

- 3.8.1. Although formerly withdrawn, the Environment Agency Pollution Prevention Guidance (PPG) provide good practice guidance of relevance to construction environmental management and can be found in the National Archives². Where applicable this guidance will be followed:
- PPG 1: General Guide to the Prevention of Pollution of Water Resources (Environment Agency, reviewed July 2013);
 - PPG 2: Choosing and using Storage Tanks (Environment Agency, April 2014);
 - PPG 3: Choosing and using Oil Separators (Environment Agency, 2006);
 - PPG 6: Working at Construction and Demolition Sites (Environment Agency, April 2014);
 - PPG 7: Operating Refuelling Facilities (Environment Agency, August 2011);
 - PPG 13: Vehicle Washing and Cleaning (Environment Agency, July 2007);
 - PPG 21: Pollution Incident Response Planning (Environment Agency, 2004); and
 - PPG 22: Dealing with Spills (April 2011).
- 3.8.2. New Guidance for Pollution Prevention (GPPs) have been released and some are of relevance to managing environmental risks on land. The current guidance includes:
- How to prevent pollution;
 - How to report an incident;
 - How to store oil;
 - How to work near water; and
 - How to manage water on land.

The Principal Contractor and all Sub-Contractors must take precautions during the construction phase to protect the entire drainage system from siltation or pollution.

3.9. SECURITY ON SITE

- 3.9.1. The Principal Contractor will develop and maintain security on-site throughout construction. It is anticipated that only authorised persons will be allowed on to the Site. To prevent unauthorised access to Site it is anticipated the following arrangements will be implemented:

² Environment Agency (2014) Pollution Prevention Advice and Guidance (PPG). Available at <https://webarchive.nationalarchives.gov.uk/20140328090931/http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx> Accessed September 2020.

- During working hours, the Site will be controlled and single vehicle delivery gates that will be attended by gate personnel; and
- Out of hours, 24-hour security will be provided to prevent unauthorised access.

3.10. HEALTH AND SAFETY ARRANGEMENTS ON SITE

- 3.10.1. Barriers and / or hoardings will be erected, adapted and maintained where necessary throughout the construction phase to completely segregate the public from construction activity.
- 3.10.2. A site-specific Health & Safety Plan will be developed by the Principal Contractor in accordance with WBC's Health and Safety policy and implemented by the Principal Contractor prior to commencement on-site.

3.11. EMERGENCY PROCEDURES

- 3.11.1. Procedures will be set in place to respond to any emergency incidents which may occur on-site. A Site Pollution Incident Response Plan will be developed by the Principal Contractor prior to works commencing on-site. Given the nature of the Proposed Scheme it is considered unlikely that major accidents and/or disasters could occur if staff follow the agreed Incident Response Plan.
- 3.11.2. All appropriate staff will be trained and made aware of the spill contingency plan set in place. In the event of any incident the Developer will be notified. Additionally, the Environment Agency and any other interested bodies will be notified as required.
- 3.11.3. Details on the emergency contacts are outlined below in this CEMP (See **Appendix F** - PEP/05).

INCIDENT RESPONSE

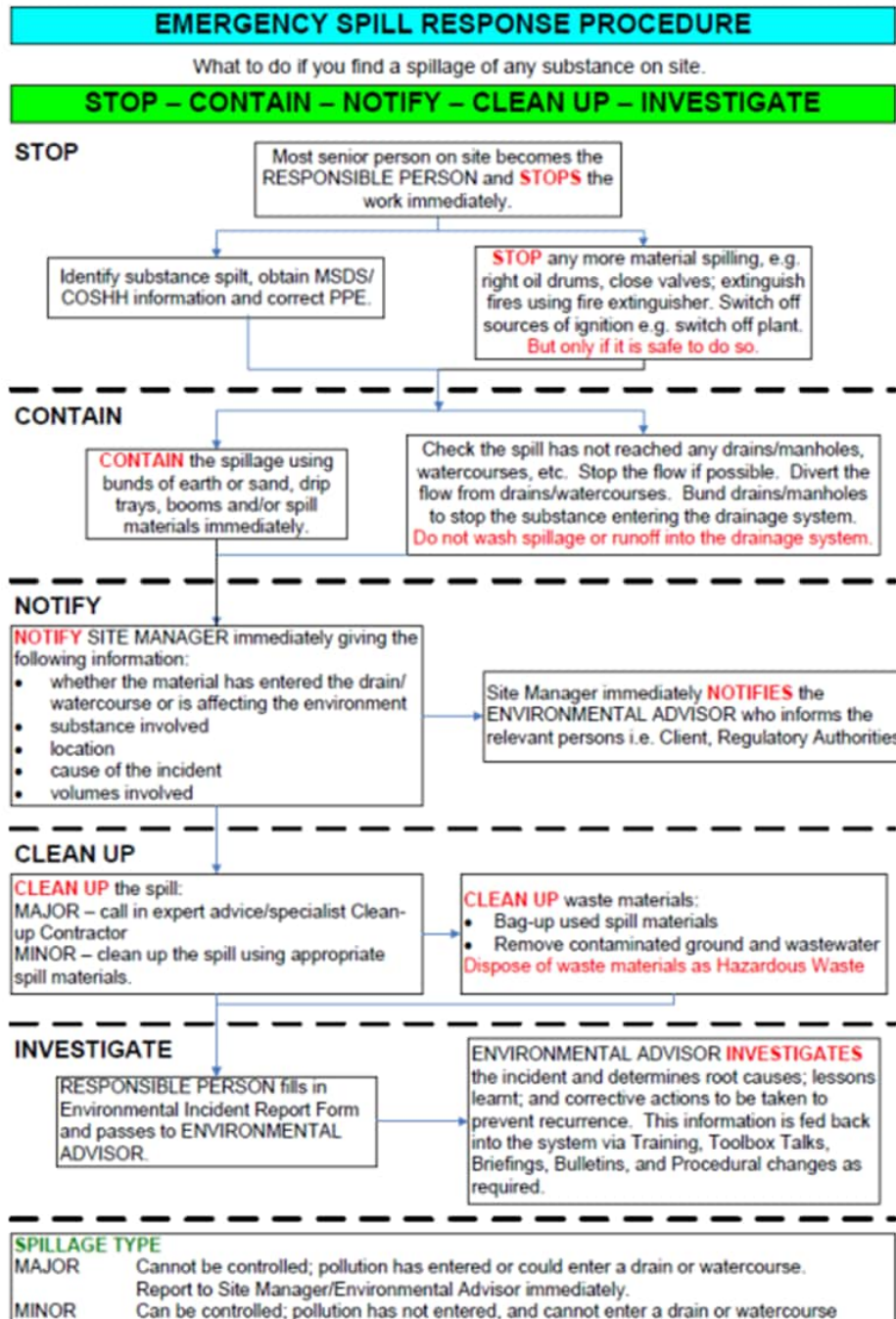
- 3.11.4. An Incident Response Plan should be developed by the Principal Contractor to highlight the potential pollution receptors specific to the Site. Each document should be in place before construction activities commence and should be available for viewing and be briefed to the workforce on Site. They should be reviewed and if necessary, updated, at least every six months. The key components of each Incident Response Plan be:
- A brief scope of works taking place on Site;
 - Types of environmental incident that have the potential to occur (however low the risk);
 - Types of hazardous material likely to be present on-site;
 - A list of pollution receptors and maps showing their location in relation to the Site;
 - The procedure for responding to environmental incidents, reporting them and investigation (including spill or leak events);
 - Key contact numbers for reporting of environmental incidents; and
 - Recommendations to help reduce the likelihood of environmental incidents.
- 3.11.5. The Principal Contractor will advise WBC within 24 hours of any incidents of non-compliance with the CEMP and will respond to any reported incidents within 24 hours, or as soon as reasonably practicable. In the event of working practices being deemed dangerous either by WBC or the HSE, immediate remedial action will be taken.
- 3.11.6. The formal procedure for handling Environmental Incidents will be developed and agreed by the Principal Contractor and Environment Manager but may include a procedure similar to that detailed below:
- Environmental Incidents are to be reported to the Principal Contractor or Environment Manager;

- The Environment Manager will record full details of the Environmental Incident and ensure that they are responded to as soon as reasonably practicable (preferably within one hour but always within 24 hours);
- The Principal Contractor (or nominated representative i.e. Environment Manager) will monitor and ensure that appropriate action is taken; and
- The Principal Contractor (or nominated representative) will undertake an investigation to assess what corrective and preventive action, or further investigation is necessary to avoid recurrence of the Environmental Incident.

3.11.7. In the event of a spill or leak, the following process shown in **Figure 3-1** will be followed. This will be communicated to the workforce and displayed on Site notice boards.

3.11.8. All incidents will be recorded in the Environmental Tracker.

Figure 3-1 - Spill Response Procedure



3.12. TRAINING

- 3.12.1. This CEMP will form part of all tender documents for all trades associated with the Proposed Scheme to ensure that the agreed principles are communicated.
- 3.12.2. All members of staff and operatives (both the Principal Contractor's staff and subcontractors) shall be made fully aware of the environmental implications that their operations may have with reference to the CEMP.
- 3.12.3. Site management staff will undertake training on environmental management, and a number of the site team will be trained in emergency response for environmental incidents.
- 3.12.4. Site based training for staff and operatives will include:
 - Site specific inductions will be completed by the Site Management Team for all staff and contractors new to the development and will include reference to the key sensitivities outlined in this CEMP;
 - Method Statement briefings including operational controls and emergency procedures;
 - Aspect and Impact Assessment briefings, including presence of protected species;
 - Tool Box Talks; and,
 - Project specific training.

3.13. LOCAL JOB VACANCIES

- 3.13.1. All contractors used on the Proposed Scheme will be selected from an approved contractor list and any new contractors appointed on the project will be subject to prior approval, in line with WBC's procedures. Local companies and trades will however be recommended to purchasers prior to construction of the Proposed Scheme.

4. KEY SIGNIFICANT ENVIRONMENTAL ISSUES

4.1. POTENTIAL SIGNIFICANT ENVIRONMENTAL EFFECTS

- 4.1.1. A schedule of potential construction phase environmental effects relating to each topic as considered in the Environmental Statement (ES) (March 2021), ES Addendum (July 2021) (**Appendix G**) and supporting planning application documentation, is provided in **Table 4-1** below.
- 4.1.2. Further environmental baseline and impact assessments may be required, and the potential environmental issues of relevance to the Proposed Scheme would need to be updated to reflect findings.

Table 4-1 - Potential Significant Environmental Effects

Topic	Potential environmental effect during construction
Topics scoped into the EIA	
Biodiversity	- Direct and indirect effects of habitat loss and fragmentation, degradation and reduced water quality; - Direct and indirect effects of harm and disturbance, breeding/foraging habitat loss; - Direct and indirect effects of disturbance through lighting and construction works; and - Direct and indirect effects of disturbance and/or obstruction of dispersal route.
Cultural Heritage	- Ground disturbance to buried heritage assets; - Direct physical impacts on built heritage assets, and indirect impacts from vibration, dust and noise; and - Changes in setting and visual intrusion.
Landscape and Visual	- Direct and indirect effects on the areas of the fabric and habitats dimension of the landscape character of the Site and surrounding area; and - Surrounding visual receptors (including residents, users of public rights of way, road users etc.).
Topic scoped out of the EIA (with potential construction phase effects):	
Traffic and Transport	- Severance; - Driver Delay; - Pedestrian Delay for users of the PROW; - Pedestrian Amenity; and - Accidents and Safety (during the Site preparation and construction phase).
Air Quality	- Effect of dust deposition and elevated PM₁₀ concentrations; and - Increases in pollutant concentrations (namely nitrogen dioxide (NO₂) and PM₁₀) as a result of exhaust emissions arising from

Topic	Potential environmental effect during construction
	construction traffic leaving and accessing the Site on local air quality and public exposure.
Noise and vibration	Direct effect of construction noise, including construction traffic noise.
Ground Conditions	- Exposure of workers, residents and users of the PROW to hazardous substances; and - Mobilisation and transfer of existing hazardous materials because of building activities.
Hydrology and Flood Risk	- Direct effects of mobilisation of sediment; - Increase in flood risk due to construction activities; and - Contamination potential of surrounding water features from accidental leaks and spillages.
Arboriculture	Disturbance to notable / veteran trees located within and adjacent to the Site.

5. ENVIRONMENTAL CONTROL MEASURES

5.1. GENERAL ENVIRONMENTAL PROCEDURES

- 5.1.1. An outline of project relevant best practice control measures is provided below **Sections 5.2 to 5.10**. These are provided as a starting point for the Principal Contractor to adopt, update and agree with the Project Manager and Developer.
- 5.1.2. The Principal Contractor will ensure that all sub-contractors adhere to the relevant local policies and good practice guidelines for implementation during all site activities.
- 5.1.3. In order to avoid / mitigate against any significant environmental effects, a series of Project Environmental Procedures (PEP) have been proposed and appended. These are provided as a starting point for the Principal Contractor to adopt, update and agree with the Project Manager and Developer. The finalisation and agreement of the PEPs will help to ensure compliance with legislation and best practice mitigation measures are implemented.
- 5.1.4. Responsibilities for the implementation of each PEP have been assigned to specific members of the project team, which it is envisaged will comprise:
- Principal Contractor (site based); and
 - Environmental Manager.
- 5.1.5. A list of the key PEPs is provided in **Table 5-1**. Further details relating to each PEP are contained within **Appendix F** of this document.

Table 5-1 - Project Environmental Procedures

Procedure	Title	Procedure relevant to:	
		Principal Contractor	Environmental consultant
PEP/01	Waste and Material Management	✓	-
PEP/02	Noise and Vibration	✓	✓
PEP/03	Dust and Local Air Quality	✓	✓
PEP/04	Vehicle Management	✓	-
PEP/05	Pollution Incident Control	✓	-

5.2. ECOLOGY

- 5.2.1. A Preliminary Ecological Appraisal (PEA) was carried out by WSP in 2020 (and updated in March 2021), and further protected species surveys were carried out across the 2020 survey season including a Preliminary Bat Roost Assessment (PBRA), bat activity surveys, badger survey, breeding bird survey, and a Great Crested Newt (GCN) survey. Ecological mitigation comprises of both general measures which will reduce impacts arising from disturbance or pollution, and site-specific ecological measures. The Principal Contractor must incorporate the requirements into the works. For further information, refer to the Wokingham Borough Council Planning Portal Planning Application Reference 241901 Condition 15 Landscape and Ecological Management Plan.

MITIGATION

- 5.2.2. Measures will be implemented to mitigate ecology effects during the Proposed Works. These measures include the following:

Reptiles and amphibians:

- A Precautionary Method of Works (PMoW) is to be produced by the Principal Contractor for reptiles, amphibians, including GCN prior to commencement of any works relating to the Scheme, to include the following:
 - Suitable amphibian habitat is to be subject to a finger-tip search of suitable vegetation by a suitably qualified ecologist prior to clearance;
 - Two-stage vegetation clearance of suitable reptile and amphibian habitat to be completed using hand tools, under supervision of an experienced ecologist. This will comprise an initial strip of vegetation down to 200mm above ground level, followed by a second cut down to ground level, completed over a minimum of two days;
 - Clearance of suitable reptile habitat will be undertaken between March and May. Should clearance of suitable habitat be unavoidable between the hibernation season (November to February), the ecologist supervising the works will thoroughly inspect the vegetation prior to clearance for the presence of hibernating reptiles, including adder;
 - Any common toad or other amphibians encountered will be immediately re-released into retained areas of suitable habitat within the Site;
 - If any GCN are encountered during vegetation clearance, all clearance works on Site will immediately cease and advice will be sought from Natural England regarding the requirement for a European Protected Species Licence; and
 - Any hibernating reptiles encountered will be taken into care for the remainder of the hibernation season and will be re-released into retained areas of suitable habitat within the Site when conditions are suitable at the start of the following active season.

Terrestrial invertebrates:

- Pre-clearance checks for deadwood during any hedgerow clearance;
- Relocation of any deadwood encountered to the retained plantation woodland; and
- Check of the soil around any deadwood encountered, to search for presence of stag beetle larvae. Any larvae encountered to be relocated to the retained plantation woodland.

Badgers and other mammals:

- Due to the risk to badgers and other mammals on Site, night-time working will be kept to a minimum. As a precaution, all deep excavations (>1m) should be covered when the Site is not under supervision including overnight and shallow excavations (<1m) should have a scaffold board or equivalent placed in them when the site is not under supervision to allow any badgers (or other animals) to exit should they fall in;
- Any works to close a badger sett under licence from Natural England will be completed in accordance with the approved mitigation strategy for the licence; and
- Any chemicals or other site materials should be stored securely in accordance with best practice guidelines, and no open pipework should be left when the site is not under supervision.

Breeding birds and owls:

- Avoidance of construction activities within 50m of the confirmed barn owl nest site during the main breeding season (March to August inclusive). Further details on the location of this can be found in the PEA. In addition, a suitably qualified ecologist will regularly attend Site to identify if barn owls are actively nesting, and mitigation to be followed as required;
- Pre-works checks by a suitably qualified ecologist when works are within 50m of the barn owl nest site, to account for the occasional behaviour to nest outside of the typical breeding season;
- To prevent breeding birds being a constraint to the programme of works, removal of all vegetation should be carried out outside of the breeding season (March to August). Where removal is to take place within the nesting bird season a suitably experienced ecologist should complete a pre-removal check for nesting birds. If active nests are found, it may be necessary to delay work, typically within 10m of the nest, until the young have fledged; and
- Avoidance of overnight works to prevent disturbance.

River Habitat of Principal Importance

- Best practice measures in accordance with the Environment Agency PPG as outlined in **Section 3.8** will be followed to minimise the effect of water pollution; and
- Construction materials will not be stored within 20m of Barkham Brook watercourse.

General:

- Retained hedgerows will be protected in accordance with BS5837:2012;
- Measures to reduce night-time working are set out in Section 10 of the CTMP, which will be adhered to, and light use kept to a minimum;
- Where the use of artificial lighting is unavoidable, a sensitive lighting strategy will be created which will seek to avoid light spill onto sensitive areas such as known bird nesting sites, badger setts and vegetated areas. The lighting strategy will be reviewed by an ecologist prior to implementation; and
- The Principal Contractor will comply with relevant legislation and should maintain habitats intact and undisturbed, where possible. If protected species are unexpectedly discovered, work should cease, and advice should be sought immediately from a suitably qualified ecologist.

5.3. CULTURAL HERITAGE

- 5.3.1. Completion of archaeological evaluation in the form of a geophysical survey has taken place to inform specific mitigation measures required. This will include production of a separate mitigation strategy which the Principal Contractor will be directed to. Design adjustments may also be deemed necessary. This CEMP will also be updated with the measures identified. For further information, refer to the Wokingham Borough Council Planning Portal Planning Application Reference 241901 Condition 9 Written Scheme of Investigation for an Archaeological Evaluation and Watching Brief.

BASIC REQUIREMENTS

- 5.3.2. In the event of unexpected discoveries by construction workers the following procedure must be followed:
- The archaeological monitoring and recording will comprise the observation by a competent archaeologist of all intrusive groundworks associated with the proposed Trial pitting and Plate load testing;
 - Immediately stop works in the area of the find;
 - Protect the find and the area surrounding by fencing/blocking off and immediately contact the site manager;
 - Contact the Archaeologist and obtain advice on how to proceed; and
 - All significant finds must be reported.

MITIGATION

- 5.3.3. Monitoring will likely be required to be undertaken in any areas where excavations are to occur. An archaeological watching brief, programme and monitoring should be undertaken (where required) and be presented in an Archaeology and Cultural Heritage Management Plan.
- 5.3.4. All archaeological findings uncovered will be recorded and examined by an Archaeologist. Lower value assets will be preserved by record. If remains of higher value are identified, then consideration will be given to alternatives to preservation by record. This would be carried out in agreement with the WBC environmental specialist and County Archaeologist.
- 5.3.5. Upon discovery of treasure, a Chartered Archaeologist will notify the client and the curator immediately. CA will comply fully with the provisions of the Treasure Act 1996 and the Code of Practice referred to therein. CA will also comply with the Treasure (Designation) (Amendment) Order 2023. Findings will be reported to the coroner within 14 days.
- 5.3.6. Any human remains (skeletal or cremated) will be treated with due decency and respect at all times.
- 5.3.7. It is not anticipated that this evaluation will afford opportunities for public engagement or participation during fieldwork. However, the evaluation results will be made publicly available on the Archaeology Data Service (ADS) and CA websites.

5.4. LANDSCAPE AND VISUAL

- 5.4.1. Potential impacts predicted to arise during the construction phase are:
- Site preparation, including earthworks, and the clearance and removal of existing landscape elements;
 - The creation of material stockpiling;
 - Site signage, traffic control, fencing and hoarding;

- The presence of working plant and machinery, including tower cranes (where required);
- The presence of construction compounds; including site huts and other welfare facilities;
- The introduction of construction traffic on to surrounding roads; and
- The presence of construction activities and related noise affecting local levels of tranquillity.

5.4.2. Measures will be implemented to mitigate landscape and visual effects during the works of the Proposed Scheme and to ensure that proposed landscaping is implemented as planned.

5.4.3. A Landscape and Ecological Management Plan (LEMP) has been produced. The Principal Contractor will adhere to the LEMP during construction. For further information, refer to the Wokingham Borough Council Planning Portal Planning Application Reference 241901 Condition 15 Landscape and Ecological Management Plan.

5.4.4. Newly created planting will be subject to management and monitoring in accordance with the requirements of the LEMP. It will detail how the proposed landscaping will be managed and monitored during construction (and operation) of the Proposed Scheme, with particular regard to the protected and notable species which new and retained habitats may support. The LEMP will include requirements to:

- Ensure construction mitigation is implemented as planned;
- Check planting to ensure it has established and is growing as expected;
- Check the landscape design is implemented as planned (as per drawings).

GENERAL MITIGATION MEASURES

General mitigation measures to be implemented as standard are:

- Tidy site management to reduce visual clutter associated with the Proposed Scheme;
- Use of hoardings should be considered to provide screening from any residential receptors in close proximity, and to ensure Site security;
- To safeguard the existing vegetation to be retained, tree protection zones would be created and fenced off to ensure that the development would not encroach onto the root protection areas. Existing vegetation would be protected in accordance with BS 5837:2012 Trees in Relation to Design, Demolition and Construction;
- The use of scaffolding covers to minimise visual intrusive and negative effects;
- Materials and plant should be stored in less visually intrusive areas of the site;
- Cement and concrete mixing must be at least 10m away from trees, over a suitable hard surface to prevent contamination (affecting trees);
- No fires;
- The use of construction lighting (when required) to involve the use of well located, modern light fittings in accordance with best practice to minimise light intrusion to surrounding sensitive receptors;
- Public roads should be kept clean; and
- Wheel wash and dust control measures as set out in **Section 10.6** of the CTMP.

5.5. TRAFFIC AND TRANSPORT

5.5.1. Full details of mitigation measures are summarised in **Section 10** of the CTMP.

5.5.2. In summary the following traffic management principles will be observed:

- Construction hours outlined in **Section 3.3** will be observed to prevent nuisance to neighbours, and night-time working kept to a minimum;
- Construction deliveries by HGVs will only take place between 9:00-15:00;
- A site-based Delivery and Transportation Manager (DTM) will be appointed. The DTM will be responsible for ensuring that all vehicle movements to/from the Site are efficiently managed in order to minimise any nuisance or disruption to the local highway network. The DTM role will also be responsible for advising delivery companies (and their drivers) of the most appropriate route/s to access/egress the Site, providing advice on any local width or weight restrictions etc;
- Local contractors will be encouraged to tender for the construction works and where possible materials will be sourced from local suppliers. This will help minimise the distance travelled for commuting and delivery trips to/from the Site;
- All vehicle parking for construction related vehicles will be provided within the Site to reduce the likelihood of overspill parking on the local highway network/nearby parking facilities;
- The contractor will provide secure, sheltered cycle parking for five bicycles for the construction workforce within one of the compounds. Cycle parking utilisation will be monitored by the Travel Plan Co-ordinator (TPC) and further cycle parking provided, where necessary;
- The contractor will provide a dedicated minibuss service linking the Site to an urban pick-up point, to reduce pressure on existing public transport services;
- A car-share scheme will be implemented allowing workers to search for matches amongst colleagues;
- The TPC will provide travel information packs to the construction workforce, which may include travel measures provided by the Green Travel Plan, public transport options, routes and timetables, local cycle and PRow routes, and parking provisions for car and bicycle.

5.6. AIR QUALITY

5.6.1. Measures will be implemented to mitigate air quality effects during the Proposed Works. These mitigation measures will comprise the following where applicable:

- Dust generating activities (e.g., cutting, grinding and sawing) will be minimised and weather conditions considered prior to conducting potentially dust emitting activities;
- Fine material will not be stockpiled to an excessive height to prevent exposure to wind and/ or dust nuisance;
- Roads and accesses will be kept clean;
- Where possible, plant will be located away from construction site boundaries that are close to residential areas;
- Water will be used as a dust suppressant, where applicable;
- Drop heights of material will be kept to a minimum;
- Distances from crushing plant to stockpiles will be kept to the minimum practicable to control dust generation associated with the fall of materials;
- Skips will be securely covered;
- Soiling, seeding, planting or sealing of completed earthworks will be completed as soon as reasonably practicable following completion of earthworks;
- Dust suppression and the maintenance of the surface of access routes will be appropriate to avoid dust as far as practicable, considering the intended level of trafficking;
- Wheel Wash facilities at Site exits to minimise trackout of dust;
- Material will not be burnt on Site; and

- Engines will be switched off when not in operation.

5.6.2. In addition, the contractor should ensure that the Environment Agency's PPGs (Outlined in **Section 3.8**) are followed and that all sub-contractors are aware of control measures.

MONITORING

5.6.3. Given the proximity of receptors that are considered sensitive to construction activities, monitoring measures of dust and particulate matter should be implemented:

- Daily on-site and off-site inspections should be undertaken, where receptors (including roads) are nearby to monitor dust. The inspection results should be recorded and made available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100m of site boundary, with cleaning to be provided if necessary; and
- The frequency of site inspections should be increased when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.

5.7. NOISE AND VIBRATION

5.7.1. Measures will be implemented to mitigate noise and vibration effects during the Proposed Works. These measures will comply with BS 5228-1:2009+A1:2014 Noise and Vibration control on construction and open sites. The contractor should also adopt Best Practicable Means (BPM), as defined in the Control of Pollution Act (1974). The measures that should be implemented include:

- Appropriate operational hours as set out in **Section 3.3** and site inductions will highlight the need for vehicle horns and alerts to only be used when necessary;
- The contractor and their sub-contractors will at all times apply the principle of BPM as defined in Section 72 of the Control of Pollution Act 1974 and carry out all work in such a manner as to avoid or reduce any disturbance from noise (and vibration) as far as is practicable.;
- Guidance given in BS 5228-1:2009+A1:2014 (Section 8: Control of noise and Annex B: Noise sources, remedies and their effectiveness) will be followed as far as is practicable and advice and training on noise minimisation given to staff during Site induction procedures;
- All plant brought on to Site will comply with the relevant EC/UK noise limits applicable to that equipment or should be no noisier than would be expected based on the noise levels quoted in BS 5228-1:2009+A1:2014. Each plant item will be well maintained and operated in accordance with manufacturers' recommendations and in such a manner as to minimise noise emissions;
- Electrically powered plant will be preferred, where practicable, to mechanically powered alternatives;
- The use of sound reduced plant fitted with suitable silencers, or operated within enclosures will be preferred;
- Pneumatic tools will be fitted with silencers or mufflers;
- Deliveries to Site will be programmed and routed to minimise disturbance to local residents;
- Items of plant operating intermittently will be shut down in the periods between use;
- Where feasible, all stationary plant will be located so that the noise effect at receptors is minimised and, if practicable, every item of static plant, when in operation, will be noise attenuated using methods based on the guidance and advice given in BS 5228-1:2009+A1:2014;

- Careful selection of construction methods and plant will be implemented and utilised, for example, breaking-out of concrete structures using, where possible, low noise methods such as munching or similar, rather than percussion breaking;
- Temporary acoustic barriers and other noise containment measures such as screens, sheeting and acoustic hoarding at the site boundary (and where required around individual plant) will be erected where appropriate to minimise noise breakout and reduce noise levels at potentially affected receptors;
- There will be a considerate and neighbourly approach to relations with local residents; and
- The site manager, or other appointed site representative, will be responsible for logging all received environmental noise and vibration comments/complaints, as well as the action that is taken in response to each point raised, and whether this was successful. Where not successful, supplementary actions will be carried out and resulting effects logged. The contact details for the site representative will be openly advertised so that local residents have a point of contact in case of any issues arising. The site representative will be responsible for keeping an open line of contact with local residents and advising the timing and programming of potentially noisy works.

MONITORING

- 5.7.2. The contractor will complete a programme of noise and vibration monitoring:
- To measure the performance of noise and vibration control measures;
 - To ascertain noise and vibration from items of plant; and
 - To provide confirmation that noise and vibration thresholds are not exceeded.
- 5.7.3. The outcomes of the noise and vibration monitoring will be incorporated into an update of the CEMP.

5.8. HYDROLOGY AND FLOOD RISK

- 5.8.1. Measures will be implemented to mitigate water resources and flood risk effects during the Proposed Works, including the following:

MANAGING SEDIMENT ENTRAINMENT AND POLLUTION OF WATERCOURSES

- A Surface Water Drainage Strategy (SWDS) has been prepared as part of the planning submission and will be implemented on a phase by phase basis as part of the design;
- Works undertaken within 3m of a public sewer will require approval from Thames Water. Some of the works related to the construction of access tracks and the grid connection to Wokingham Substation are proposed within 3m from public sewers;
- A 5m protection buffer will be required to the banks of watercourses and ditches on site to reduce the impact of any pollution, sedimentation and prevent debris being carried into the water features, which could exacerbate the risk of flooding;
- Silt barriers are to be used to reduce any pollution impacts on the watercourses and ditches;
- It is required that the levels within the areas associated with the overland flow route (i.e. at risk of surface water flooding up above the 0.1% AEP) across the Site are not altered to ensure flood risk is not increased elsewhere;
- Soils with high contents of clay are expected to be found on site, therefore the areas below and around the solar panels are to be kept vegetated during construction to reduce erosion at the foot of the mounting frame and avoid formation of grooves that could potentiate the concentration of runoff of fine clay particles into existing water features;

- Dewatering will be carried out during the establishment of the foundations of the solar panels. Measures will also be followed to prevent the disturbance and mobilisation of contaminants if identified, and prior to discharge into Barkham Brook, silts will be removed;
- Avoid the positioning of stockpiles near to watercourses, ensure they are located outside of the flood zone. Stockpiles should be located a minimum of 10m from the top of bank and 20m from Barkham Brook;
- Cover stockpiles when not in use;
- Contain stockpiles with bunds or sediment fences;
- Control of runoff during construction. This may include creating temporary drainage systems to both alleviate flood risk and help to prevent sediment laden runoff entering the watercourse;
- Compliance with the relevant sections of BS6031:2009 Code of Practice for Earthworks (British Standards, 2009) with respect to protection of water quality and control of site drainage including washings, dewatering, abstractions and surface water;
- Safe containment of chemicals, use of drip trays and provision of emergency spill kits;
- The use of silt fences, silt traps, filter bunds, settlement basins and/or proprietary units such as a 'siltbuster' to treat sediment laden water generated on site before discharge;
- Fuel, oil and chemicals will be stored in secondary containment and located a minimum of 10m from any watercourse. The secondary containment system must provide storage of at least 110% of the tank's maximum capacity and ensure that any valves, filters, sight gauges, vent pipes or other ancillary equipment are also situated within the secondary containment system and arranged so that any discharges are contained;
- Availability of oil absorbent booms on site to be deployed in the event of a significant spillage;
- Regular inspection of control and treatment measures to ensure they are working effectively;
- Regular checking of construction plant for oil and fuel leaks, particularly when construction works are undertaken in or near the existing site water bodies;
- During works, machinery will only be refuelled within the designated refuelling area;
- Collection of waste fuels and other fluid contaminants in leak-proof containers prior to removal from construction site to an approved recycling processing facility;
- Concrete mixing and washing areas shall be located more than 10m from any watercourse; have settlement and re-circulation systems for water reuse; have a contained area for washing out of concrete batching plant or ready-mix lorries; and collect wash-waters and, where necessary, contain wash-water for authorised off-site disposal. Wash-water from concrete shall not be discharged into the watercourse;
- Avoiding vehicle cleaning near to existing watercourses;
- Dewatering working areas to maintain a dry construction area and passing any water generated by the dewatering process through silt busters or sediment tanks prior to returning this water to the watercourses; and
- Dewatering as shallow groundwater is encountered, there may be a need to pass the water through a silt buster or settlement pond if the abstracted water has a high sediment load; and
- Lining any temporary excavations to prevent infiltration of contaminants to the groundwater.

MANAGING FLOOD RISK

- A Flood Risk Assessment has been produced evaluating the flood risk to the Site;
- A Flood Evacuation Plan should be produced by the Principal Contractor and implemented;
- Sign up for flood warnings and check online warnings regularly;
- Avoid works during high flow events and intense rainfall events;

- Site compound(s) located outside of areas of flood risk; and
- Do not store materials and mobile machinery within areas of flood risk.

5.9. GROUND CONDITIONS

5.9.1. Measures will be implemented to mitigate ground conditions effects during Proposed Works. These mitigation measures comprise:

- Undertaking of a Ground Investigation (GI) report compliant with BS 10175. Should contamination be encountered, required remediation and / or mitigation will be identified and implemented;
- Use of appropriate Personal Protective Equipment (PPE) at all times during the construction works;
- Provision of adequate hygiene facilities for washing and changing;
- Water spray onto material being worked on to dampen down any potential contaminated dust and prevent it from becoming airborne;
- The presence of contaminants and the associated risks will be explained to ground workers before they begin work;
- Fuel storage on-site to be carried out under best practice i.e. integrally bunded containers. Plant refuelling to be carried out using best practice techniques and any spills to be controlled with spill kit;
- Dust suppression measures (e.g. damping down) will be implemented to minimise the potential for dust generation;
- Use of appropriate machinery to minimise soil compaction (e.g. reduce the use of heavy plant or tracked vehicles passing over organic soils);
- Relief of compaction of restored soils (i.e. dig out, aerating any highly compacted area of organic soil);
- Surface stripping and storage of topsoil/subsoil (subject to other environmental constraints, such as the presence of buried archaeological remains);
- Wheel washing of site vehicles to minimise the potential for dust generation; and
- Excavated soils will be used on-site wherever possible; and
- In the event that unexpected contamination is found at any time when carrying out the Proposed Works, it must be reported immediately to WBC. A risk assessment shall be undertaken to assess the nature and extent of the contamination and work shall cease on the land affected by the contamination. A written report of the findings shall be submitted to and approved by WBC, together with a scheme to remediate, if required, prior to further works on site taking place. Only once written approval from WBC has been given, shall works recommence on that part of the Site. For any contaminated material encountered on-site, the handling, storage and removal will be subject to current waste management legislation and guidance (see **Appendix A**).

5.10. ARBORICULTURE

- 5.10.1. An Arboricultural Method Statement (AMS) and Scheme of Works has been prepared as part of the NMA. The Principal Contractor will adhere to the AMS and a pre-commencement meeting will be held between the Principal Contractor, local authority tree officer and the project arboriculturist. For further information, refer to the Wokingham Borough Council Planning Portal Planning Application Reference 241901 Condition 7 Arboricultural Method Statement and Scheme of Works.
- 5.10.2. The AMS adopts a precautionary approach to tree protection and addresses all identifiable activities which have the potential to cause damage to retained trees. The AMS addresses, in principle, the following matters which are of relevance to the Proposed Development.
- Arboricultural monitoring;
 - The use of tree protection fencing;
 - The use of no dig hard surfacing; and
 - The installation of boundary fencing.
- 5.10.3. The AMS is to be reviewed and updated at the following stages of design and construction:
- Detailed design and discharge of conditions or reserved matters;
 - Contractor engagement;
 - Pre-commencement; and,
 - Prior to any instance where the site clearance or construction methodology is amended.
- 5.10.4. During detailed design the AMS will be updated to include reference to the following matters:
- The precise location and standard of all tree protection fencing to be utilised during construction;
 - The location of power and communication cables;
 - The location of, and foundations for, photovoltaic modules;
 - The extent, design and construction methodology for no dig elements of the internal access road within Root Protection Areas; and,
 - A specification for all arboricultural pruning activities across the Site.
- 5.10.5. General good practice will also be recommended which includes:
- Advice of an arboriculturist must be sought regarding the removal of any A or B category trees or those which are afforded statutory protection by virtue of a tree preservation order;
 - Arboricultural and landscape advice should also be sought in order to ensure that there is adequate consideration given to new and existing trees within the final design. The areas where such advice may be needed include:
 - Any works within the Root Protection Area (RPA) of any retained tree;
 - The spatial relationship between new and existing trees and proposed structures;
 - The constraints that trees may pose on associated infrastructure such as above and below ground services, visibility splays, sightlines, solar panels, paths and CCTV;
 - The working space available during construction including the tree protection measures that may be required and;
 - The species composition and requirements of any new planting whether mitigatory or otherwise.

6. MONITORING

6.1. MONITORING PROCEDURES

- 6.1.1. The Principal Contractor will hold the responsibility for maintaining a register of all environmental monitoring, which will be made available for auditing and inspection.

6.2. REPORTING

- 6.2.1. Reporting procedures will be defined by the developer who will hold overall responsibility for providing feedback to the Principal Contractor and the Developer on the environmental performance of the construction works. Reporting procedures will be defined by the Environment Manager who will hold overall responsibility for providing feedback to the Principal Contractor and the Developer on the environmental performance of the construction works.
- 6.2.2. All injury accidents occurring as a result of the Project's work activities or conditions are to be reported to the Site Management and recorded in the site Accident Book. First aid will be provided and where necessary, arrangements will be made to get the injured person to hospital.
- 6.2.3. Site Management will report all injury accidents, 'near misses' and dangerous occurrences to Countryside Health and Safety Department who will carry out an investigation of all notifiable injury accidents and incidents as scheduled under The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013. Minor injury accidents will be investigated where it is deemed beneficial.

6.3. ENVIRONMENTAL INCIDENTS

- 6.3.1. The Principal Contractor will advise WBC within 24 hours and any incidents of non-compliance with the CEMP and will respond to any reported incidents within 24 hours, or as soon as reasonably practicable. In the event of working practices being deemed dangerous either by the Local Planning Authority or the Health and Safety Executive (HSE), immediate remedial action will be taken.
- 6.3.2. The formal procedure for handling Environmental Incidents will be developed and agreed by the Principal Contractor / Site Manager but may include a procedure similar to that detailed below:
- Environmental Incidents are to be reported to the Site Manager;
 - The Principal Contractor (or nominated representative) will record full details of the Environmental Incident and ensure that they are responded to as soon as reasonably practicable (preferably within one hour but always within 24 hours);
 - The Principal Contractor (or nominated representative) will monitor and ensure that appropriate action is taken; and
 - The Principal Contractor (or nominated representative) will undertake an investigation to assess what corrective and preventive action, or further investigation is necessary to avoid recurrence of the Environmental Incident.

6.4. COMMUNICATIONS AND COMPLAINTS

- 6.4.1. The Principal Contractor will define procedures for managing incidents. A centralised register of all reported complaints and incidents will be maintained by the Site Manager.
- 6.4.2. The formal procedure for handling project complaints / concerns will be developed and agreed by the Principal Contractor / Site Manager but may include a procedure similar to that detailed below:
- Stakeholders will be able to report any concerns, complaints or other comments to the Site Manager in writing, by email or in person at the site offices. Site contacts details will be provided at site entrances, on perimeter hoardings and possibly at appropriate community locations;
 - The Principal Contractor (or nominated representative) will take full details of the concerns expressed and ensure that a formal assessment is commenced of the reported concern. They will also issue an initial response to the person who has submitted the complaint / concern confirming its receipt. The Principal Contractor will record the date and contact information associated with a complaint / concern on a standard form and place a copy in a project grievance register;
 - The Principal Contractor (or nominated representative) will undertake an investigation to assess what corrective and preventive action, or further investigation is necessary;
 - The Principal Contractor (or nominated representative) will respond within a reasonable timescale (typically not more than 30 days) and place details of the completed corrective and preventive actions within the project grievance register. If a longer-term programme is required to provide an adequate solution, then this programme will be detailed on the register against the specific issue;
 - The Principal Contractor (or nominated representative) will notify the relevant stakeholder of the proposed corrective and preventive actions to be adopted;
 - Any corrective measures / actions will be implemented with associated implementation dates being recorded;
 - For long term corrective action, the complainant will be informed of proposed action; and
 - Following the implementation of the corrective action and agreement with the relevant stakeholder that the complaint has been adequately addressed the case will be closed and date recorded.
- 6.4.3. In the event that a complaint is not resolved to the satisfaction of the complainant directly with the Principal Contractor the following levels of mediation will be available:
- If the grievance cannot be adequately addressed by the Principal Contractor, the complaint / concern will be escalated to an appropriate contact for the Developer; and
 - If the grievance is still not adequately resolved the issue will be taken to WBC for a final decision to be made.

7. SUMMARY

- 7.1.1. This CEMP has been developed to outline measures to avoid, minimise and mitigate the potential negative environmental effects relating to construction of the Proposed Scheme and to ensure industry best practice is followed.
- 7.1.2. In accordance with Condition 14, the planning submission CEMP has been updated to include:
- Details contained within the draft CEMP dated March 2021;
 - Additional information contained within the updated and approved CTMP as required by Condition 13; and
 - Details of the avoidance and mitigation measures for protected species as set out in the Environmental Statement Addendum.
- 7.1.3. The content of the CEMP will be agreed with WBC and other organisations as appropriate, prior to the commencement of construction.
- 7.1.4. The CEMP is a 'live document' and is to be updated following the instruction of the Principal Contractor and during the Proposed Works. A Principal Contractor has not yet been selected; however, they will be required to comply with the requirements of the CEMP.
- 7.1.5. Some elements of this CEMP have been based on a suite of assumptions in the absence of input typically provided by the Principal Contractor. Once appointed, the CEMP will be updated by the Principal Contractor and reviewed by WBC.

Appendix A

RELEVANT LEGISLATION



APPENDIX A – RELEVANT LEGISLATION

Environmental Legislation	Summary of Relevance to the Site
Hazardous Substances	
Control of Substances Hazardous to Health (COSHH) Regulations 2002 (and amended 2003, 2004)	The COSHH regulations provide a legal framework for controlling people's exposure to all 'very toxic, toxic, harmful, corrosive or irritant' substances and apply to all places of work. There are various requirements including an assessment of the risk to the health of employees arising from their work and what precautions are needed, introduction of appropriate measures to prevent or control the risk (ensuring that measures of control do not increase the overall risk to health and safety), use of control measures and maintenance of equipment.
Waste	
Control of Waste (Dealing with Seized Property) (England and Wales) Regulations SI 2015/426	This legislation provides powers to control fly-tipping and prevents the unlicensed transport of waste materials. All carriers of controlled waste including the producers of building and demolition waste are required to be registered with the Environment Agency. Controlled waste is defined as household, industrial, radioactive or commercial waste other than agricultural, mineral/ quarrying or explosive wastes. This registration must be renewed every 3 years.
The Environmental Permitting (England and Wales) Regulations 2010 (amended 2011, 2012, 2013, 2014 and 2015)	The Regulations consolidate the Pollution Prevention and Control and waste Management Licencing regulations to provide a more streamlined approach to environmental regulations, by allowing for a number of different activities to be regulated under one permit by the Environment Agency.
Hazardous Waste (England and Wales) Regulations 2005 (amended 2009)	The Regulations ensure the sound management, storage and safe disposal of hazardous wastes, to prevent environmental pollution and harm to human health. 'Hazardous' waste applies to wastes which contain any substance which: - is listed a hazardous waste in the List of Waste Regulations 2005 (see below); - is exceptionally classified as hazardous by the Secretary of State or any of the National Executives; or - is declared hazardous by virtue of any regulations under section 62 of the Environmental Protection Act (EPA) 1990. All hazardous waste movements require pre-notification to the Environment Agency prior to any hazardous waste being produced (where possible). Producers are required to know and document the quantity, nature, origin and final destination of the Hazardous Waste and to certify that the waste carrier is registered under the Controlled Waste (Registration of Carriers and Seizure of Vehicles) Regulations 1991.

Environmental Legislation	Summary of Relevance to the Site
	Copies of the completed consignment notes must be retained for at least 3 years by all those in the waste chain.
Hazardous Waste (England and Wales) Regulations 2005 and Hazardous Waste (Miscellaneous Amendments) Regulations SI 2015/1360	These regulations relate to environmental permitting, landfill allowances, hazardous and non-hazardous waste. The definitions of Waste Framework Directive and the WEEE Directive have been updated within amended legislation to refer to the current legislation; Directives 2008/98/EC and 2012/19/EU
Environmental Protection (Duty of Care) Regulations 1991 (as amended 2003)	A legal duty of care is imposed on anyone – from producers, to carriers and disposers of waste, to ensure that: - Waste is not illegally disposed of or dealt with without a licence or in breach of a licence or in any way that causes pollution or harm; - Waste is transferred only to an ‘authorised person’, i.e. a local authority, registered carrier or a licensed disposer; and - When waste is transferred, it is accompanied by a full written description which forms part of a waste transfer note (or consignment note for hazardous wastes). All persons subject to duty of care are required to ensure that neither they nor any other person commit an offence under the Regulations.
Environmental Protection Act (EPA) 1990: Part 2 – Waste on Land (amended 2010)	This Act builds on the system put in place by the Control of Pollution Act with stricter licensing controls and other provisions aimed at ensuring waste handling, disposal and recovery operations do not harm the environment. It reorganised Local Authority responsibilities for waste management, introduced a duty of care for producers and handlers of waste and described the offences of unauthorised storage, treatment and disposal of waste.
Environmental Protection Act (EPA) 1990: Part 2a (as amended)	The section of the EPA created by the Environment Act 1995 setting out the legislative framework for identifying and dealing with contaminated land.
Environment Act 1995 (as amended)	Inserted Part ‘2a’ to the EPA 1990 giving powers and responsibilities to Local Authorities regarding contaminated land.
Discharge to Water / Land	
Anti-Pollution Works Regulations 1999	Aimed at ensuring that site owners pay for the prevention and remediation of pollution arising from their activities. Notices can be served by the Environment Agency directing a site owner to carry out anti-pollution works where any poisonous, noxious or polluting matter is likely to enter, or to be, or to have been present in any controlled waters.
Water Industry Act 1999	- The Act prohibits certain discharges to sewers including: - Any matter likely to injure the sewer or interfere with the free flow of its contents or to affect the treatment, disposal of its contents;

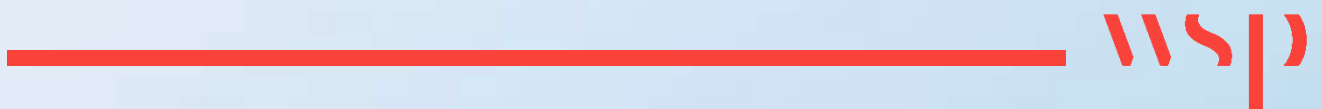
Environmental Legislation	Summary of Relevance to the Site
	▪ Liquid waste or steam at a temperature higher than 110°F or any other chemical waste which is dangerous, a nuisance or prejudicial to health; ▪ Any petroleum spirit; and ▪ Calcium carbide. ▪ Trade effluents may be discharged into public sewers only with the consent, or by agreement with, the sewerage undertaker (i.e. local water company). The consent may stipulate conditions relating to: ▪ Nature or composition of the effluent; ▪ Maximum daily volume allowed; ▪ Maximum daily rate of flow; and ▪ Sewer into which the effluent is discharged.
Water Resources Act 1991 (amended 2009)	The Act requires water abstractions to be licensed and certain discharges into controlled waters to be subject to Environment Agency consent. It is an offence under the Act 'to cause or knowingly permit': ▪ Poisonous, noxious or polluting matter, or any solid waste matter, to enter controlled waters ▪ Matter, other than trade or sewage effluent, to be discharged from a sewer in contravention of a relevant prohibition; ▪ Trade or sewage effluent to be discharged into controlled waters or through a pipe into the sea (beyond the controlled waters) ▪ Unauthorised work in a water protection zone; ▪ Trade or sewage effluent to be discharged onto land or into a lake or pond in contravention of a relevant prohibition or; ▪ Any matter to enter inland waters so as to cause or aggravate pollution by impeding flow. Pollution from individual discharges into water is controlled by a system of discharge consents which set legal limits on the type, concentration and total volume of discharge which can be released. If a pollution incident occurs, a description of the nature and extent of harm must be produced.
Water Act 2003 and 2014	The Water Act replaces parts of the Water Resources Act 1991, and will be fully implemented by 2012. The Water Act introduces a new abstraction licence system which reduces the number of licences and encourages the development of Catchment Abstraction Management Strategies (CAMS).
Groundwater Regulations 2009	The Regulations transpose the requirements of the Groundwater Directive into UK legislation. The Regulations aim to prevent and limit the pollution of groundwater by certain listed substances or groups of substances. The listed substances are the same as those in the Groundwater Directive. The Regulations aim to prevent entry of List I substances into groundwater and prevent groundwater pollution by List II substances. The direct or indirect discharge of List I or II substances must be subject to prior investigation and authorisation. The Regulations also allow notices to be served to control activities which might lead

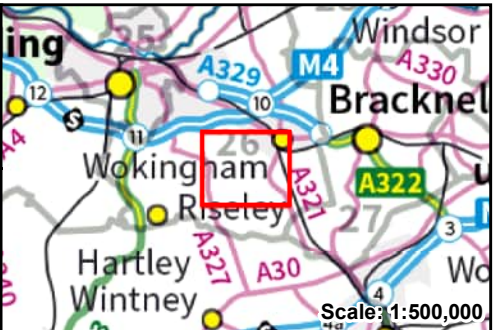
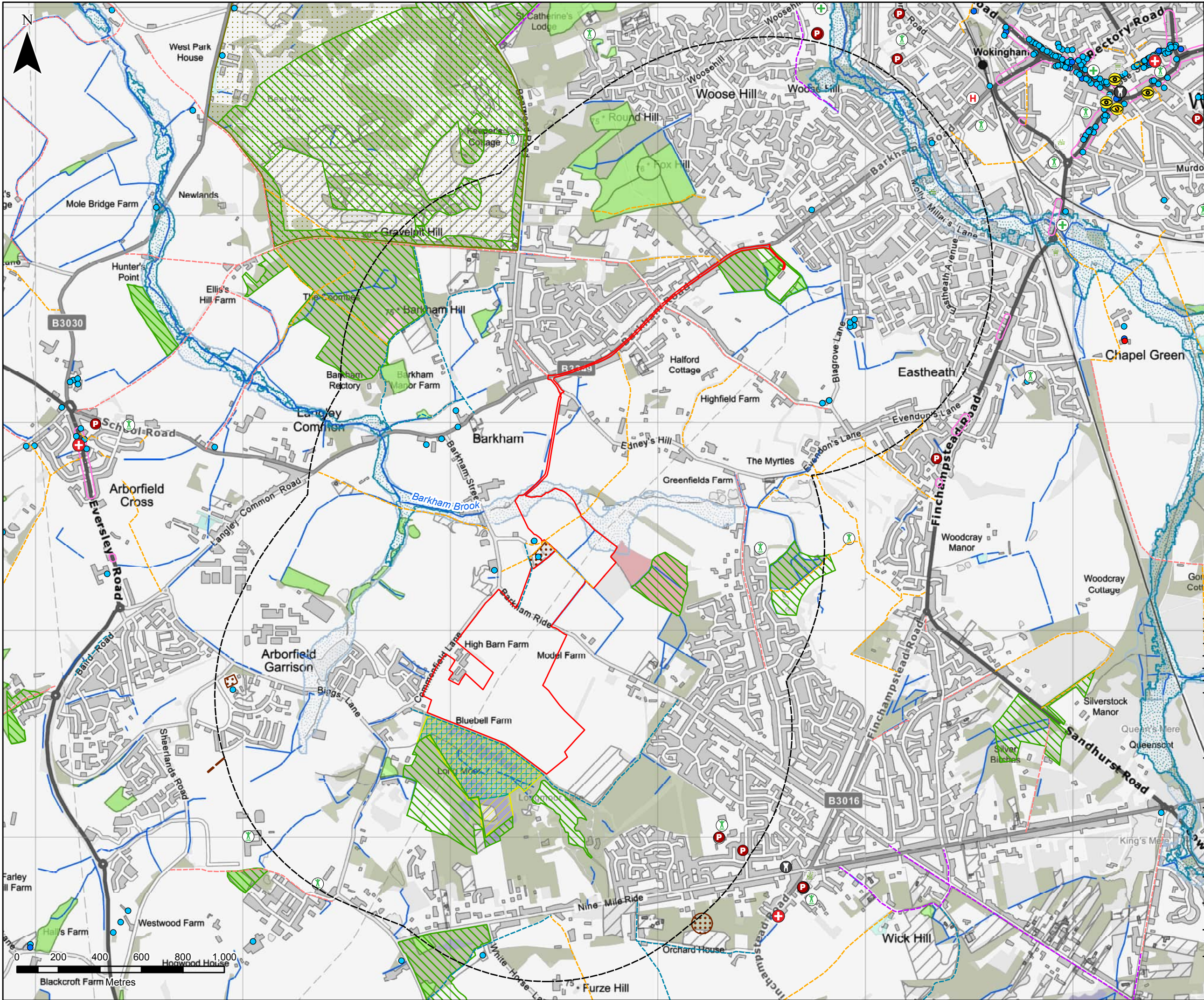
Environmental Legislation	Summary of Relevance to the Site
	to an indirect discharge of List I substances or groundwater pollution by an indirect discharge of substances in List II.
Control of Pollution (Oil Storage) (England) Regulations 2001	These Regulations require a person having custody or control of oil to carry out certain works and to take certain precautions and other steps for preventing pollution of any waters which are controlled waters for the purposes of Part III of the Water Resources Act 1991. The Regulations impose general requirements in relation to the storage of oil and the types of container used. Where the Environment Agency considers that there is a significant risk of pollution of controlled waters from the oil in question it has the power to serve a notice on the person having custody or control to minimise the risk.
Contaminated Land (England) Regulations 2000 (as amended 2006 and 2012)	Local Authorities have a duty to inspect land, to identify contamination and to decide whether any such land should be designated a 'special site'. Public registers of contaminated land and special sites are kept by the local authority and the Environment Agency. Following designation of land as contaminated or a special site, the enforcing authority can serve a remediation notice on the appropriate person(s) specifying what needs to be done and the period within which remedial work should be completed. The appropriate person will be the person(s) who caused or permitted the contamination of the land. If this person cannot be identified then responsibility falls to the current occupier or owner of the land.
Building Regulations 2010	The Regulations impose requirements upon people carrying out certain building operations, including new buildings, building extensions and a material change of use of land or a building. Building work must comply with schedule 1 of the Regulations which include minimum standards for various aspects including site preparation, toxic substances, drainage etc.
Emissions to Air / Noise	
Control of Pollution Act (COPA) 1974 (Sections 60, 61) (amended 1989)	Section 60 of COPA gives powers to the Local Authority to control noise and vibration from construction sites. The basis of the COPA legislation is that Best Practical Means should be used to control noise and vibration pollution. Control is by service of an abatement notice (under S60) on the person responsible for the noise requiring specific controls to minimise noise and vibration. The notice may specify types of plant and machinery, hours of work, boundary noise levels, etc. Section 61 provides for the Contractor to apply to the Local Authority for consent before works commence. This protects the contractor from action by the local authority under S60, but not from individual residents' complaints.
Clean Air Act 1993	The Act prohibits, subject to certain conditions, the emission of dark and black smoke from chimneys serving boilers and other industrial plant. Limits also apply to dust, grit, sulphur and car fume

Environmental Legislation	Summary of Relevance to the Site
	emissions. All new furnaces shall be so far as practicable, smokeless. The Local Authority is empowered to undertake an examination of a plant likely to be causing air pollution, taking into account the possible relevance of statutory exemptions.
Noise and Statutory Nuisance Act 1993	This Act amends the Environmental Protection Act (EPA) 1990 to make noise emitted from vehicles, machinery or equipment in the street a statutory nuisance. It gives the Local Authority powers to serve an abatement notice on the person responsible.
Noise Act 1996	Introduces a new procedure for Local Authorities to seize noisy equipment, in relation to statutory nuisance offences under the EPA 1990.
Control of Noise at Work Regulations 2005	Requires that all employers must conduct an assessment of the exposure and therefore of the risk of their employees to noise where they have reason to believe that any of the specified action levels for various noise exposures is or could be exceeded.
Construction Plant and Equipment (Harmonisation of Noise Emission Standards) Regulations 1985 (as amended 1995)	Provides for examination and certification of construction plant that comply with noise emission standards. The Regulations require that plant is certified by approved bodies. Various types of plant manufactured after the dates of the regulations are to meet noise emission standards and are certified as such.
Environmental Protection Act (EPA) 1990: Part 3 – Statutory Nuisance (section 80)	When a complaint of statutory nuisance is made to the Local Authority by a person living in its area, the Authority has to take steps to investigate the nuisance. Statutory nuisances include any premises maintained in such a state to be prejudicial to health or a nuisance; any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance. Noise emitted from premises so as to be prejudicial to health or a nuisance.
Vehicles	
Road Vehicles (Construction and Use) Regulations 1986 (as amended 2015)	It is an offence to use a vehicle if it is emitting ‘smoke, visible vapour, grit, sparks, cinders or oily substances’ in such a way as is likely to cause ‘damage to any property or injury to any person’. It is an offence to use a vehicle in such a way as to cause excessive noise.
Road Traffic (Vehicle Emissions) (Fixed Penalty) Regulations 1997 (as amended 2002 and 2003)	These Regulations give powers to Local Authorities to enforce vehicle emission standards at the roadside as part of the implementation of the national air quality strategy. Under the Regulations, Local Authorities may issue fixed penalty notices to users of vehicles that do not comply with emissions standards set in the Road Vehicles (Construction and Use) Regulations 1986 as amended. Appropriately trained Local Authority officers can test emissions from vehicles with the help of a uniformed police officer to stop the vehicle. The Local Authority officer may also issue a fixed penalty notice to drivers who leave their engines running unnecessarily.

Appendix B

ENVIRONMENTAL CONSTRAINTS





LEGEND	
	Site Boundary
	1km Buffer
	Rivers
	Flood Zone 2
	Flood Zone 3
	Scheduled Monument
	Site of Special Scientific Interest
	Local Nature Reserve
	Local Wildlife Site
	Ancient Woodland
	Noise Important Areas
	Parks and Gardens
	GP Practice
	Pharmacy
	Dentist
	Optician
	Sports and Fitness
Supermarket	
	Convenience
	Hypermarket
	Mid-size
	Supermarket
Listed Building	
	Grade I
	Grade II*
	Grade II
Public Right of Way	
	Footpath
	Bridleway
	Byway open to all traffic
	Restricted Byway
Education	
	Primary
Health and Wellbeing	
	Hospital (No A and E)
Habitats of Principal Importance	
	Deciduous woodland
	Good quality semi-improved grassland
	Lowland fens
	Lowland heathland
	Purple moor grass and rush pastures
	Reedbeds
	Traditional orchard
	No main habitat but additional habitats

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001	BG	AK	AM	03/03/2021

FIRST DRAFT ISSUE

REVISION	DRAWN	CHECKED	APPROVED	DATE
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DESCRIPTION



PROJECT TITLE:
Barkham Farms

DRAWING TITLE:
Figure 2.1:
Environmental Features Plan

CONFIDENTIALITY
PUBLIC

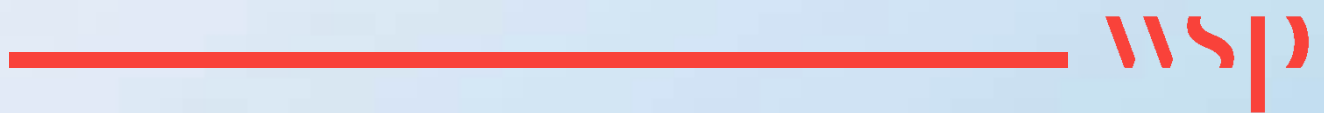
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BG	AK	AM	MM

SCALE @ A3 SIZE:	DATE:	REVISION:
1:17,000	22/03/2021	002

DRAWING NUMBER:
70074897-XX-XX-EN-004

Appendix C

SITE LAYOUT



Appendix D

CONSTRUCTION TRANSPORT MANAGEMENT PLAN





EQUANS

BARKHAM FARMS SOLAR FARM

211081 / Condition 13 - Construction Traffic
Management Plan



EQUANS

BARKHAM FARMS SOLAR FARM

**211081 / Condition 13 - Construction Traffic Management
Plan**

CONFIDENTIALITY: PUBLIC

PROJECT NO. 2024UK311126

OUR REF. NO. BFSF-WSPC-ZZ-RP-Z-0002

DATE: SEPTEMBER 2024



EQUANS

BARKHAM FARMS SOLAR FARM

211081 / Condition 13 - Construction Traffic Management
Plan

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	
Remarks	Draft for Client Review	Final for Submission	Final for Submission with updated Compound Plan	
Date	20 th September 2024	27 th September 2024	30 th September 2024	
Prepared by	Vicky Gouge	Vicky Gouge	Vicky Gouge	
Signature				
Checked by	Chris Williams	Grace Blizard	Grace Blizard	
Signature				
Authorised by	Justin Sherlock	Justin Sherlock	Justin Sherlock	
Signature				
Project number:	2024UK311126			
Report Number:	BFSF-WSPC-ZZ-RP-Z-0002			
File reference	2024UK311126 - Barkham Farms Solar Farm - Transport Planning - All Documents (sharepoint.com)			

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GREEN TRAVEL PLAN

APPENDIX D

TEMPORARY SITE COMPOUND PLAN

1 INTRODUCTION

- 1.1.1. This Construction Traffic Management Plan (CTMP) has been prepared on behalf of EQUANS to discharge Condition 13 of planning permission 211081 associated with Barkham Farms in Wokingham (the 'Site'). Barkham Farms is located 5km to the south-west of Wokingham within the administrative area of WBC. Full planning permission was approved on 21 January 2022 for the following:

"Full application for EIA development for the proposed installation of a new 52ha solar farm for a temporary period of 25 years including underground grid connection between site and Electricity Distribution Centre, laying of internal access road, the erection of substation building security fencing, and associated landscaping with approximately of 3.4ha of tree planting for carbon sequestration."

- 1.1.2. The key elements include a solar farm consisting of approximately 44,000 solar photovoltaic (PV) panels (30mwh peak) and associated infrastructure including the grid connection to the Wokingham Sub-station.
- 1.1.3. A non-material amendment to planning consent 211081 was approved in May 2024 to amend the layout of the approved solar farm in relation to the location of the Distribution Network Operator (DNO) substation, the PV layout and the internal access road.
- 1.1.4. Condition 13 (Construction Traffic Management Plan) requires the following:

Prior to the commencement of the development hereby permitted, a Construction Traffic Management Plan (CTMP) shall be submitted to and approved in writing by the local planning authority. The CTMP should include the principles contained within the draft CTMP dated March 2021 in addition to full details of the following:

a) Location of wheel washing facilities

b) Routing of construction traffic

c) Details of street sweeping

d) A detailed green travel plan

e) Cycle parking

f) Traffic management

g) A detailed construction schedule to include construction vehicles and day to day travel of construction workers

The development is to be undertaken in strict accordance with the approved document for the life of the construction period.

Reason: In the interests of highway safety and convenience and neighbour amenities. Relevant policy: Core Strategy policies CP3 and CP6.

1.2 PURPOSE OF THIS CTMP

- 1.2.1. This CTMP details the measures and initiatives proposed to manage and mitigate any construction related transport impacts, including access proposals, traffic volumes, types of vehicle and routing.

Through the selection of materials and working practices this CTMP seeks to minimise the adverse effects of vehicle movements on the existing transport network and surrounding residential areas.

1.2.2. This CTMP builds on the principles established within the CTMP submitted with the planning application namely:

- To appoint a site-based Delivery and Transportation Manager (DTM) to ensure that all vehicle movements to/from the Site are efficiently managed to minimise any nuisance or disruption to the local highway network;
- Local contractors to be encouraged to tender for the construction works and where possible materials to be sourced from local suppliers to minimise the distance travelled for commuting and delivery trips to/from the Site; and
- All vehicle parking for construction related vehicles will be provided within the Site to reduce the likelihood of overspill parking on the local highway network/nearby parking facilities.

1.2.3. In addition, the CTMP covers the following:

- Details of the proposed construction access to the Site;
- The proposed routing of construction vehicles from the strategic highway network;
- The forecast construction vehicle and delivery volumes including employee trips to/from the Site;
- The level of traffic associated with the operational and de-commissioning phases of the Proposed Development;
- Details of the proposed mitigation measures; and
- A Construction Workers Green Travel Plan.

1.2.4. This CTMP has been prepared at Stage 1 of the JCT Design and Build contract, whereby the contractor carries out both the design and the construction work. The construction part of the contract has not yet been commissioned, and therefore some elements of the build process will not be determined until the construction stage. However, the Principal Contractor, when appointed will be required to comply with the requirements of the CTMP.

1.3 DISTRIBUTION AND CONTROL OF THE CTMP

1.3.1. Contractors and personnel working on the solar farm site will be provided with access to the most current version of the CTMP. The CTMP is a dynamic document that will be reviewed, updated and amended as necessary during the construction programme in order to make the Site access and working arrangements safer.

1.3.2. Any document revisions and updates will be subject to approval by the Site Manager and/or the Local Planning Authority (LPA), where appropriate. Consultation with WBC will be undertaken as part of this process.

1.3.3. Changes to the CTMP will be communicated to all personnel through inductions and on-going training.

2 THE DEVELOPMENT SITE

2.1 THE SITE

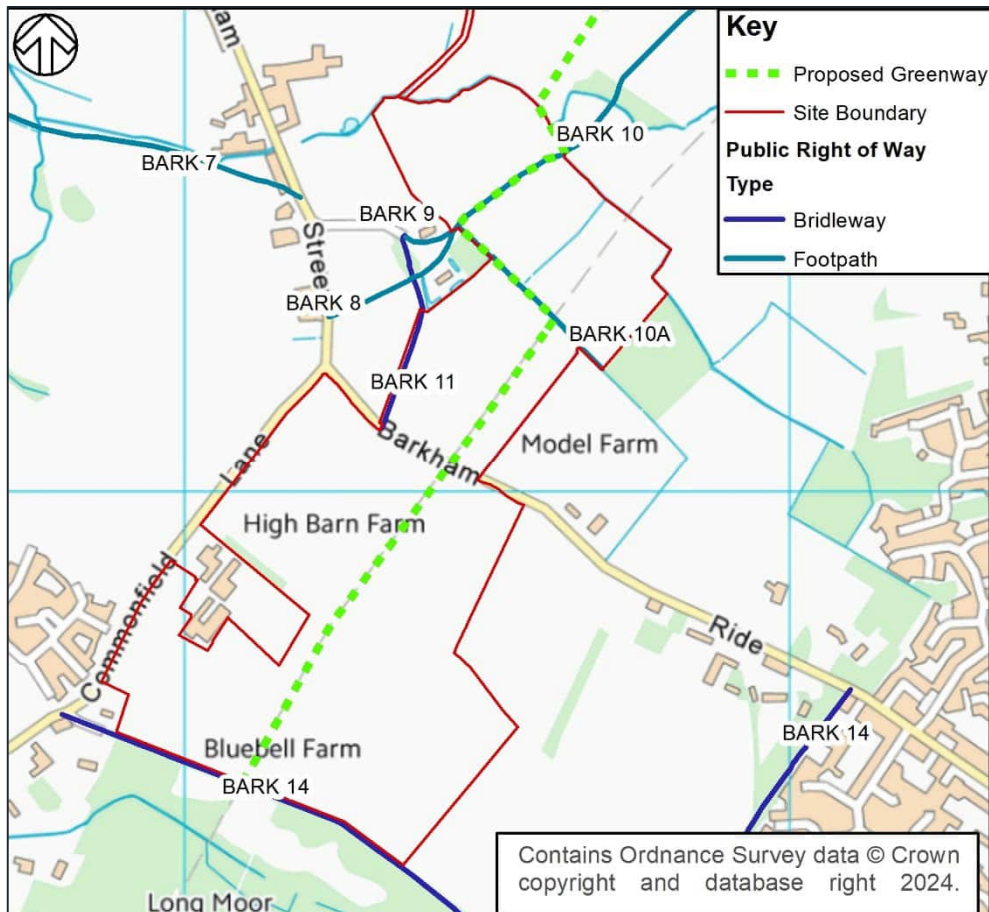
- 2.1.1. The Site is located within the administrative boundary of WBC approximately 500m south of the town of Barkham, 5km to the south-west of Wokingham Town Centre, and 14km to the south-east of Reading Town Centre as shown in Figure 2-1. The land use within the Site is currently agricultural land, which is owned by WBC.
- 2.1.2. Land uses surrounding the Site include agricultural land, residential dwellings and retail uses. The Site is bounded by residential dwellings along Commonfield Lane and Archer Grove. The Site is also bounded by properties along Church Lane to the north-west of the Site, which include Barkham Village Hall and The Parish Church of Saint James which is Grade II Listed. The rest of the Site is bounded by agricultural land and the woodland to the south is designated as a Site of Special Scientific Interest and Local Nature Reserve; Longmoor Bog. Barkham Ride divides the Site in two, from east-to-west.

Figure 2-1 - Site Location



- 2.1.3. Public Rights of Way (PROW) are located within and adjacent to the Site. Footpaths (WBC References BARK FP 10 and FP 10A) pass through the northern part of the Site and join footpaths (References BARK FP 8 and 9) outside the red line boundary. A bridleway (BARK BR 11) runs adjacent to the west boundary of the Site north of Barkham Ride and part of this bridleway (from the point south of Church Cottages to Barkham Ride) is included within the Site boundary. These PROW are presented below in Figure 2-2.

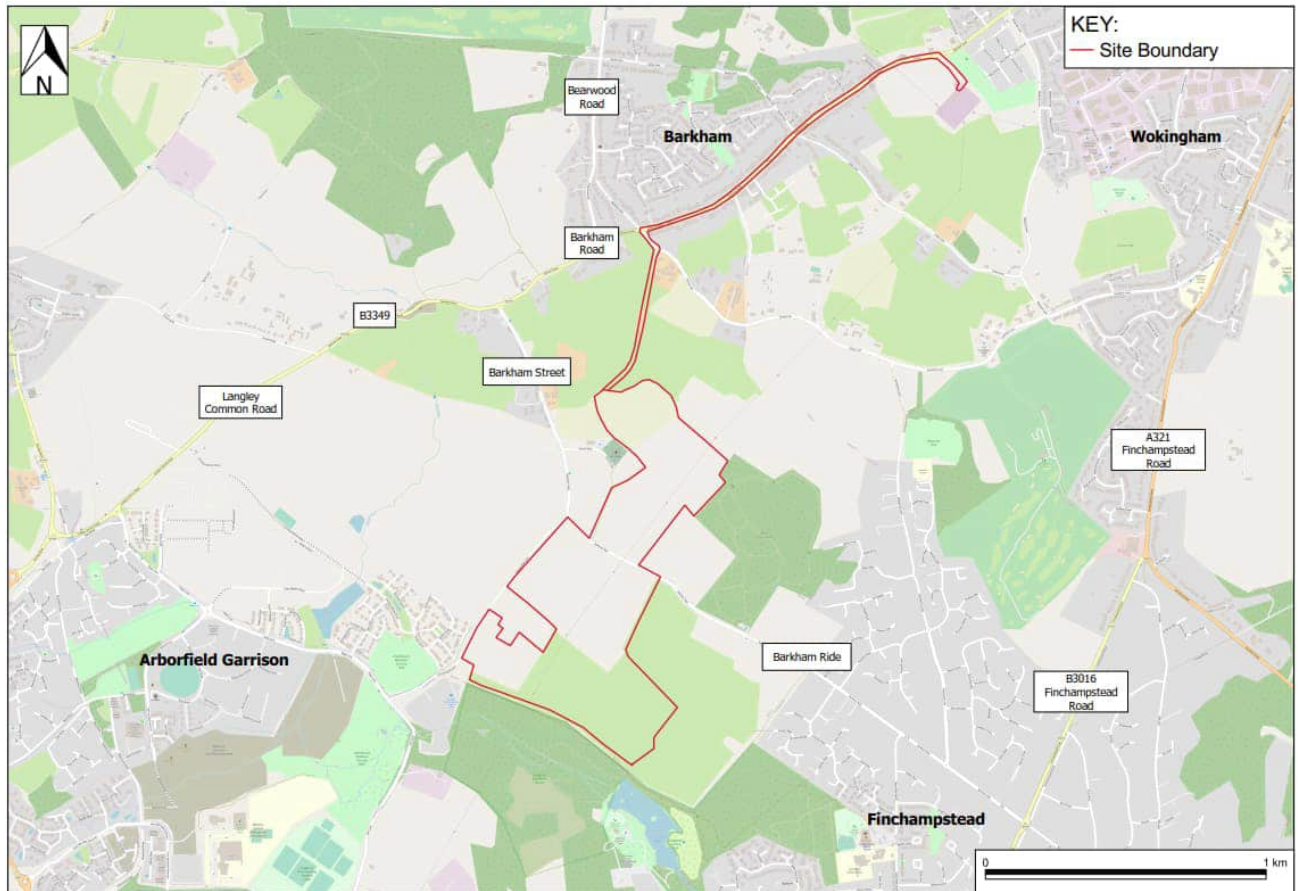
Figure 2-2 - PROW around Development Site



2.2 LOCAL HIGHWAY NETWORK

- 2.2.1. The Site is well located for access to the strategic and local highway network and has existing access to the public highway. The local highway network is shown in Figure 2-3 and discussed below.

Figure 2-3 - Local Highway Network



BARKHAM RIDE

- 2.2.2. Barkham Ride is the main access road to the Site, and it acts as a primary connection between the villages of Barkham and Finchampstead. It is approximately 5m wide and is subject to a 40mph speed limit within the vicinity of the Site. Barkham Ride provides access to Barkham Road to the north west and B3016 to the south east. Barkam Ride is subject to a width restriction of 6 foot 6 inches, except for buses.

2.2.3. BARKHAM STREET

- 2.2.4. Barkham Street connects Barkham Ride to Barkham Road. It is approximately 5m wide and is subject to a 40mph speed limit, which reduces to 30mph approximately 40m from the roundabout with Barkham Road. Barkam Street is subject to a width restriction of 6 foot 6 inches, except for buses.

BARKHAM ROAD

- 2.2.5. Barkham Road acts a main link between the villages of Barkham and Arborfield Garrison. It is approximately 6.2m wide and is subject to varying speed limit of 40mph and 30mph.

A327 OBSERVER WAY

- 2.2.6. A327 Observer Way was opened in November 2020 and acts as a primary link between Arborfield Garrison and Shinfield. It is approximately 7m wide and is subject to the National Speed Limit.

B3016

- 2.2.7. B3016 acts as a link road from A321 which connects Wokingham to Finchampstead. It is fronted by residential developments on either side and is approximately 5.6m in width, with a 40mph speed limit.

EASTERN RELIEF ROAD

- 2.2.8. The Eastern Relief Road reroutes A327 around the eastern side of Shinfield. It is approximately 7.3m in width and has a 50mph speed limit.

B3270

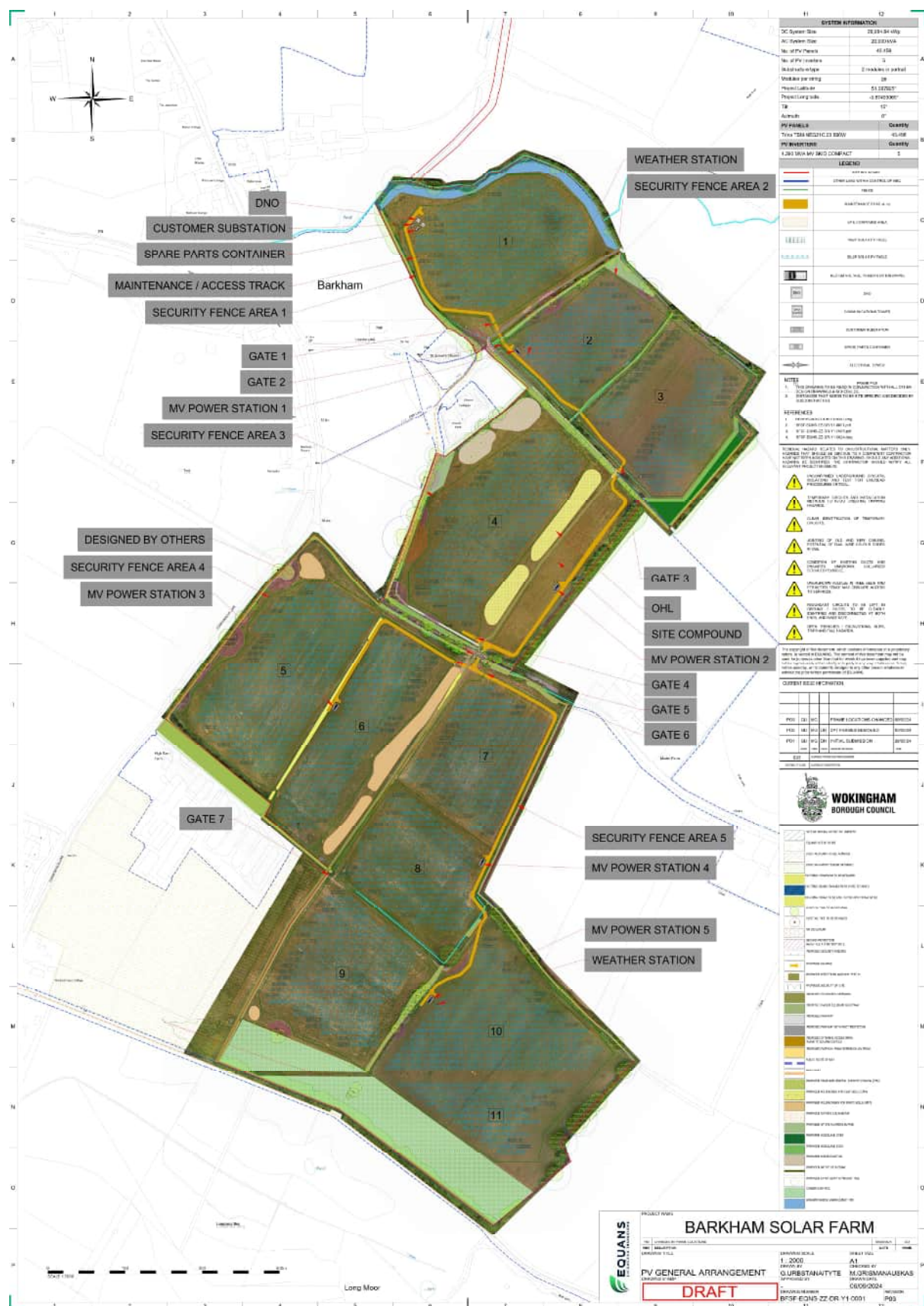
- 2.2.9. B3270 runs parallel to the M4 linking Black Boy Roundabout and Junction 11 of the M4 together. It is approximately 7m in width and features a 40mph speed limit.

3 CONSTRUCTION OF THE PROPOSED DEVELOPMENT

3.1 THE PROPOSED DEVELOPMENT

- 3.1.1. The Development consists of a 52ha solar farm with vehicular access taken from Barkham Ride. It is proposed to generate energy outputs up to a 30MWp and will consist of:
- Approximately 44,000 solar PV panels;
 - Transformers and cabins;
 - Sub-station;
 - Grid connection to Wokingham Sub-Station; and
 - Vehicle access and fencing.
- 3.1.2. Part of the development, the community orchard is complete.
- 3.1.3. A greenway is also proposed between Bark BR 14 in the south and BARK FP 10 and will consist of a 3m wide shared cycling, walking and horse-riding path. The existing vegetation along this route will be retained and enhanced. The remaining Site area will be landscaped.
- 3.1.4. Lighting will be included on Site for use during emergency maintenance visits only; the Site will not be permanently lit.
- 3.1.5. The grid connection will be provided underground between the Site boundary and point of connection at Wokingham Sub-station as shown in Figure 2-3. Final design of the grid connection will be the subject of detailed design by the appointed contractor and their highway works contractor.
- 3.1.6. The site layout is shown in **Figure 3-1**. It can be seen that Barkham Ride splits the Site into two land parcels, hereinafter referred to as the 'North Land Parcel' and 'South Land Parcel'.

Figure 3-1 - Site Layout



3.2 CONSTRUCTION SITE ACCESS

- 3.2.1. To provide construction access to the two land parcels, two accesses (to agricultural vehicle access standards) will be provided to connect with Barkham Ride. The access arrangements are shown within Drawings BFSF-CURT-XX-DR-C-9500 P01 and BFSF-CURT-XX-DR-C-9505 P01, contained in **Appendix A** showing the visibility splays.
- 3.2.2. The largest construction vehicle that will access the Site (with the exception of the Abnormal Indivisible Load (AIL)) will be a 16.5m HGV. Drawing BFSF-CURT-XX-DR-C-9501 P01 contained in **Appendix B** show the swept path analysis of a 16.5m articulated vehicle successfully accessing and egressing the Southern and Northern Land Parcels respectively.
- 3.2.3. The Site access as it abuts the public highway will be made of a concrete construction up to the Site access gates. Within the Site itself a crushed aggregate surface will be used.
- 3.2.4. As shown by the swept path analysis, HGVs will be required to manoeuvre into the middle of Barkham Ride slightly in order to access/egress the Site. If deemed appropriate, temporary traffic signals could be installed at the Site accesses / Barkham Ride to manage the interaction between local and construction traffic. A decision on the final construction access arrangements will be made by the contractor once appointed.

3.3 CONSTRUCTION PROGRAMME

- 3.3.1. The Development is anticipated to be constructed between March 2025 and January 2027. However, the main period of construction activity associated with constructing the solar farm is anticipated between over a 10 month period between April 2025 and January 2026. Testing and commissioning are anticipated to begin in October 2025 and finish in November 2026, with the Proposed Scheme anticipated to be completed in January 2027. At this stage, prior to a contractor having been appointed a draft construction programme has been developed. The draft construction programme will follow the schedule as shown in Table 3-1 – Proposed Draft Construction Programme.

Table 3-1 – Proposed Draft Construction Programme

Activity	2025										2026												2027
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
Site mobilisation																							
Pre-construction works																							
CCTV installation																							
Solar PV array installation																							
Installation and termination of combiner boxes																							
Trenching																							
Inverters and main switch installation																							
Installation of meteo station																							
Customer substation installation																							
Testing and commissioning																							
Demobilisation																							
ICP works (completed by others)																							
Project completion																							

3.4 CONSTRUCTION WORKFORCE AND TRAVEL ARRANGEMENTS

- 3.4.1. During construction, a workforce of up to a maximum of 100 personnel during peak times is anticipated per day. The number of staff on-site per day on average would be less than this. 60 on site car parking spaces will be provided within the construction compound. This proposed car parking provision is considered to be sufficient as the construction workforce will be encouraged to use mini-buses and car sharing to reduce the number of vehicular movements to/from the Site. Sufficient parking for four mini-buses will also be provided.
- 3.4.2. It is expected that construction personnel may choose to stay in local accommodation and a mini-bus would be ideal to transport the workforce from/to the Site. Alternatively, construction personnel could be encouraged to park at an agreed central location to minimise their travel distance, and a mini-bus could transport them to/from the Site. This element will be included within the Principal Contractor's proposals.
- 3.4.3. The use of mini-buses/car sharing will be promoted and encouraged as part of the Green Travel Plan. The Green Travel Plan is provided within **Appendix C**.

3.5 CONSTRUCTION WORKING HOURS

- 3.5.1. Construction work will be restricted to the following hours:
- Monday to Friday: 08:00 to 18:00; and
 - Saturday: 08:00 to 13:00.
- 3.5.2. No construction work will be undertaken on Sundays or Bank Holidays. Any deviations from these hours will be agreed in advance with the LPA.

3.6 SITE COMPOUND

- 3.6.1. A temporary site compound in the North Land Parcel will be set up near to the access junction. The compound will comprise:
- A temporary hardstanding with security fencing and access gates;
 - Porta-cabins including offices, welfare and toilet facilities;
 - Containers for storage materials;
 - 60 vehicle parking spaces for construction workers and construction vehicles;
 - Parking area for two HGVs;
 - Parking for four mini-buses;
 - Five Sheffield stands for cycle storage, including shelter;
 - Turning area for deliveries; and
 - Wheel washing facilities.
- 3.6.2. The construction compound layout is shown in Figure 3-2 and in BFSF-EQNS-ZZ-DR-Y1-0022 P01 contained in **Appendix D**.

WHEEL WASHING FACILITIES

- 3.6.3. Wheel washing facilities will be provided in both the North and South Land Parcel. They are located close to the entrances to the site from Barkham Ride to ensure that they clean wheels before entering the local highway network. The location of the wheel washing facilities is shown in Figure 3-2 and in BFSF-EQNS-ZZ-DR-Y1-0022 P01 contained in **Appendix D**.

3.7 INTERNAL ROUTING AND ACCESS

- 3.7.1. Internal access roads will be provided throughout the Site to allow the movement of construction vehicles and in the longer term provide access for maintenance purposes. It is proposed that the internal access road will be completed during the initial stages of construction so that temporary haul routes are not necessary.

3.8 CONSTRUCTION OF GRID CONNECTION

- 3.8.1. The grid connection will be provided underground between the Site boundary and point of connection at Wokingham Sub-station as shown in Figure 2.3. Responsibility for delivery of the grid connection will be Scottish and Southern Electricity Networks (SSEN) as Distribution Network Operator for the area. The final alignment and specification of the grid connection will be subject to the design undertaken by SSEN. However, at this stage and based upon other similar proposals it is anticipated that the cable is to be laid in a trench which will vary in width and depth. The width can vary between approximately 0.5 and 1.5m wide and depth can vary between approximately 600mm and 1200mm. Every 500-1000m a joint bay will be required for jointing of sections of cable. Further joint bays may also be required where the cable changes direction. The joint bays take the form of inspection chambers. Across WBC land a 10m wide corridor has been identified where the cable trench and cable could be constructed. The design will aim to avoid any hedgerows, trees and root protection zones. On the public highway the cable trench and cable will be constructed within the carriageway and/or footway only. Where any hedgerows need to be removed these will be re-instated. Temporary Traffic Management (TTM) will be required to lay the cable in the public highway. Typically, installation rates for electricity cables are approximately 18 to 30m per day in urban areas and up to 50m per day across open land. Typically, this equates to approximately 100m of cable route being laid per week. Installation of the grid connection could therefore take up to approximately 20 weeks to complete. The programme for delivery of these works will be confirmed in due course by SSEN.

3.9 CONSTRUCTION TRAFFIC ACCESS STRATEGY

3.9.1. It is anticipated that the main construction works would take approximately 10 months. The principal activities for the construction of the Development are as shown in Table 3-1 – Proposed Draft Construction Programme Accordingly, the traffic associated with the construction phase can be split into three main categories. These are:

- Construction workforce movements;
- Delivery of construction plant / equipment; and,
- Delivery of the Solar Park plant / equipment / materials.

CONSTRUCTION WORKFORCE MOVEMENTS

- 3.9.2. During construction a workforce of up to 100 personnel per day is expected. The workforce will be encouraged to use sustainable modes of transport to access the Site, and the peak vehicle demand would therefore be approximately 60 vehicles (i.e. 120 traffic movements per day).
- 3.9.3. A Green Travel Plan has been prepared to minimise impacts on the highway network and encourage travel by sustainable modes which is contained within **Appendix C**.

DELIVERY OF CONSTRUCTION PLANT / EQUIPMENT

3.9.4. Construction plant / equipment will be delivered to the Site on Low Loaders. The construction / plant equipment to be delivered will include:

- Bobcat Tracked Digger, for the excavating and trenching;
- Tipper Truck, for material import and export;
- Vibrating Roller, for compaction of access tracks and hard standing;
- Piling Machine, for installing the PV Panel support structures / mounting systems;
- Telehandler, for movement of materials around the Site;
- Cement Mixer. Import concrete for foundations and substation;
- 4-Wheel Drive Forklift Trucks;
- 16.5m articulated lorry, import of construction materials such as portacabins, mounting frames, panels and transformers;
- Low Loader, import of sub-station and construction vehicles such as a digger;
- 10m rigid lorry, import of construction material;
- Panel Vans, import of construction material;
- Skip Lorry, Export of waste construction material; and
- Tractor, for installing the fencing.

3.9.5. This construction plant / equipment will be delivered to Site in the first few weeks of the construction programme, such that the access tracks and temporary compounds can be constructed and the delivery of the Solar Park plant / equipment / materials can begin.

DELIVERY OF THE SOLAR PARK PLANT / EQUIPMENT / MATERIALS

3.9.6. The Solar Park plant / equipment / materials will be delivered to the Site via a mixture of HGVs, trucks and concrete mixer trucks. The Solar Park plant / equipment / materials to be delivered will include:

- Materials to construct the onsite access track;
- Surfacing materials for the Temporary Construction Compound / Laydown Area;

- Approximately 44,000 PV Panels;
- 641 tables;
- 5 inverters
- 1 transformers;
- 1 substation;
- Approximately 6100m fencing; and
- 1 mini substation.

3.10 TOTAL CONSTRUCTION TRAFFIC MOVEMENTS

3.10.1. It is estimated that 600 vehicles would be required to deliver material to the Site. The breakdown of these vehicles is presented in Table 3-2.

Table 3-2 – HGV Construction Traffic Movements

Activity	Type of Vehicle	Total Number of Deliveries	Two-Way Movements
Solar Farm components	Up to 16.5m articulated HGV	600	1,200
<u>Inclusive of:</u>			
Transformer	Abnormal Indivisible Load (AIL)	1	2
Main Substation		1	2
Access Tracks	10 meter tipper Trucks	100	200
Inverters	Up to 10 meter rigid HGV	5	10
Control Room		1	2
33Kv Substation		1	2
General	Front end JCB	1	2

3.10.2. During the site preparation and construction phase the maximum number of HGVs per day will be 17 in each direction, equating to 34 HGV movements per day. Based upon the 10-month main construction programme there will be an average of three HGV deliveries per day or six HGV movements per day.

3.10.3. The maximum number of vehicles arriving to site during the Site preparation and construction phase is anticipated to be in the region of 81 per day (assuming 17 HGVs, 60 construction worker vehicles and 4 mini-buses), equating to 162 movements per day. Over the 10-month main construction

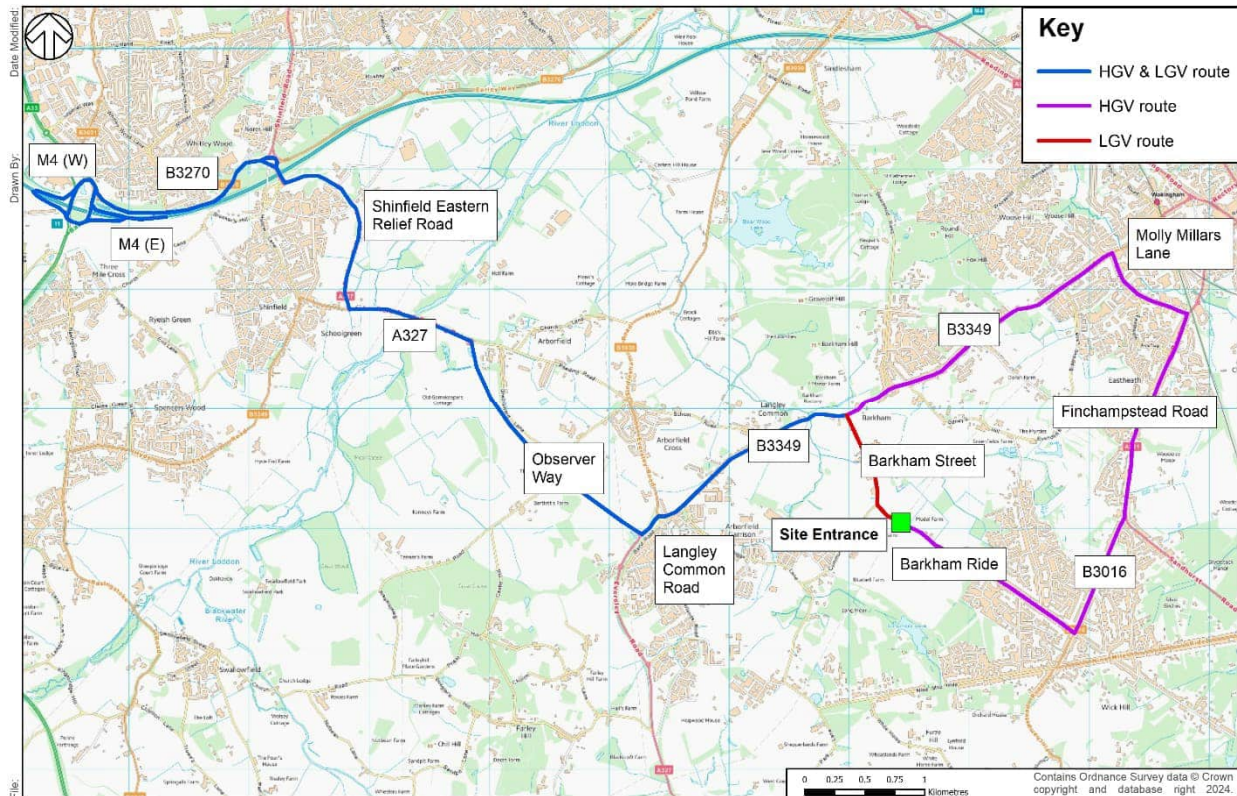
programme there will be an average of 67 vehicle arrivals to site per day (3 HGVs, 60 construction worker vehicles and 4 mini-buses), equating to 134 movements per day. These movements would be spread out across the day, with peak movements occurring at the beginning and end of the working day as construction workers arrive and depart the Site. The working hours of the construction site are anticipated to be Monday to Friday 08:00 to 18:00 and Saturday 08:00 to 13:00.

- 3.10.4. Peak construction worker movements would take place outside of these hours 07:00-08:00 and either 18:00-19:00 (weekday) or 13:00-14:00 (weekend). HGV movements would be spread out across the operational hours of the day between 09:00 and 15:00.

3.11 CONSTRUCTION TRAFFIC ROUTING

- 3.11.1. The construction access strategy is based upon construction traffic using the Strategic Road Network as far as possible before routing onto the local highway network. The designated route for construction traffic associated with the construction phase is illustrated in Figure 3-3.
- 3.11.2. The main construction route will be:
- B3270 between M4 Junction 11 and Black Boy Roundabout;
 - A327 between Black boy roundabout and A327 / Eversley Road roundabout;
 - Eversley Road between A327 and Langley Common Road;
 - Langley Common Road / Barkham Road;
 - Barkham Street; and
 - Barkham Ride west of the construction site access junction.
- 3.11.3. An alternative route has been identified for HGVs as they approach the area local to the site. The route will remain as per the overall construction traffic route above, with an amendment from Barkham Road as depicted on Figure 3-3:
- B3270 between M4 Junction 11 and Black Boy Roundabout;
 - A327 between Black boy roundabout and A327 / Eversley Road roundabout;
 - Eversley Road between A327 and Langley Common Road;
 - Langley Common Road / Barkham Road;
 - Molly Millars Lane;
 - Finchampstead Road / B3016 Finchampstead Road; and
 - Barkham Ride east of the construction site access junction.
- 3.11.4. Construction personnel and delivery drivers will be advised of the route in advance of driving to the Site.
- 3.11.5. Other vehicle movements associated with construction of the proposed development will relate to construction workforce traffic or delivery by LGV. The location of where staff will travel from is unknown at this stage as it will depend on the appointed contractor. However, it is anticipated at this stage that the non-local workforce will stay at local accommodation and general operatives will be transported to the site by minibuses to minimise the impact on the local highway network. The number of car trips to the site will be minimised to those senior staff such as project managers and the Health and Safety Executive. Taking this into account, no prescribed routing will be applied to these vehicles.

Figure 3-3 - Route to Site for Construction Traffic



ROUTE DETAILS

Inbound Construction Traffic

- 3.11.6. From the strategic road network (SRN) (M4 to the west), construction vehicles will exit M4 at Junction 11 and then head east via B3270 to Black Boy Roundabout.
- 3.11.7. Construction vehicles will exit the Black Boy Roundabout and use the Eastern Relief Road which connects to the A327 to the south. Vehicles will then join onto Eversley Road, exiting A327 Observer Way and then onto Langley Common Road which connects to Barkham Road.
- 3.11.8. For LGVs, Barkham Road connects to Barkham Ride via Barkham Street and the Site is accessed approximately 1km from the Barkham Road / Barkham Street mini roundabout.
- 3.11.9. For HGVs, Barkham Road continues to the mini roundabout junction with Molly Millars Lane. Vehicles take a right turn onto Molly Millars Lane, proceed to a mini roundabout at the end of the road where a right turn joins onto Finchampstead Road. After 2.8km, vehicles will take a right turn at a roundabout from B3016 Finchampstead Road onto Barkham Ride. The site is accessed approximately 1.8km from the Barkham Ride / B3016 Finchampstead Road roundabout.

Outbound Construction Traffic

- 3.11.10. Upon egressing the Site in either direction onto Barkham Ride, outbound construction traffic will follow the same routes as described above in reverse for LGV and HGV respectively.

ROUTE SIGNAGE

- 3.11.11. Prior to commencement of construction, the Principal Contractor will erect temporary 'works traffic' signage on local roads as appropriate and in accordance with Chapter 8 of the Traffic Signs Manual¹. This signage will be provided and maintained for the duration of the works. The required signage will fall into two broad categories: directional signage on the approved route to the Site and warning signage.
- 3.11.12. Directional signage will be located at key points on the approved route to the Site with the purpose of reinforcing the route and discouraging construction vehicles from using other routes. Warning signage will principally be located within the vicinity of the Site entrance to warn members of the public of the possibility of HGV traffic.
- 3.11.13. The Applicant will consider the installation of permanent directional signage on the route to the Site to assist maintenance staff in navigating to the Site during the operational phase.
- 3.11.14. Any requirements for Temporary Traffic Regulation Orders (TTROs) to facilitate construction will be discussed with the local highway authority.

3.12 ABNORMAL LOADS

- 3.12.1. Two abnormal load deliveries will be required to transport the transformer and substation to site. These will be transported by specialist hauliers and subject to Road Vehicles (construction & Use) Regulations 1986 and Road Vehicles (Authorised Weight) Regulations 1998. These require hauliers to review the route proposed for access in advance and to notify the police, highways and bridge authorities prior to the movement of abnormal loads.

¹ Department for Transport, Traffic Signs Manual, 2009

4 PROPOSED MITIGATION MEASURES

4.1 CONSTRUCTION TRAFFIC MANAGEMENT PRINCIPLES

4.1.1. During the construction phase the following traffic management principles will be observed:

- A site-based DTM will be appointed. The DTM will be responsible for ensuring that all vehicle movements to/from the Site are efficiently managed in order to minimise any nuisance or disruption to the local highway network. The DTM role will also be responsible for advising delivery companies (and their drivers) of the most appropriate route/s to access/egress the Site, providing advice on any local width or weight restrictions etc.
- Local contractors will be encouraged to tender for the construction works and where possible materials will be sourced from local suppliers. This will help minimise the distance travelled for commuting and delivery trips to/from the Site.
- All vehicle parking for construction related vehicles will be provided within the Site to reduce the likelihood of overspill parking on the local highway network/nearby parking facilities.

4.2 THE USE OF AGREED AND APPROVED ROUTES

4.2.1. The deliveries to the Site will follow the route shown in Figure 3-3. Temporary 'works traffic' signage will be erected on local roads as appropriate in accordance with Chapter 8 of the Traffic Signs Manual³. This signage will be provided and maintained for the duration of the works.

4.3 TEMPORARY TRAFFIC MANAGEMENT

4.3.1. Provided below is an outline of temporary traffic management that will be employed to facilitate construction of the proposed development. It should be noted however that a contractor has not yet been appointed and therefore the details of such will need to be confirmed at a later stage when detailed design is complete and a contractor appointed. The contractor will be required to submit all proposed traffic management measures to WBC for approval in accordance with relevant guidance.

SITE ACCESS

4.3.2. Due to the relatively low number of vehicles associated with the construction phase, there is not anticipated to be any delay to existing local traffic. However local traffic will always be given priority in the vicinity of the Site access junctions with the following traffic management strategy employed during HGV arrivals / departures.

4.3.3. To ensure safe and efficient movement of vehicles is maintained at the site access the following arrival procedure will be initiated for HGVs accessing the Site:

- Driver to call ahead to Site whilst stopped safely in an appropriate layby;
- Banksman are mobilised and will go to position at the Site access;
- Drivers will be informed when the operators are in place and it is appropriate to travel to the Site via the agreed route;

³ Department for Transport, Traffic Signs Manual, 2009

- Each of the operatives will have a handheld transceiver and will be able to communicate with each other, the Site Manager and the HGV drivers as necessary; and
 - Banksmen will assist HGVs to manoeuvre into the Site but will not direct general traffic.
- 4.3.4. Existing laybys have been identified on A327 Observer Way approximately 3.5km and 4.6km from the construction site access (5 and 6 minutes journey time). HGV drivers will be notified of the location of these laybys and requested to stop at the furthest layby from the site if available.
- 4.3.5. The following departure procedure will be initiated for HGVs egressing the Site:
- Before drivers depart, the Site Manager will be notified. They will then mobilise the banksmen at the Site accesses;
 - Drivers will be advised when the banksmen and operatives are in place and will leave the Site; and
 - Banksmen will guide the drivers exiting the Site onto Barkham Ride eastbound but will not direct general traffic.
- 4.3.6. For transferring materials between the north and south parts of the site, it will be necessary for some HGV movements to take place across Barkham Ride. In these situations, the above mechanisms will be in place whereby banksmen will be deployed to the site accesses, giving priority to general traffic and advising HGV drivers when to proceed.
- 4.3.7. The phone number of the DTM will be made available to all drivers of vehicles that will be accessing the Site. The contractor will employ qualified banksmen who are experienced at traffic management.

BARKHAM STREET / BARKHAM RIDE

- 4.3.8. To facilitate safe movement of construction traffic along Barkham Street it may be necessary to implement a temporary 30mph speed limit. Final details of this will be confirmed by the Principal Contractor in due course.
- 4.3.9. Traffic management will be required when construction of the cable connection will take place across Barkham Ride to link the north site to the south site. This will consist of a temporary closure of Barkham Ride whilst this activity takes place during construction hours, the proposals for which will be submitted to and approved by the local highway authority.

BARKHAM ROAD

- 4.3.10. Temporary traffic management will be used to lay the grid connection cable within the public highway. The programme for delivery of these works will be confirmed in due course by SSEN.
- 4.3.11. The cable will be laid in sections to minimise disruption. Where temporary traffic management is used this normally takes the form of temporary traffic lights to maintain access to the public highway without requiring road closures and to control the flow of traffic.

OTHER TRAFFIC MANAGEMENT

- 4.3.12. Additional temporary construction traffic management may be deployed during the construction phase beyond those identified above. The type of construction traffic management deployed will vary and could include temporary traffic signals, manned stop / go boards or additional temporary speed restrictions and will be confirmed once a contractor is appointed.
- 4.3.13. All temporary construction traffic plans would need to be submitted to and approved by the local highway authority and will be applied in accordance with guidance contained within Traffic Signs

Manual Chapter 8: Traffic Safety Measures and Signs for Roadworks and Temporary Situations (Department for Transport, 2009).

4.4 CONSTRUCTION DELIVERY HOURS

- 4.4.1. Construction deliveries will only take place within the construction hours detailed in Section 3. Where possible, deliveries will be made outside of typical network peak hours and will be spread across the operational hours of the day.

4.5 CONSTRUCTION WORKFORCE TRAVEL PLAN

- 4.5.1. During construction, a workforce of up to 100 personnel per day are expected. However, only 60 on site car parking spaces will be provided. This proposed car parking provision is considered to be sufficient as some of the construction workforce will be transported by mini-buses and use car sharing to reduce the number of vehicular movements to/from the Site. Sufficient parking for mini-buses will also be provided.
- 4.5.2. It is expected that construction personnel may choose to stay in local accommodation and a mini-bus would be ideal to transport the workforce from/to the Site. Alternatively, construction personnel could be encouraged to park at an agreed central location to minimise their travel distance, and a mini-bus could transport them to/from the Site.
- 4.5.3. The use of mini-buses/car sharing will be promoted and encouraged as per the Green Travel Plan during the construction personnel training. The potential benefits of these modes of travel will be highlighted, including:
- Reduced travel costs;
 - Reduced travel stress;
 - Easy access and user-friendly system;
 - More environmentally friendly than single occupancy vehicle trips.
- 4.5.4. The Green Travel Plan is provided within **Appendix C**.

4.6 WHEEL WASHING AND ROAD SWEEPING FACILITIES

- 4.6.1. Cleanliness of the local highway network will be maintained at all times. The Principal Contractor will enforce strict measures which will include, but are not limited to, the following:
- Use of on approved mechanical road sweeper to clean the highway;
 - Adequate sheeting of vehicles carrying waste materials; and
 - Measures will be taken to ensure that mud and debris is not swept into gullies.
- 4.6.2. Wheel washing facilities will be situated on a hard-standing area, with adequate drainage to ensure pools of water do not materialise in the vicinity of the facility. Wheels will be cleaned using a high-pressure, hand-held water spray gun attached to a hose fed by a local water and electricity supply.
- 4.6.3. Once the top half of a given vehicle's wheels have been cleaned, the driver will be asked to move forward slightly to rotate the wheels 180 degrees and allow for the other half of the wheels to be cleaned.
- 4.6.4. The wheel washing facilities will be situated close to the Site accesses to enable construction vehicles wheels to be cleaned just prior to joining the local highway network.

4.7 CONSTRUCTION TRAFFIC MONITORING

- 4.7.1. Construction traffic movements will be monitored by the DTM throughout the construction programme and, if necessary, the DTM will liaise with the LPA to agree any necessary further mitigation or monitoring measures.

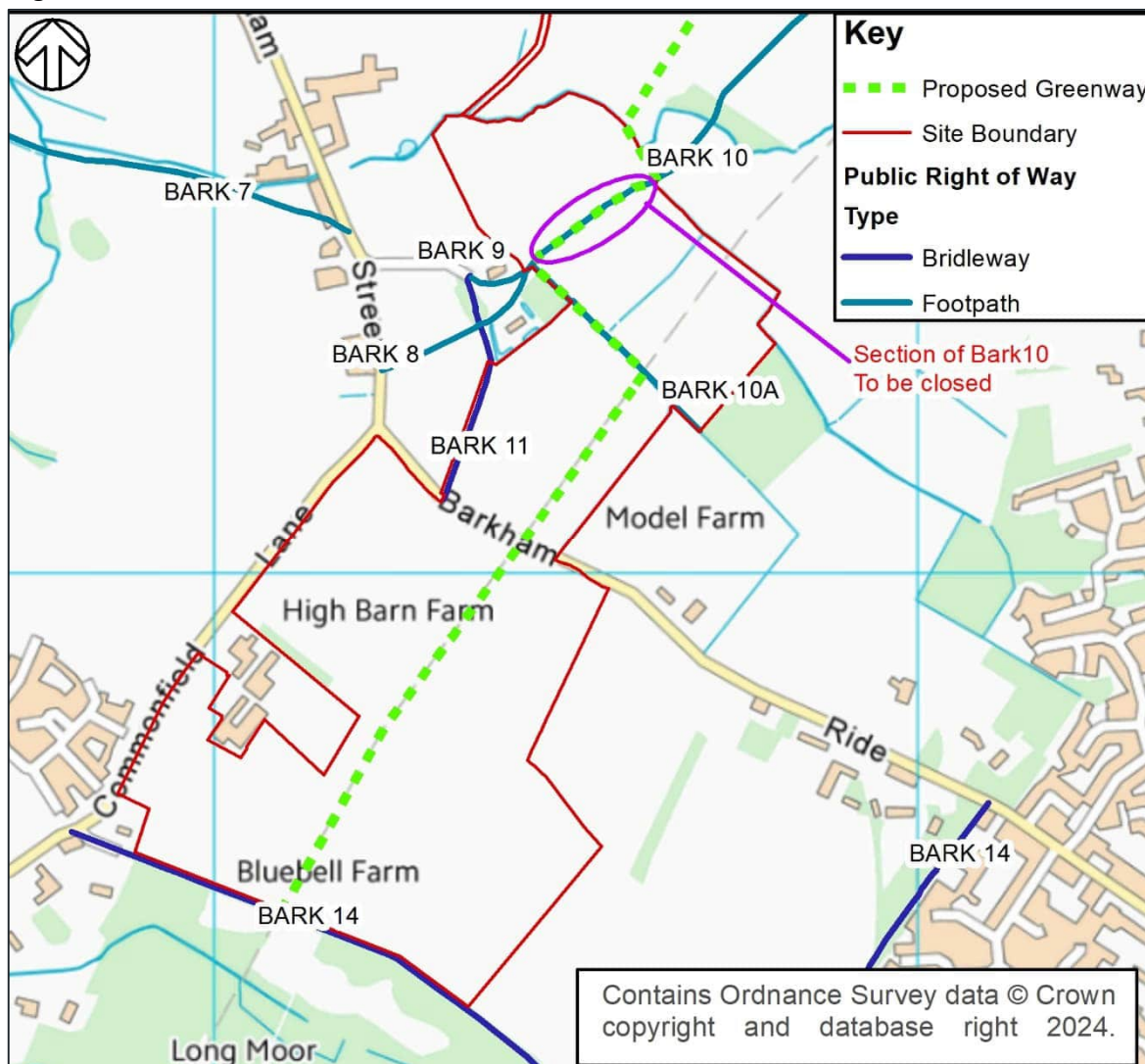
4.8 ROAD CONDITION SURVEYS

- 4.8.1. A pre-commencement walk-over condition survey will be carried out with local highway officers on the local highway network to assess the baseline condition of the adopted highway before construction activities commence. The extent of the survey will be agreed with highway officers.
- 4.8.2. The survey will incorporate photographic records as appropriate. This would be followed by a further condition survey with highway officers with a further photographic record covering the same extent at the end of construction activities, in order to identify and agree any remedial works reasonably attributable to construction activities.

4.9 IMPACT ON PROW

- 4.9.1. Existing PROW located in close proximity to the Site comprise:
- Footpaths (WBC References BARK FP 10 and FP 10A) pass through the northern part of the solar farm site and join footpaths (References BARK FP 8 and 9) outside the red line boundary; and
 - A bridleway (BARK BR 11) runs adjacent to the west boundary of the solar farm site north of Barkham Ride and part of this bridleway (from the point south of Church Cottages to Barkham Ride) is included within the Site boundary.
- 4.9.2. The Proposed Scheme will primarily impact the PROW in the north of the Site (WBC Reference BARK FP 10), which is likely to need to be suspended until the upgrade and expansion of the PROW by the delivery of the new Greenway is completed as part of the Proposed Scheme.
- 4.9.3. **Figure 4-1** presents the section of PROW BARK FP 10 that will need to close during the main works between April 2025 and January 2026. An application to close the PROW will be made separately to WBC.

Figure 4-1 - PROW Closure Location



4.9.4. For those PROWs that remain open during construction, there will be a need to cross the PROW network with construction traffic primarily on the northern site. This will be managed by the appointed contractor.

4.9.5. Details relating to the management of PROWs shall be included within the Application for discharging Condition 10 of Planning Permission 211081. Condition 10 is provided below:

10) Rights of way details

Prior to the commencement of the development hereby permitted, details of works to existing and proposed rights of ways, including the greenway through the site, shall be submitted to and approved in writing by the local planning authority. These details shall include but not be specifically limited to:

a) Existing and proposed levels

b) Widths and alignment (including the Greenway being setback from the hedgerow at the northern end of the site to allow growth without continued maintenance

c) Directional signage

- d) Surfacing, including of spurs and connecting paths (including the laying of an aggregate path (type 1 granite and dust) for a 15m length of Footpaths 8 and 10A from the Greenway*
- e) Construction timetable and details of temporary closures of existing footpaths and alternate access where necessary*
- f) Measures to safeguard the implementation of a bridleway link between Bridleway 11 and the approved greenway, including soil and ground cover*
- g) Measures in accordance with the findings of the solar glint and glare assessment in Condition 22*
- h) Temporary and permanent post and rail fencing*

Reason: To ensure satisfactory implementation of the greenway and associated infrastructure for the benefit of local users.

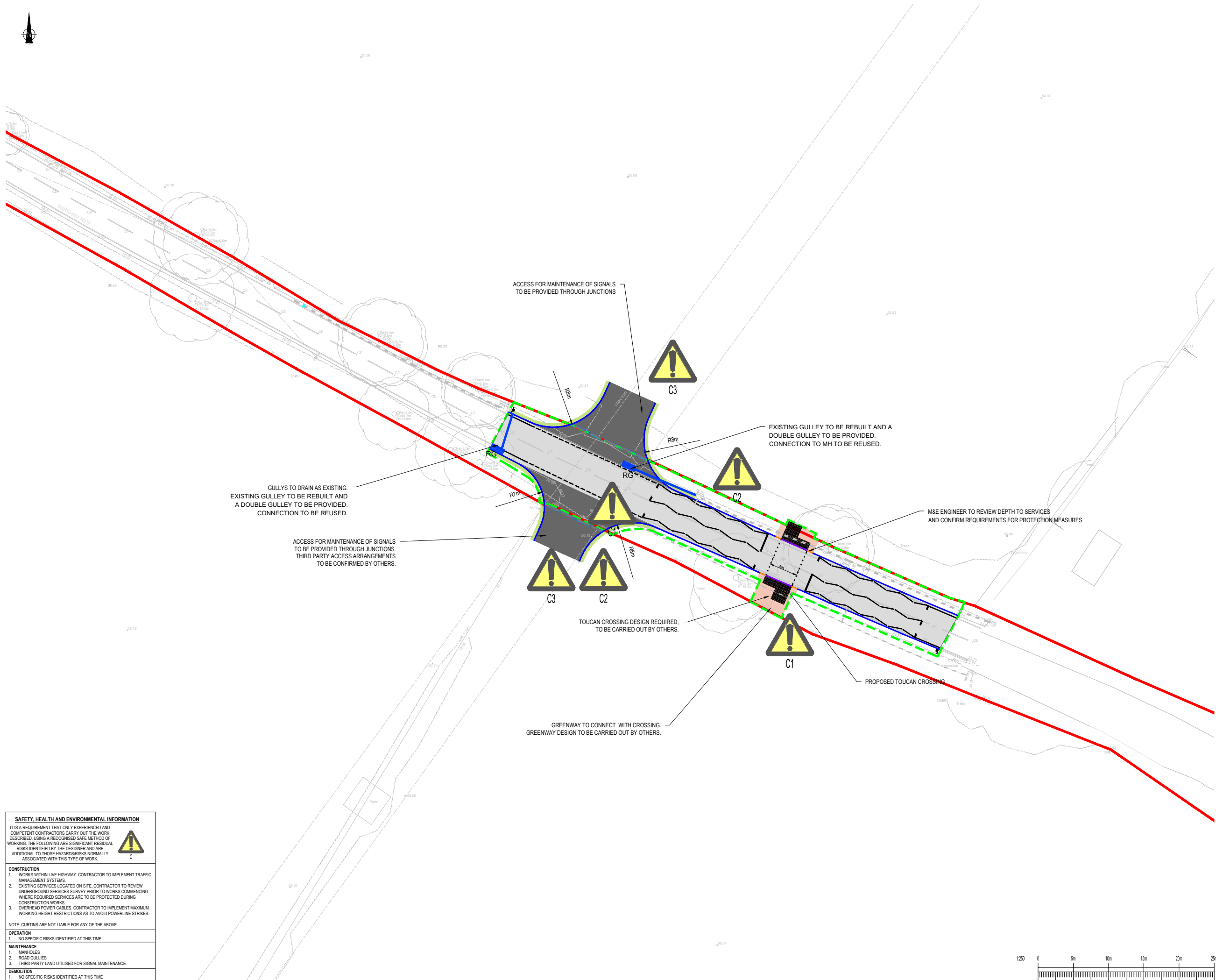
Relevant policy: NPPF Paragraph 100 and Core Strategy Policies CP1, CP3, CP6 and CP11.

- 4.9.6. In addition to the above, construction traffic will be required to give priority to pedestrians, cyclists or equestrians using PROW where it is safe to do so.

Appendix A

CONSTRUCTION ACCESS PLANS – VISIBILITY SPLAYS





GENERAL NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
- DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
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- FOR GENERAL NOTES REFER TO DRAWING.
- TOPOGRAPHICAL SURVEY RECEIVED FROM EQUANS.. DRAWING REF 230633-CAT-XX-XX-M3-G-00001
- ALL SIGNS AND LINES TO BE INSTALLED IN STRICT ACCORDANCE WITH TSRGD AND TSM.

KEY:

- HIGHWAY BOUNDARY
- HIGHWAY BOUNDARY
- HB2 125mm UPSTAND KERB
- TK TRANSITION KERB
- BN DROPPER KERB
- PROPOSED TARMAC
- EXISTING TARMAC TO BE RETAINED
- PROPOSED FOOTWAY
- VERGE
- TACTILE PAVING
- PROPOSED ROAD MARKINGS
- SIGN POST
- ROAD GULLIES AND CONNECTIONS
- CHANNEL DRAIN
- EXISTING DRAINAGE TO BE RETAINED

DESIGN RISKS

RSA STAGE 1 & 2 REQUIRED. DESIGN SUBJECT TO CHANGE UPON RECEIPT OF COMMENTS FOR RSA.

TOUCAN CROSSING DESIGN REQUIRED BY OTHERS. DESIGN SUBJECT TO UPON RECEIPT OF DESIGN.



WORKS WITHIN HIGHWAY BOUNDARY AND AREAS TO BE OFFERED FOR ADOPTION SUBJECT TO TECHNICAL APPROVAL BY HIGHWAY AUTHORITY. UNTIL TECHNICAL APPROVAL IS ISSUED AREA IS SUBJECT TO CHANGE AND IS AT RISK.

P01	FIRST ISSUE	12/09/24	EB	MM
Rev:	Description:	Date:	By:	Chkd:

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Status: **SUITABLE FOR INFORMATION** **S2**

Project: **BARKHAM SOLAR FARM**

Dwg Title: **GENERAL ARRANGEMENT**

Drawn By EB	Designed By EB	Checked By MM
Date 03/06/24	Scales @ A1 1:250	Revision P01

Project No - Originator - Function - Spatial - Form - Discipline - Number
BFSF-CURT-XX-DR-C-9500

SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

IT IS A REQUIREMENT THAT ONLY EXPERIENCED AND COMPETENT CONTRACTORS CARRY OUT THE WORK DESCRIBED. USING A RECOGNISED SAFE METHOD OF WORKING. THE FOLLOWING ARE SIGNIFICANT RESIDUAL RISKS IDENTIFIED BY THE DESIGNER AND ARE ADDITIONAL TO THOSE HAZARD RISKS NORMALLY ASSOCIATED WITH THIS TYPE OF WORK.



CONSTRUCTION

- WORKS WITHIN LIVE HIGHWAY. CONTRACTOR TO IMPLEMENT TRAFFIC MANAGEMENT SYSTEMS.
- EXISTING SERVICES LOCATED ON SITE. CONTRACTOR TO REVIEW UNDERGROUND SERVICES SURVEY PRIOR TO WORKS COMMENCING. WHERE REQUIRED SERVICES ARE TO BE PROTECTED DURING CONSTRUCTION WORKS.
- OVERHEAD POWER CABLES. CONTRACTOR TO IMPLEMENT MAXIMUM WORKING HEIGHT RESTRICTIONS AS TO AVOID POWERLINE STRIKES.

NOTE: CURTINS ARE NOT LIABLE FOR ANY OF THE ABOVE.

OPERATION

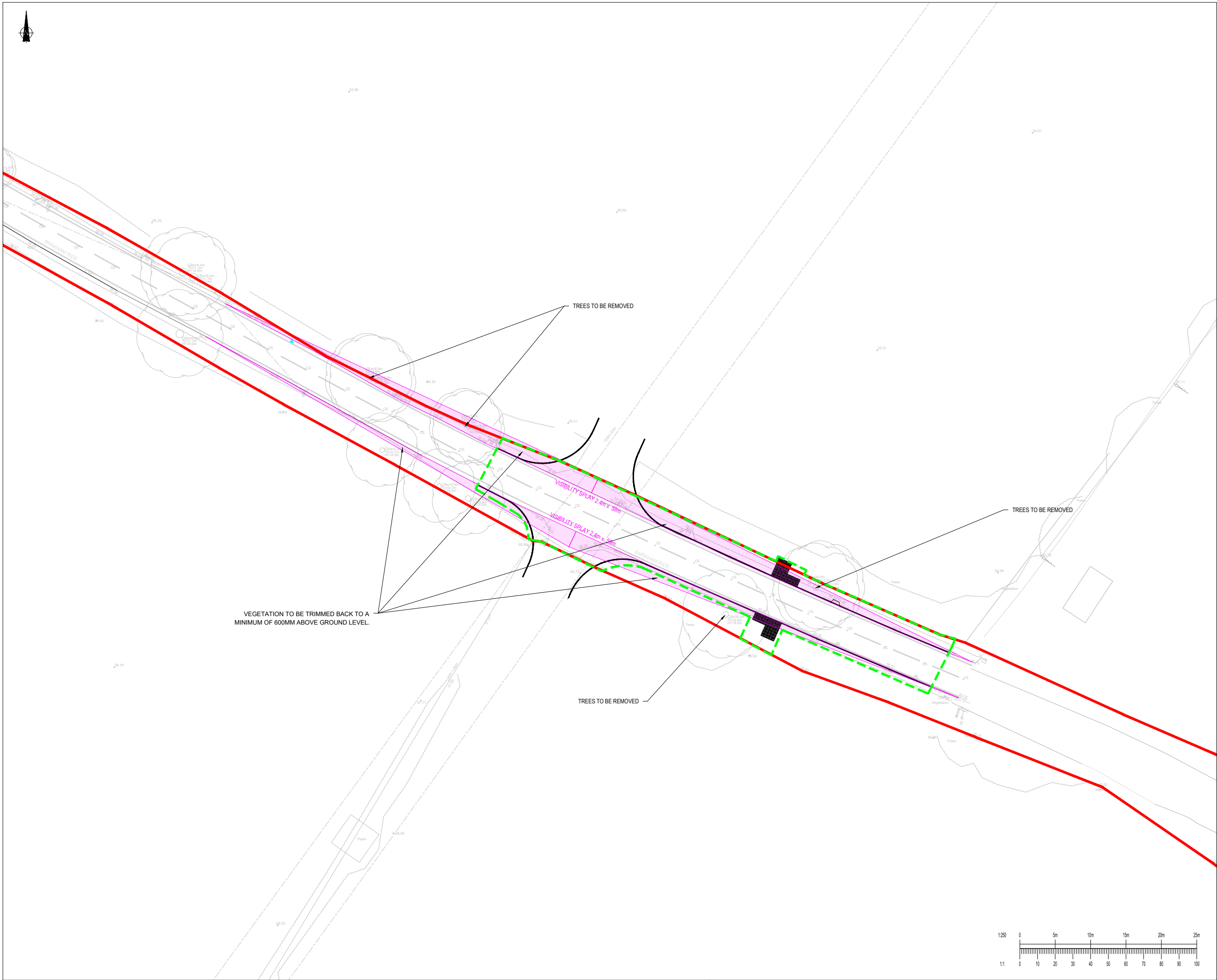
- NO SPECIFIC RISKS IDENTIFIED AT THIS TIME.

MAINTENANCE

- MANHOLES
- ROAD GULLIES
- THIRD PARTY LAND UTILISED FOR SIGNAL MAINTENANCE.

DEMOLITION

- NO SPECIFIC RISKS IDENTIFIED AT THIS TIME.



GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
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4. FOR GENERAL NOTES REFER TO DRAWING.
5. TOPOGRAPHICAL SURVEY RECEIVED FROM EQUANS.. DRAWING REF 230633-CAT-XX-XX-M3-G-00001

KEY:	EXISTING DRAINAGE RETAINED
	HIGHWAY BOUNDARY
	S278 BOUNDARY
	VISIBILITY SPAY

DESIGN RISKS

RSA STAGE 1 & 2 REQUIRED, DESIGN SUBJECT TO CHANGE UPON RECEIPT OF COMMENTS FOR RSA.

TOUCAN CROSSING DESIGN REQUIRED BY OTHERS, DESIGN SUBJECT TO UPON RECEIPT OF DESIGN.

WORKS WITHIN HIGHWAY BOUNDARY AND AREAS TO BE OFFERED FOR ADOPTION SUBJECT TO TECHNICAL APPROVAL BY HIGHWAY AUTHORITY. UNTIL TECHNICAL APPROVAL IS ISSUED AREA IS SUBJECT TO CHANGE AND IS AT RISK.

P01	FIRST ISSUE	13/09/24	EB	MM
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Rev:	Description:	Date:	By:	Chkid:
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Status: SUITABLE FOR INFORMATION **S2**

Project: BARKHAM SOLAR FARM

Orig Title: S278 VISIBILITY SPLAYS

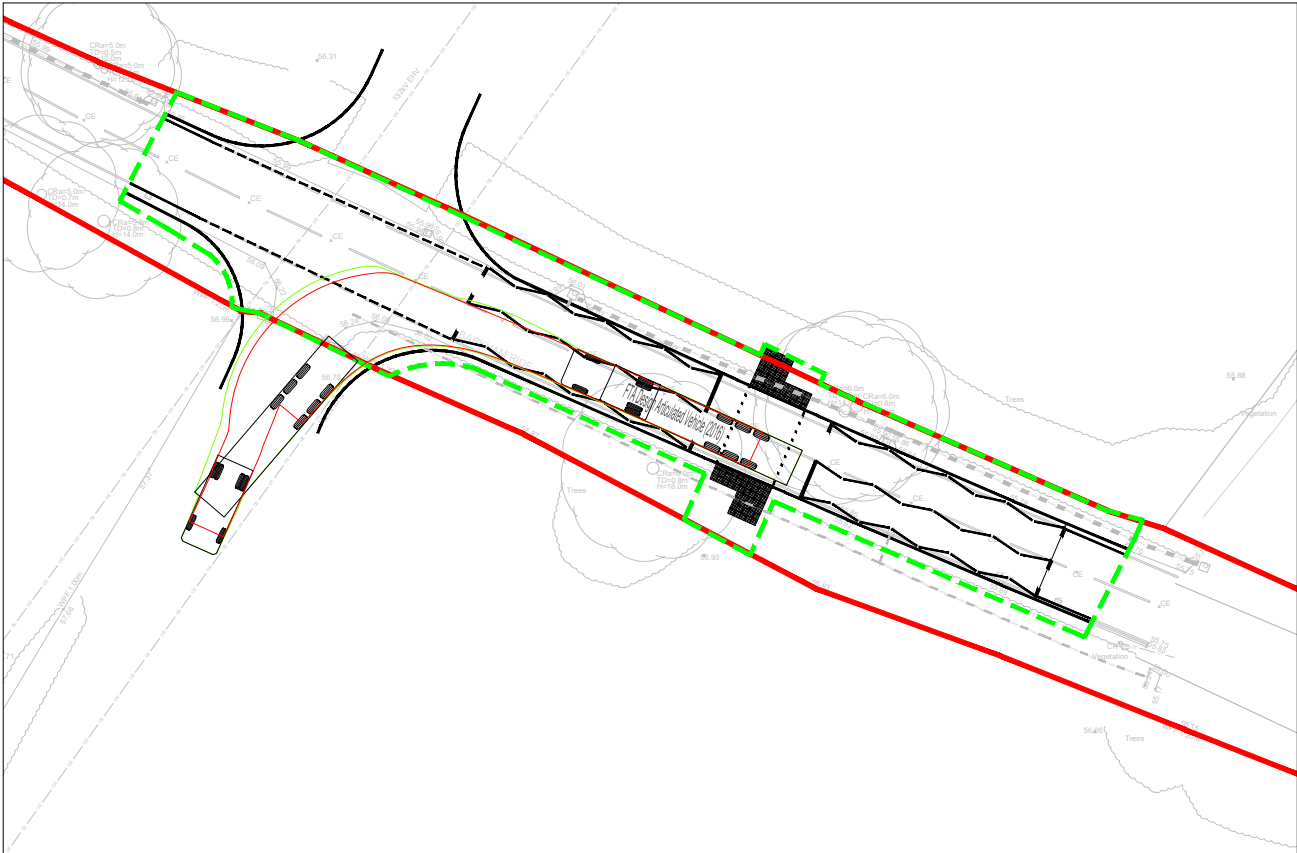
Drawn By EB	Designed By EB	Checked By MM
Date 03/06/24	Scales @ A1 1:250	Revision

BFSF -CURT- XX - DR- C - 9505 P01

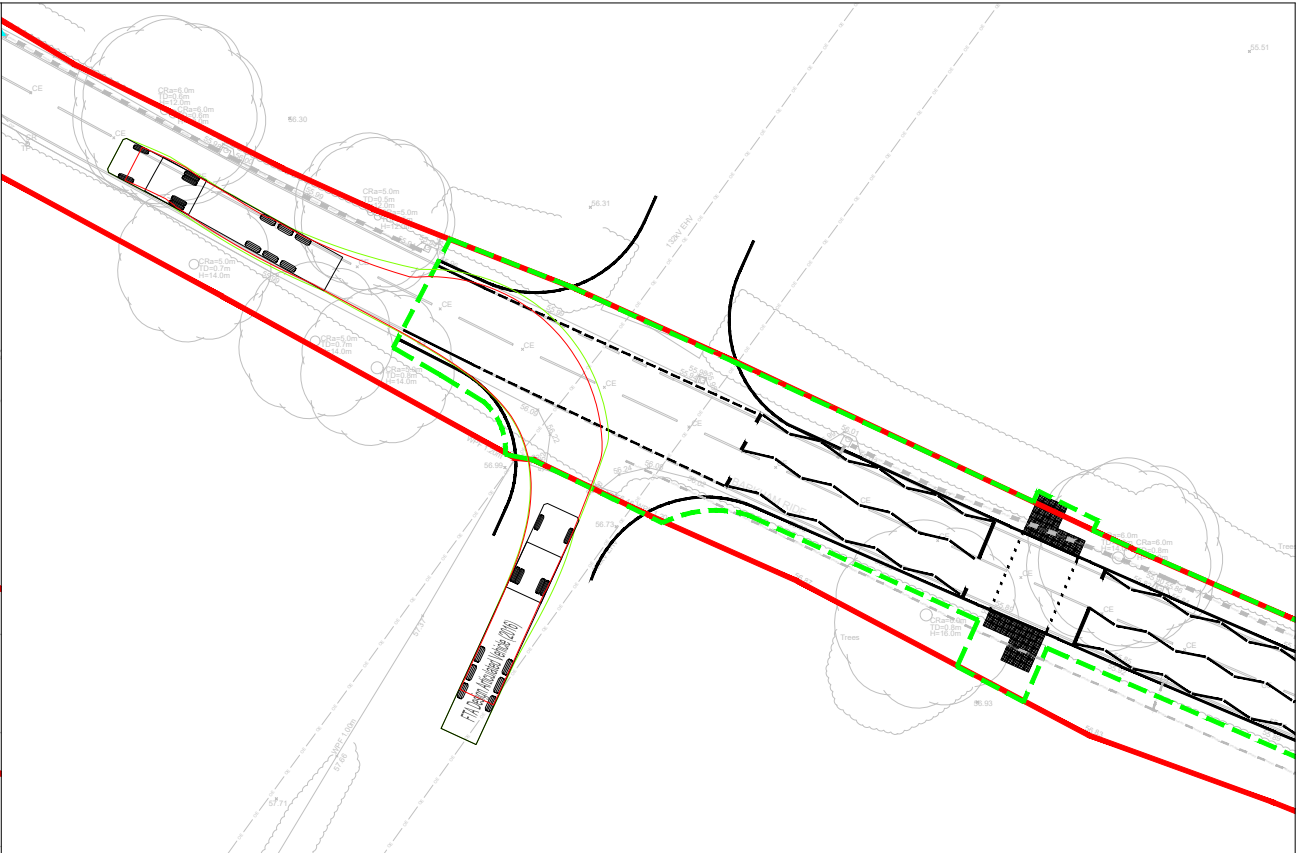
Appendix B

CONSTRUCTION ACCESS PLANS – SWEPT PATHS

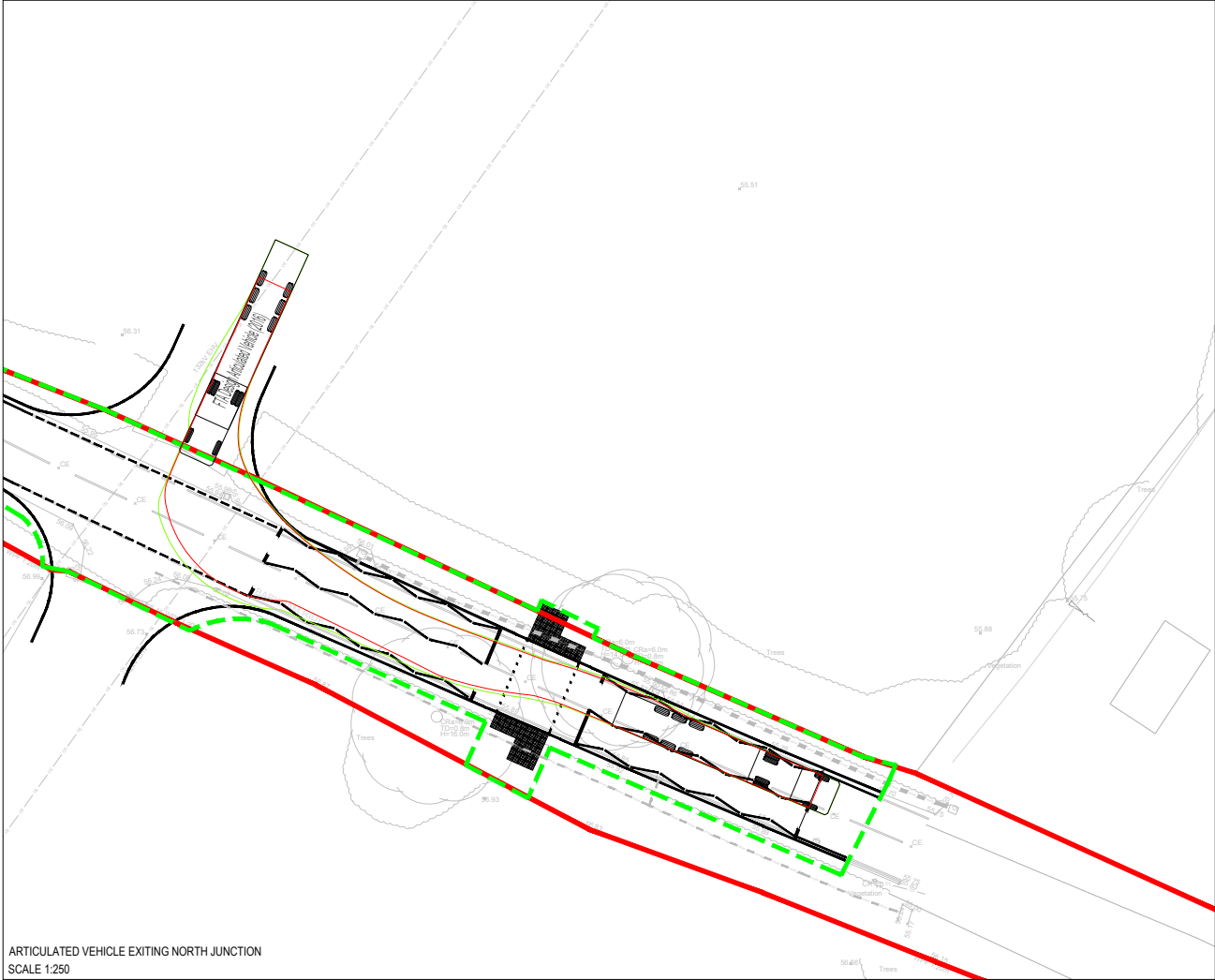




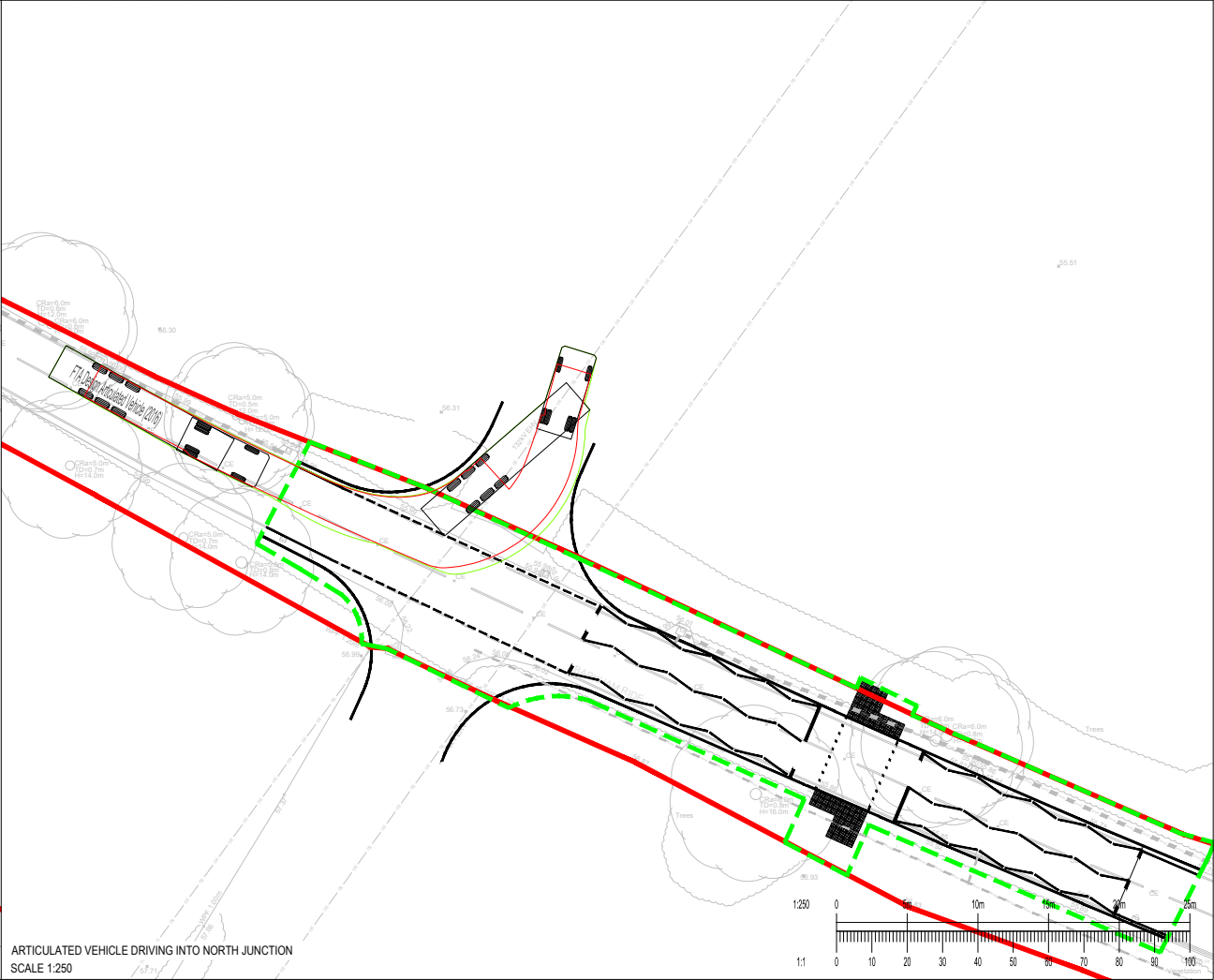
ARTICULATED VEHICLE DRIVING INTO SOUTH JUNCTION
SCALE 1:250



ARTICULATED VEHICLE EXITING SOUTH JUNCTION
SCALE 1:250



ARTICULATED VEHICLE EXITING NORTH JUNCTION
SCALE 1:250

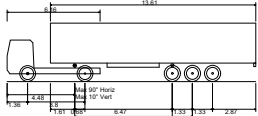


ARTICULATED VEHICLE DRIVING INTO NORTH JUNCTION
SCALE 1:250

GENERAL NOTES:

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- FOR GENERAL NOTES REFER TO DRAWING.

KEY:
— HIGHWAY BOUNDARY
- - - S278 BOUNDARY



FTA Design Articulated Vehicle (2016)
Overall Length: 16.480m
Overall Width: 2.550m
Overall Body Height: 3.870m
Min Body Ground Clearance: 0.515m
Max Track Width: 2.470m
Lock to lock time: 3.00s
Kerb to Kerb Turning Radius: 6.600m

DESIGN RISKS

RSA STAGE 1 & 2 REQUIRED, DESIGN
SUBJECT TO CHANGE UPON RECEIPT OF
COMMENTS FOR RSA.



TOUCAN CROSSING DESIGN REQUIRED BY
OTHERS, DESIGN SUBJECT TO UPON
RECEIPT OF DESIGN.



WORKS WITHIN HIGHWAY BOUNDARY AND AREAS
TO BE OFFERED FOR ADOPTION SUBJECT TO
TECHNICAL APPROVAL BY HIGHWAY AUTHORITY.
UNTIL TECHNICAL APPROVAL IS ISSUED AREA IS
SUBJECT TO CHANGE AND IS AT RISK.

P01	FIRST ISSUE	13/09/24	EB	MM
Rev:	Description:	Date:	By:	Chkd:

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Status: **SUITABLE FOR INFORMATION** **S2**

Project: **BARKHAM SOLAR FARM**

Dwg Title: **S278
VEHICLE TRACKING**

Drawn By EB	Designed By EB	Checked By MM
Date 02/09/24	Scales @ A1 1:250	Revision

BFSF-CURT- XX - DR- C - 9501 **P01**

Appendix C

GREEN TRAVEL PLAN



CONSTRUCTION WORKER GREEN TRAVEL PLAN

Background

The commitments made in this section represent a baseline for the contractor to build on including incorporating their own corporate social responsibility (CSR) policies such as Climate Change Action Plan.

Construction Programme

The project is programmed to begin construction in March 2025 and completed in December 2026. The main construction works are to take place on site between March 2025 and January 2026.

The working hours of the construction site are Monday to Friday 08:00 to 18:00 and Saturday 08:00 to 13:00. Peak construction worker movements would take place outside of these hours 07:00-08:00 and either 18:00-19:00 (weekday) or 13:00-14:00 (weekend)).

Construction Workforce

During construction a workforce of a maximum of 100 personnel per day is expected. This represents a worst case during the highest period of construction activity with the average number of staff anticipated on-site per day likely to be less. 60 on site car parking spaces have been proposed within the Site Compound area. In, addition space for parking mini-buses is included.

Aims and Approach

The principal aim of the Construction Worker Green Travel Plan for the Project is to reduce car usage and increase the proportion of sustainable travel amongst the workforce reflecting the accessibility of the proposed site compound by walking, cycling and local bus services.

Objectives

The objectives of the Construction Worker Green Travel Plan are as follows:

- To reduce the impacts of the Project through increasing the proportion of the workforce that travel by sustainable modes including walking, cycling, public transport, and car sharing.
- To increase the proportion of car sharing amongst construction workers.
- To increase the proportion of construction workers using local bus services.
- To provide construction workers with up-to-date information on facilities/services available to them to allow them to make informed travel choices.
- To appoint a construction phase Travel Plan Co-ordinator (TPC) for the duration of the construction programme.

Smart Targets

SMART (Specific, Measurable, Attainable, Realistic, and Timely) targets will be set following the completion of baseline travel surveys and monitored throughout the construction programme.

Prior to the completion of a baseline travel survey the mode share of the construction workforce cannot be confirmed. However, initial mode share targets have been established based upon an assumed baseline mode split which has in turn been informed by other construction projects. The indicative baseline mode share and draft mode share targets are provided below in Table 1.

Table 1: Mode Share Targets

	Car Driver	Car / vehicle passenger	Minibus / Bus / Train	Walk	Cycle	Motorcycle
Indicative Initial expectation	80%	20%	0%	0%	0%	0%
Aim target	40%	10%	40%	0%	10%	0%

Green Travel Plan Measures

The contractor will provide secure, sheltered cycle parking for ten bicycles for the construction workforce within the site compound, in order to encourage cycling to work. This will be five Sheffield Stands. Cycle parking utilisation will be monitored by the TPC, and further cycle parking will be provided, where necessary.

The contractor will provide the construction workforce with information about cycle facilities during their site induction.

Given the rural location of the site, it is unlikely that construction workers will be able to reach site using existing public transport services in significant numbers. The contractor will provide a dedicated minibus service linking the site to an urban pick-up point. The precise routes, frequencies and timings would be reviewed based on ongoing demand.

A car-share scheme will be implemented allowing workers to search for matches amongst their colleagues.

The above measures will be reviewed by the appointed contractor and added to where appropriate to align with the contractor's corporate social responsibilities (CSR) and values.

During site inductions staff will be provided with travel information as part of their briefing and within a travel information pack. Information will include:

- Travel options provided by the measures (such as minibus pick-up points, cycle facilities etc.);
- Public transport options, routes and timetables;
- Local cycle and public rights of way routes; and
- Parking provisions for both car and bicycle.

At the compound, a staff notice board will be provided allowing an opportunity for organising shared travel, as well sharing information on travel choices.

Travel information is proposed to be updated on a regular basis (at least quarterly) to ensure it continues to be accurate and relevant to the needs of the construction workforce.

Monitoring and Review

MONITORING STRATEGY

Monitoring will be undertaken on a six-monthly basis to review progress against the targets. The baseline travel survey will be conducted within three months of commencement on site. A follow up survey will then take place six months post the baseline survey to monitor progress against the targets. The monitoring will consist of:

- A survey of the mode of travel of all staff present on site at that time
- Cycle parking utilisation
- Car parking utilisation

The results of the survey will be summarised and displayed on the travel notice board.

The TPC will be responsible for undertaking the survey and producing the monitoring information.

Travel Plan Action Plan

Table 2 presents the implementation action plan for the Travel Plan.

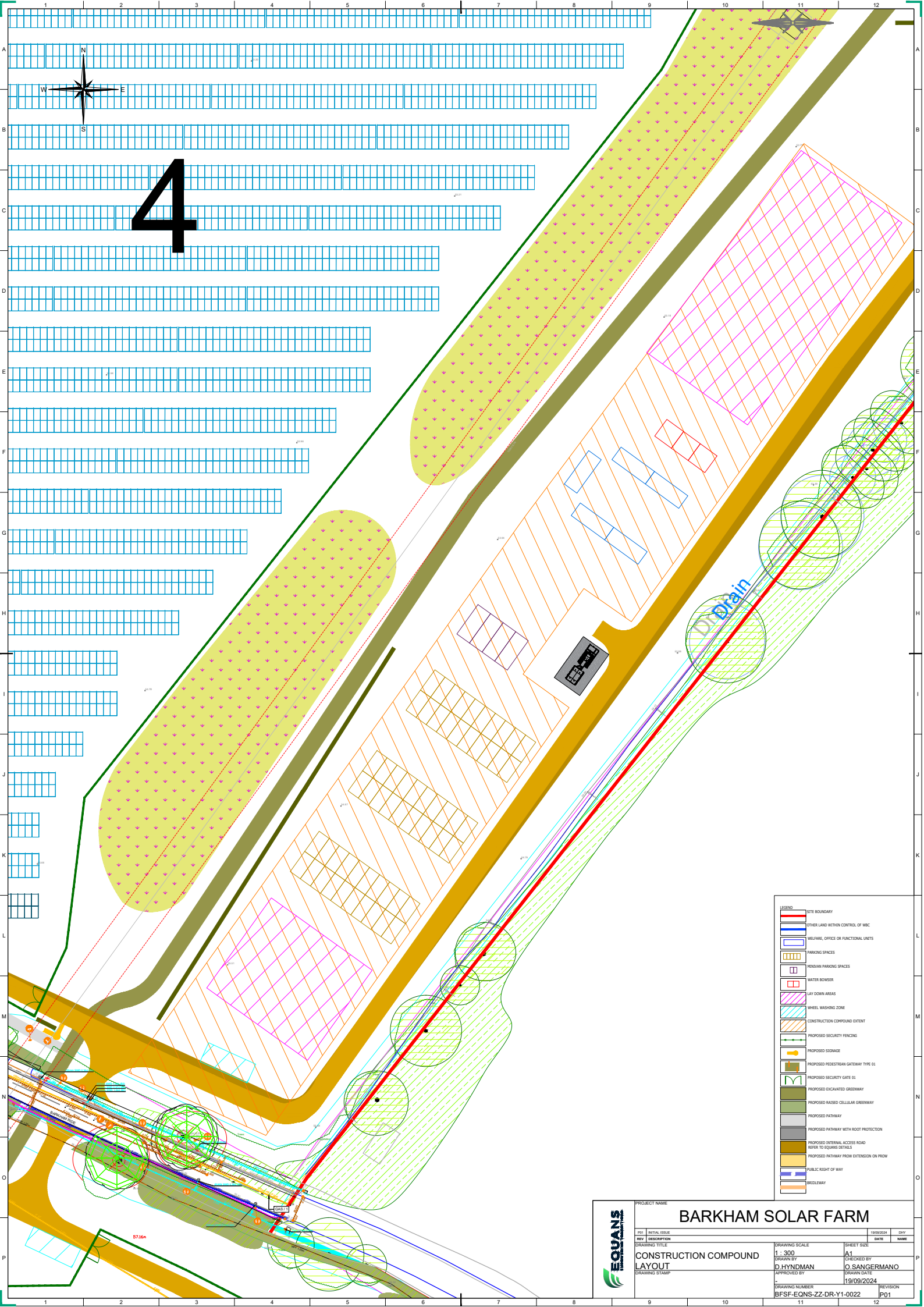
Table 2: Implementation Action Plan

Travel Plan Measure	Timescale	Responsibility
Appointment of TPC	Prior to construction commencement	Site Management
Provision of cycle parking at site compound	From occupation, as part of the construction of the site compound	Site Management
Travel notice board	From occupation, and to be updated at least quarterly	TPC
Travel information pack	From occupation, and to be updated at least quarterly	TPC
Promotion of car sharing platform	From occupation, and to be updated at regular intervals	TPC
Baseline Travel Survey	Within three months of commencement on site	TPC
Monitoring Travel Surveys	Every six-months after baseline survey	TPC

Appendix D

TEMPORARY SITE COMPOUND PLAN







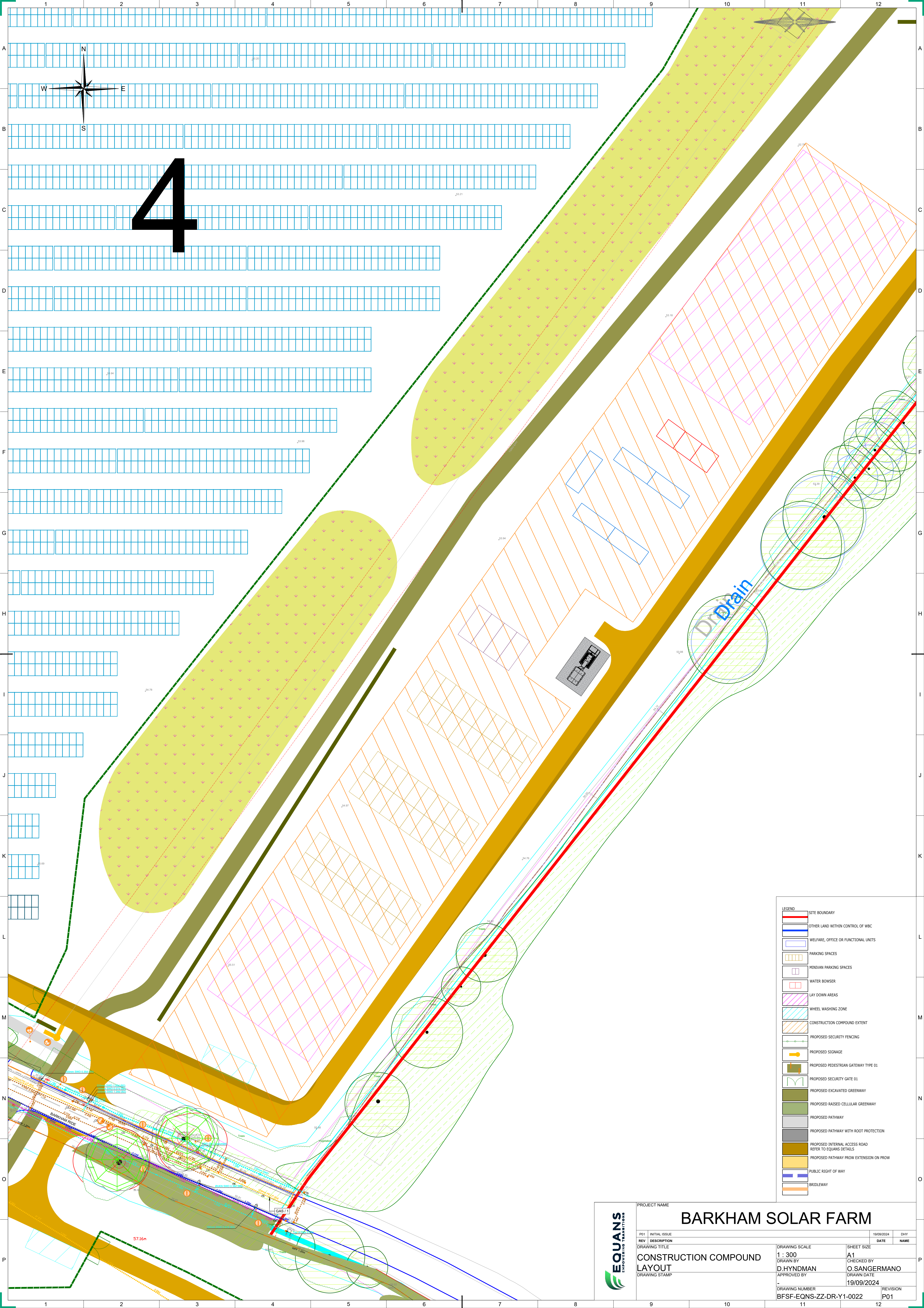
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Appendix E

SITE COMPOUND PLAN





LEGEND	
	SITE BOUNDARY
	OTHER LAND WITHIN CONTROL OF WBC
	WELFARE, OFFICE OR FUNCTIONAL UNITS
	PARKING SPACES
	MINIVAN PARKING SPACES
	WATER BOWSER
	LAY DOWN AREAS
	WHEEL WASHING ZONE
	CONSTRUCTION COMPOUND EXTENT
	PROPOSED SECURITY FENCING
	PROPOSED SIGNAGE
	PROPOSED PEDESTRIAN GATEWAY TYPE 01
	PROPOSED SECURITY GATE 01
	PROPOSED EXCAVATED GREENWAY
	PROPOSED RAISED CELLULAR GREENWAY
	PROPOSED PATHWAY
	PROPOSED PATHWAY WITH ROOT PROTECTION
	PROPOSED INTERNAL ACCESS ROAD REFER TO EQUANS DETAILS
	PROPOSED PATHWAY PROW EXTENSION ON PROW
	PUBLIC RIGHT OF WAY
	BRIDLEWAY

PROJECT NAME

BARKHAM SOLAR FARM

P01	INITIAL ISSUE	19/09/2024	DHY
REV	DESCRIPTION	DATE	NAME
DRAWING TITLE			
CONSTRUCTION COMPOUND LAYOUT			
DRAWING STAMP			
DRAWING SCALE		SHEET SIZE	
1 : 300		A1	
DRAWN BY		CHECKED BY	
D. HYNDMAN		O. SANGERMANO	
APPROVED BY		DRAWN DATE	
-		19/09/2024	
DRAWING NUMBER		REVISION	
BFSF-EQNS-ZZ-DR-Y1-0022		P01	

Appendix F

PROJECT ENVIRONMENTAL PROCEDURES



APPENDIX F – PROJECT ENVIRONMENTAL PROCEDURES (PEP)

Procedure	Waste and Materials Management
Ref:	PEP/01
Action By:	Principal Contractor
Purpose:	Management of the storage, handling, movement and disposal of waste materials.
Procedure	Classification: - The amount of waste, its classification and disposal route will be identified at site set-up to facilitate separation and correct disposal. Segregation: - Waste materials will be segregated by type. A separate skip for special waste will be used. Storage: - All waste will be stored in designated areas which are isolated from surface drains; - Waste will be stored in such a manner as to prevent its escape. This may be achieved through secondary containment as necessary; - Stored waste will be clearly identified and its stability monitored; - Sufficient equipment will be provided to staff on-site to enable the safe storage and containment of waste; and - Skips will be covered and regularly checked to see if they are full. Hazardous wastes: - Used oil will be stored in bunded area for collection. Waste licensing and Duty of Care: - A full audit of materials leaving the site will be made; - Licences of waste carriers, contractors and final disposal sites and consignment notes will be inspected and the results recorded; - Waste management registers will be maintained in line with current legislation; - Checks will be made to ensure the accurate completion of transfer notes; and - Checks will be made to ensure waste reaches the destination detailed on the transfer note. Records: - All records for waste disposal will be maintained for a minimum of three years after the completion of the contract, or any such period necessary to comply with relevant legislation.
References:	- Waste Transfer Notes; - Special Waste Transfer Notes; - Control of Waste (Dealing with Seized Property) (England and Wales) Regulations SI 2015/426;

Procedure	Waste and Materials Management
	- Environmental Protection (Duty of Care) Regs 1991; - Environmental Protection Act 1990: Part 2 – Waste on Land; - Hazardous Waste (England and Wales) Regulations 2005 - Hazardous Waste (Miscellaneous Amendments) Regulations SI 2015/1360; - The Waste Management Licensing Regs 1994 (as amended); and - Control of Substances Hazardous to Health (COSHH) Regs 1999. - PPG8: Safe storage and disposal of used oils (Environment Agency); - Waste Management Guidance Notes (Environment Agency); and - CIRIA, Waste minimisation in construction, Special Publications 133, Site Guide, 1997.

Procedure	Noise and Vibration
Ref:	PEP/02
Action By:	Principal Contractor and Noise Consultant
Purpose:	Monitoring and control of noise and vibration
Procedure	Licensing: - It will be ensured that where appropriate a Section 61 consent is in place prior to work starting (in accordance with the Control of Pollution Act 1974). - Identification of sensitive receptors: - Local receptors to noise and vibration nuisance will be identified; and - Interested parties will be pre-notified of noise and vibration levels associated with activities on-site where applicable. Plant maintenance: - All plant will be maintained in accordance with the manufacturers' or suppliers' instructions; - All machines in intermittent use will be shut down when not in use; and - Where possible all plant will be placed away from the site boundaries to reduce the effect on the local community. Noise and vibration abatement measures: - Working hours will be limited to those agreed with EDC to minimise disruption to neighbours; - All vehicles, plant and other equipment will be fitted with the appropriate silencers, mufflers or acoustic covers as applicable; - Neighbours will be kept informed of the times and dates of any potential noise nuisances; and - Noise barriers, e.g. mounds of earth, fences, etc. will be put in place where necessary early in the construction works. Crushing of concrete: - Where possible concrete sections will be removed whole and crushed off-site; - Checks will be made to ensure that concrete crushers used on-site are fully licensed and maintained; and - No materials are to be stored upon the site.
References:	- Control of Pollution Act (COPA) 1974; - Environmental Protection Act (EPA) 1990: Part 3 – Statutory Nuisance; - Countryside and Rights of Way Act 2000; - Noise and Statutory Nuisance Act 1993; - Noise Act 1996; - BS5228: Noise and vibration control on construction and open sites, Parts 1 & 2 (1997), Part 4 (1992) – BSI, London; - HSE, Noise in construction, 1992; and - Ground borne vibrations arising from piling, CIRIA Technical Note 142, 1992.

Procedure:	Dust and Local Air Quality
Reference:	PEP/03
Action By:	Principal Contractor and Air Quality Consultant
Purpose:	Control of dust and atmospheric emissions affecting local air quality
Procedure:	Sensitive receptors: - Identify potential receptors: - Residents; - Pedestrians; - Neighbouring tenants; - Local transport infrastructure; - Drainage systems; and - Controlled waters. Regular communication with local residents and businesses will be established Dust risk register: - Site activities causing dust problems and existence of sensitive receptors will be identified to assess the risk of nuisance caused by dust; and - Identify and record activities and receptors and any control or protection measures put in place. Wind: - Wind speed and direction will be observed prior to conducting dust-generating activities to determine the potential for dust nuisance to occur when wind direction may carry dust into sensitive areas and avoiding dust-generating operations during periods of high or gusty wind. Equipment: - All construction plant and dust abatement equipment will be maintained in good working order and will not be used if it is not in full working order. Construction: - Cutting and grinding will be conducted using dust suppressed equipment and water sprays will be used to minimise dust emissions; - Dust generating activities (e.g., cutting, grinding and sawing) will be minimised and weather conditions considered prior to conducting potentially dust emitting activities; - Fine material will not be stockpiled to an excessive height in order to prevent exposure to wind and/or dust nuisance; - Skips will be securely covered. All vehicles / skips transporting waste or excavation arisings will deploy suitable covers over loads; - Design controls for construction equipment and vehicles could be implemented and only appropriately designed vehicles will be used for materials handling; - Vehicles will be appropriately covered when moving material to and from site to prevent potential dust mobilisation; - On-site cement and concrete batching will be undertaken in enclosed areas with suitable water dowsing and wind shielding; - On-site aggregate handling will be carried out in enclosed areas where practicable;

Procedure:	Dust and Local Air Quality ▪ The height from which materials will be tipped or dropped during transfer will be minimised; and ▪ The mixing of large quantities of concrete or bentonite slurries shall take place in enclosed or shielded areas where practicable. Vehicles: ▪ Haul roads and associated vehicle waiting areas will be regularly inspected and kept clean of all materials (including dust); ▪ Wheel washing will be undertaken on vehicles leaving the site directly on to surrounding roads; ▪ General site traffic will be restricted to watered or treated haul roads; and ▪ Local highways and site boundaries will be regularly inspected for dust deposits and, if necessary, cleaned. Smoke nuisance: ▪ No burning of rubbish or any other activity likely to give rise to dark smoke on or off the site shall be undertaken.
References:	▪ PEP/04 Vehicles Management; ▪ Environmental Protection Act 1990 (EPA); ▪ Clean Air Act 1993; ▪ Environment Act 1995 Part 4; and ▪ Road Vehicles (Construction and Use) Regulations 1986 (as amended).

Procedure:	Vehicles Management
Reference:	PEP/04
Action By:	Principal Contractor
Purpose:	Minimisation of the effect of vehicles on-site
Procedure:	Traffic Management: - Permitted access routes for HGV movements will be clearly signed and compliance with these restrictions regularly monitored; - Speed limits will be set within the site which are appropriate to the various activities which are required to be undertaken; - Delivery routes will be clearly marked; and - Plant crossings, access and egress points will be kept clean in order to avoid the deposition of debris, mud or other materials which could cause nuisance to other road users. Control of dust and other materials: - Haul roads and associated vehicle waiting areas will be regularly inspected and kept clean of all dusty materials; - Wheel washing facilities will be utilised on site; - General site traffic will be restricted to watered or treated haul roads; - Local highways and site boundaries will be regularly inspected for dust deposits and, if necessary, cleaned; and - Refer to Procedure PEP/03 Dust and Air Quality. Fuel handling: - Refuelling will be carried out as far away as feasible from any drain or other sensitive receptor, only in designated areas on impermeable surfaces; - Refuelling equipment will be regularly inspected with maintenance and repair as appropriate; - Spill kits, locks and other suitable security devices will be provided; and - Fuel bowsters and stores will be secure and as far as possible vandal-proof. Washing vehicles: - Wheel-washing facilities will be provided at main construction access and crossing points; - Hardstanding areas will be used for all plant maintenance and washing off; - These areas will be sited away from any drain or watercourse; and - Water released from this area will be directed to a temporary drainage system or pumped for off-site disposal. Avoidance of nuisance from exhaust emissions: - No vehicle or item of equipment emitting visible black smoke, other than during ignition, will be used on any construction site or public highway; - Combustion engines on all plant and equipment shall not be left running unnecessarily; - All vehicle and equipment engines and exhaust systems will be maintained so that the exhaust emissions do not breach statutory limits for the vehicle/equipment type and mode of operation; - All vehicles and equipment shall be maintained in accordance with the manufacturers' and suppliers' recommendations; and

Procedure:	Vehicles Management
	Exhausts of vehicles and equipment used for construction shall be positioned at a sufficient height to ensure dispersion of exhaust emissions.
References:	- PEP/02: Noise and Vibration; - PEP/03: Dust and Air Quality; - Anti-Pollution Works Regs 1999; - Clean Air Act 1993; - Environmental Protection Act 1990 – Part 3: Statutory Nuisance; - Road Vehicles (Construction and Use) Regs 1996; - Road Traffic Regulation Act 1984; - Water Industry Act 1991; - Water Resources Act 1991; - The Groundwater Regulations 1998; - PPG6: Working at Construction and Demolition Sites (Environment Agency) ; and - PPG7: Refuelling Facilities (Environment Agency).

Procedure:	Pollution Incident Control
Reference:	PEP/05
Action By:	Principal Contractor
Purpose:	Identification, prevention and control of pollution incidents
Procedure:	Storage of hazardous materials: ▪ Stockpiles will be located, as far as is reasonably practicable, away from sensitive receptors such as residential areas, places of public access, surface water features etc.; ▪ On site storage of chemicals, fuels etc will be checked regularly and any container found to be leaking will be removed immediately; ▪ Hazardous substances will only be stored in dedicated enclosed areas with an impervious base; ▪ Adequate secondary containment (bundling) will be put in place. This will be at least 110% of the capacity of the containers where possible; ▪ Secondary containment will be regularly inspected, emptied and maintained; and ▪ A COSHH register documenting all materials stored and safe handling requirements will be kept in the site office. Handling hazardous materials: ▪ Use of potentially hazardous materials will be minimised and quantities stored will be kept to a minimum; ▪ Designated access routes for the delivery and transport of such materials will be used; and ▪ All site staff will be made aware of risks associated with the handling, storage and use of hazardous materials through training sessions. Spill kits: ▪ Spill kits with instructions will be sited in areas of high risk and in close proximity to material storage areas; ▪ All staff will be trained in the use of spill kits and the correct disposal of used spill control material; ▪ Used spill kit equipment will be disposed of as hazardous waste (see PEP/02 Waste Management); and ▪ Spill kits will be maintained and periodically inspected. Site drainage and water courses: ▪ Site drainage plans will be obtained and a copy kept on-site; ▪ The on-site drainage system will be tested; ▪ Abandoned drains will be sealed off or removed to minimise the loss of contaminated water; and ▪ The layout of the site will be designed to minimise the risk of pollution reaching groundwater or watercourses/drainage ditches. Discharge of water: ▪ Written discharge consents will be obtained prior to any discharge to public sewer from the Environment Agency or the local sewerage undertaker as appropriate; and ▪ Consents to discharge will be recorded. Actions in the event of a pollution incident on-site:

Procedure:	Pollution Incident Control
	▪ Stop work on-site immediately and take appropriate safe actions to prevent further pollution occurring; ▪ Notify Site Manager / Project Manager of incident, possible environmental effects and impact on works; ▪ Identify nearby potentially sensitive receptors and take appropriate actions to prevent migration of pollutants; ▪ Monitor surrounding areas for further contamination / migration of pollutants; and ▪ Agree and implement remediation techniques. Pollution incident reporting: ▪ Reporting form will include the following information: • Date, time and location of incident; • The nature of the incident and a description of the events; • The environmental effects of the incident; • Immediate action taken following the incident; and • Corrective action taken and the date closed. ▪ The completed form will be signed by the Project Manager and a copy passed to the Principal Contractor for signing. Emergency contact and telephone numbers: ▪ A list of emergency contacts will be kept on display in the site office and in high risk areas (e.g. oil storage locations), including: • Site Environmental Manager; • Environment Agency contacts; and • Approved pollution clean-up contractors.
References:	▪ PEP/02 Waste Management; ▪ COSHH Register; ▪ Emergency contacts list; ▪ Water Resources Act 1991; ▪ Water Industry Act 1991; ▪ Environment Act 1995; ▪ Anti-Pollution Works Regulations 1999; ▪ Control of Pollution Act (COPA) 1974; and ▪ The Groundwater Regulations 2009. Environment Agency Pollution Prevention Guidelines, including: ▪ PPG1 – General guide to the prevention of pollution of controlled waters ▪ PPG2 – Above ground oil storage tanks ▪ PPG4 – Disposal of sewage where no mains drainage is available ▪ PPG5 – Working in or near rivers ▪ PPG6 – Working on Construction and Demolition Sites ▪ PPG8 – Safe storage and disposal ▪ PPG21 – Pollution Incident Response Planning

Appendix G

ENVIRONMENTAL STATEMENT ADDENDUM





Wokingham Borough Council

BARKHAM FARMS SOLAR FARM

Environmental Statement Addendum



Wokingham Borough Council

BARKHAM FARMS SOLAR FARM

Environmental Statement Addendum

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 70074897

OUR REF. NO. 70074897/EN/100/02

DATE: JULY 2021

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QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft for Client comment	Updated for issue		
Date	July 2021	July 2021		
Prepared by	Various	Various		
Signature				
Checked by	Nicola Lear / Justin Sherlock	Nicola Lear / Justin Sherlock		
Signature				
Authorised by	Alan Heatley	Alan Heatley		
Signature				
Project number	70074897	70074897		
Report number	70074897/EN/100/01	70074897/EN/100/02		
File reference	\\uk.wspgroup.com\central data\Projects\700748xx\70074897 - Wokingham-WKH-2021-Barkham Farms Solar Farm\03 WIP\EIA\ES Addendum			

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1. INTRODUCTION

1.1. BACKGROUND

- 1.1.1. Wokingham Borough Council (WBC) Development Team (referred to as 'the Applicant') submitted a planning application (Reference 211081) in March 2021 for a 52 hectare (ha) solar farm in Barkham, located approximately 5km southwest of Wokingham, Berkshire (referred to as the 'Proposed Development'). The Proposed Development would generate energy outputs of 32.28 megawatt peak (MWp) and consist of approximately 71,800 solar photovoltaic (PV) panels, associated transformers and cabins, a sub-station, vehicle access, fencing, planting and landscaping. It also includes improvements to the Public Rights of Way (PRoW) network on Site.
- 1.1.2. An Environmental Statement (ES) comprising three volumes accompanied the planning application for the Proposed Development (referred to as the 'March 2021 ES'). The planning application has not yet been determined.
- 1.1.3. The Proposed Development comprises a main site area of 52ha, with the grid connection covering an additional 1.9ha. The land use within the area of the main site is currently agricultural land, which is owned by WBC and leased by tenant farmers. The grid connection runs from the solar farm, under WBC owned land, before meeting the public highway which it then follows to the point of connection at Wokingham Sub-Station.
- 1.1.4. The March 2021 planning application sought permission for:
- "Proposal for the installation of a new 52 hectare (ha) solar farm, underground grid connection between site and Electricity Distribution Centre, laying of internal access roads, the erection of substation building, security fencing, and associated planting and landscaping including approximately 3.4ha of tree planting for carbon sequestration."*
- 1.1.5. The planning application and associated documentation have been the subject of consultation since the application validation. Following feedback from stakeholders, refinements have been made to the layout of the solar farm, which are being submitted as an amendment to the current application, as such this ES Addendum has been prepared to submit with the amendments. The development with the design changes, is hereafter referred to as the 'Revised Development'.
- 1.1.6. Chapters 6-10 (Volume 1) of the March 2021 ES reported on the assessment of likely significant effects of the Proposed Development. The Proposed Development is described further in ES Chapter 3: Description of the Proposed Development. A summary of the design changes to the Proposed Development since submission of the March 2021 planning application is provided in Chapter 2 of this Addendum.
- 1.1.7. The ES is the output of the Environmental Impact Assessment (EIA) process which has been undertaken in accordance with the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the 'EIA Regulations') [Ref. 1.1]. Given the nature and scale of the Proposed Development, the Proposed Development was considered to fall under Schedule 2 of the EIA Regulations 2017 and therefore an EIA was undertaken.

1.2. PURPOSE OF THIS ES ADDENDUM

- 1.2.1. This ES Addendum has been prepared to provide a mechanism to report the outcome of the following:
- To undertake a technical analysis to outline the implications that the Revised Development will have on the March 2021 ES;
 - To consider and confirm if the overall significance of effects and conclusions as reported in the March 2021 ES remain valid;
 - If there is the potential for a change in the level of significance of residual effects previously identified, then a reassessment or further clarification is required; and
 - To provide a clear and concise report which, in combination with the March 2021 ES, can inform the decision-making process.
- 1.2.2. The majority of the environmental information provided in the March 2021 ES remains valid and up to date, and this ES Addendum supplements that document. Therefore, the March 2021 ES, and this ES Addendum together comprise the assessment of environmental effects of the Revised Development. As before, the expectation is that the proposed mitigation will be secured by appropriate planning conditions.

1.3. LEGAL FRAMEWORK

- 1.3.1. The legal framework for the March 2021 ES and this ES Addendum is the EIA Regulations 2017 which require that prior to consent being granted, for certain types of development, an EIA must be undertaken. The EIA Regulations set out the types of development which must always be subject to an EIA (referred to as Schedule 1 development respectively) and other developments which may require an EIA if they are likely to give rise to significant environmental effects (referred to as Schedule 2 development respectively).
- 1.3.2. The findings of the EIA are presented in the March 2021 ES and this ES Addendum (July 2021) which has been prepared in accordance with Schedule 4 of the EIA Regulations and Regulation 18 (Paragraphs 3-4) as well as the online National Planning Policy Guidance (PPG) published by the Ministry of Housing, Communities and Local Government [Ref. 1.2].
- 1.3.3. An overview of the methodology adopted is provided in Chapter 5: Approach to EIA in the March 2021 ES, with each respective chapter (Chapters 6-9) also setting out the relevant methodology for each assessment.

1.4. PROJECT TEAM AND ROLES

- 1.4.1. WSP has been responsible for the preparation of this ES Addendum and supporting environmental information. The technical teams involved in the preparation of this of ES addendum also prepared the March 2021 ES.

1.5. ES AVAILABILITY

- 1.5.1. The ES Addendum and the March 2021 ES will be available to view on the WBC website. Comments on the planning application can also be made on the WBC website.
- 1.5.2. Paper copies of the March 2021 ES and ES Addendum will not be available due to restrictions in respect of COVID 19 but may subsequently be made available dependant on government

guidelines. Where appropriate, paper copies of the ES documents can be provided at a cost. Please contact WBC for more information.

1.6. REFERENCES

- **Reference 1.1:** Town and Country Planning (Environmental Impact Assessment) Regulations 2017. Statutory Instrument 2017 No. 571. Available online: <https://www.legislation.gov.uk/ukxi/2017/571/contents/made> [Accessed July 2021].
- **Reference 1.2:** Ministry of Housing, Communities and Local Government (May 2020) Planning Practice Guidance (PPG) Online Tool. Available online at: <https://www.gov.uk/guidance/environmental-impact-assessment>. [Accessed July 2021].

2. SUMMARY OF CHANGES

2.1. HOW AND WHY THE PROPOSED DEVELOPMENT HAS CHANGED

2.1.1. Since submission of the planning application in March 2021, the Proposed Development has continued to evolve to respond to consultee feedback. A revised design (the Revised Development) has been developed to address the feedback received. The Revised Development has several design changes which are outlined in **Table 2-1** with the reasons for each change. The following updated figures are attached in **Appendix 2-1** (the remainder remain as per the figures attached to Chapters 1-3 of the March 2021 ES):

- **Figure 3-1:** Environmental Masterplan;
- **Figure 3-6:** Indicative PV Layout;
- **Figure 3-8:** Site Access with Visibility Splays;
- **Figure 3-9:** Construction Access, South (changes to junction geometry and swept paths); and
- **Figure 3-10:** Construction Access, North (changes to junction geometry and swept paths).

Table 2-1 - Design Change and Rationale

Design Change	Drawing Reference	Rationale
Removal of solar panels adjacent to High Barn Farm and retention of farmland	Figure 3-6	To retain operational farm on Site.
Removal of woodland planting in south of scheme	Figure 3-1	To retain operational farm on Site.
Re-alignment of Greenway	Figure 3-1	To provide a more direct route between bridleway BR14 and footpath FP10A and move it away from the heritage assets.
New Public Right of Way north of Barkham Ride	Figure 3-6	To connect the realigned Greenway with bridleway BR11.
Reduction in length of access tracks across the solar farm	Figure 3-6	To reduce the potential impact of the scheme on any heritage assets and tree root protection zones. Access tracks are retained around the access points to the public highway and space has been retained within the design for vehicular access around the Site for maintenance purposes. This will be infrequent and undertaken by appropriate vehicles (four wheeled drive vehicles for example).

Design Change	Drawing Reference	Rationale
Access track through solar farm	Figure 3-6	To provide a connection between High Barn Farm and Rooks Nest Farm for operational farm purposes.
Relocation of sub-station further to the east (north of Barkham Ride) than previously proposed and refinement of sub-station layout	Figure 3-6	To relocate the sub-station to a less prominent location within the Site and reduce the area of impermeable surface around the sub-station used for storage, manoeuvring and parking.
Removal of landscaping buffers around Church Cottage, Moated Site at Church farm and the Church of St James (referred to as the heritage assets)	Figure 3-1	To preserve long range views of the heritage assets and across the Site more widely.
Increased buffer of 25m between the heritage assets and solar panels	Figure 3-1	To reduce any potential impact on the setting of the heritage assets and root damage to the structure of the ancient moat.
Increased buffer of 10m to Barkham Brook	Figure 3-1	To provide additional land for ecological enhancement around the watercourse.

2.1.2. There are no changes to the proposals for the grid connection, they remain as provided in the March 2021 ES.

2.1.3. **Table 2-2** summaries the key infrastructure and areas for the Proposed Development and the Revised Development.

Table 2-2 - Key Infrastructure and Areas

Statistic	Original Planning Submission (Proposed Development)	Updated Submission (Revised Development)
Output (DC)	32.38MWp	29.63MWp
Inverters	282	257
Modules (Panels)	71,812	67,340
Transformers (5MW MV Transformers)	6	5
Access Tracks	5400m	470m
Planning Application Boundary	51.97 hectares	51.97 hectares

Statistic	Original Planning Submission (Proposed Development)	Updated Submission (Revised Development)
Solar Farm area	48.5 hectares	43.56 hectares
Woodland planting	3.4 hectares	2.89 hectares
Retained farm	-	5.52 hectares
Trees (within carbon sink)	15,093	10,947

2.2. PLANNING CONTEXT

- 2.2.1. The EIA Regulations do not require an assessment of planning policy or guidance; however the March 2021 ES identified the current policy context for each technical assessment at the time of writing. Since March 2021, there has been an update relevant to this ES Addendum; the National Planning Policy Framework (NPPF), published on 20th July 2021 (**Ref. 2.1**) has been updated. Solar farms have now been included within Annex 3 and are considered “essential infrastructure” which relates to Flood Vulnerability Classification. However, the amendments to the NPPF have no impact on this proposal.

2.3. REFERENCES

- **Reference 2.1:** Ministry of Housing, Communities and Local Government (February 2019) National Planning Policy Framework. [Online] accessed via <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed July 2021].

3. APPROACH TO ES ADDENDUM

3.1. INTRODUCTION

3.1.1. The approach adopted for this ES Addendum is set out below:

- To provide a response to the matters raised by the consultation responses, where relevant;
- To undertake a qualitative technical analysis of the changes to the Proposed Development based on the magnitude of change, sensitivity of receptors and whether are any changes to the receptors; assessment of the significance of effects of the Revised Development and cumulative effects to determine if the conclusions of the overall significance of residual effects and the proposed mitigation measures as reported in the March 2021 ES remain valid; and
- Where the changes to the Proposed Development have a potential effect, an updated assessment has been provided using the same criteria, magnitude of change, sensitivity of receptors and assessment of effect as set out within Chapter 5: Approach to EIA of the original March 2021 ES.

3.2. APPROACH TO THE BASELINE

3.2.1. Baseline conditions remain the same as those reported within the March 2021 ES. Therefore, the baseline information presented within the March 2021 ES remains valid and no additional baseline surveys have been undertaken for the purpose of this ES Addendum. Additional analysis on the bat activity data has been completed on the request of the WBC Ecology Officer, as described in Chapter 4 of this Addendum. A complete overview of the baseline conditions and the baseline for each technical discipline has not been provided in this ES Addendum as this document should be read in conjunction with the March 2021 ES.

3.3. SENSITIVE RECEPTORS

3.3.1. Sensitive receptors remain largely the same as those considered in the March 2021 ES, with the exception of an additional visual receptor for the Landscape and Visual Impact Assessment (LVIA). As with the approach to the baseline conditions, a complete overview of this section has not been provided in this ES Addendum. The additional sensitive receptor for the LVIA is described in Chapter 6 of this Addendum.

3.4. ASSESSMENT SCENARIO

3.4.1. The assessment scenarios for the Revised Development remain the same as those considered in the March 2021 ES (i.e. Construction Phase and Operational Phase), albeit with a revised construction programme. The proposed construction programme for the Revised Development is January - October 2022, with the Site open and operational in October 2022. The previous construction programme for the Proposed Development assessed in the March 2021 ES was October 2021 – July 2022, with the Site open and operational in July 2022. The updated construction programme is provided in **Table 3-1**.

Table 3-1 - Proposed Construction Programme

Activity	2022									
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct
Constructing the on-site access tracks and the temporary compound / laydown areas										
Installing security fencing										
Excavating and constructing the foundations for the PV panels and the Inverter / Transformer Cabins and Control Building										
Installing / constructing the PV panel support structures and the Inverter / Transformer Cabins and Control Buildings										
Assembling the PV panel mounting systems										
Mounting the PV panels										
Installing the underground electrical system										
Commissioning and energising the solar farm										
Site reinstatement, including undertaking any landscape enhancement measures										

3.5. APPROACH TO PLANNING POLICY AND GUIDANCE

- 3.5.1. As detailed in Chapter 2, a change has occurred to planning policy since submission of the March 2021 ES (NPPF, July 2021, **Ref. 2.1**). There have been no changes to technical guidance since the March 2021 ES.

3.6. ASSESSMENT OF EFFECTS AND CUMULATIVE ASSESSMENT

- 3.6.1. Chapter 9: Cumulative Effects of the March 2021 ES sets out the cumulative assessment for both intra-project and inter-project effects resulting from the Proposed Development. This ES Addendum provides an update to the assessment contained within the March 2021 ES, to take account of the design changes and the six additional committed developments which have come to light since March 2021. Further information is provided in Chapter 7 of this ES Addendum.

4. BIODIVERSITY

4.1. INTRODUCTION

- 4.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from and to the Revised Development upon Biodiversity.

4.2. CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION

- 4.2.1. Comments on the Proposed Development from the Ecology Officer at WBC broadly related to the following:
- A request for a more detailed consideration of baseline bat activity data collected, using the online tool 'Ecobat' (**Ref. 4.1**) to compare records to those from other sites within the wider locale.
 - A request for updated mapping of badger *Meles meles* data in the Badger Monitoring Survey Report (Appendix 6-4 of the March 2021 ES), and the consideration of badger gates at key points along the security fencing. Updated mapping has been provided for the Badger Monitoring Survey Report (see **Appendix 4-1: Badger Survey (Restricted)**), and badger gates are considered within the reassessment of effects detailed in **Table 4-3**.
 - A request to consider the local adder *Vipera berus* population in greater detail when assessing the construction phase and operational impacts of the Proposed Development on reptiles. Adders are considered within the reassessment of effects in **Table 4-2** and **Table 4-3**.
 - A request for more information regarding the assessment of the river corridor units and proposed enhancements for the river corridor detailed in the Biodiversity Net Gain (BNG) Assessment (Appendix 6-7 of the March 2021 ES), as well as greater consideration of drainage and the grassland species mixes proposed in light of local soil geology.

SCOPE

- 4.2.2. Following a review of the design changes described in **Table 2-1**, the associated figures contained in **Appendix 2-1** and the consultation comments from the WBC Ecology Officer, no changes to the scope of assessment have been made following the previously submitted March 2021 ES. The following areas of scope require updates due to the Revised Development:
- On-Site Habitats;
 - Roosting Bats;
 - Commuting and Foraging Bats;
 - Badger;
 - Reptiles; and
 - Amphibians.

- 4.2.3. The extent of the study area remains the same as that stated in Paragraphs 6.2.8 - 6.2.10 of the March 2021 ES.

METHODOLOGY

- 4.2.4. The methodology for the baseline and construction/operational phase assessments remain the same as the March 2021 ES.

SIGNIFICANCE CRITERIA

- 4.2.5. The significance criteria remain the same as that set out in Table 6-5 of the March 2021 ES.

4.3. LEGISLATIVE FRAMEWORK, POLICY AND GUIDANCE

- 4.3.1. No legislative and planning policy changes relevant to biodiversity have occurred since the March 2021 ES was submitted.

4.4. BASELINE CONDITIONS

- 4.4.1. No additional baseline surveys have been completed since the submission of the March 2021 ES. However, additional analysis on the bat activity data has been completed on the request of the WBC Ecology Officer as described in paragraph 4.2.1.
- 4.4.2. All other baseline conditions remain the same as previously submitted in the March 2021 ES.

4.5. SENSITIVE RECEPTORS

- 4.5.1. The sensitive receptors considered remain the same as previously submitted in the March 2021 ES.
- 4.5.2. The sensitivity of reptiles has been upgraded from Negligible to Low, to account for the local adder population to the south of the Site in California Country Park, as raised by the WBC Ecology Officer. The Low sensitivity reflects the rarity of adder and their habitat requirements in comparison to more common reptile species (e.g. slow worm *Anguis fragilis* and common lizard *Zootoca vivipara*).
- 4.5.3. The sensitivity of all other receptors considered remains the same as previously submitted in the March 2021 ES.

4.6. ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

- 4.6.1. **Table 4-1** provides a summary of the effects previously assessed within the March 2021 ES and the impacts the Revised Development will have on these effects.

Table 4-1 - Summary of the Effects Previously Assessed - Biodiversity

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Construction Phase		
Statutory Designated Sites: Qualifying features may be detrimentally affected by increased air pollution, dust pollution and run-off pollution.	None	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Non-statutory Designated Sites: Nature conservation value of sites may be detrimentally affected by increased air pollution, dust pollution, or run-off pollution, particularly for nearby sites or those which are hydrologically linked to the Site.	None	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
Off-Site Habitats: Quality of off-site habitats may be detrimentally affected by increased air pollution, dust pollution and run-off pollution.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
On-Site Habitats: Construction will result in minor loss of hedgerow and may detrimentally affect habitat quality of retained hedgerow and river areas.	Refinement of the proposals around the Barkham Brook in the north-west of the Site. The Site fencing is now set back a minimum of 10m from the Barkham Brook.	Yes, the Potential Effects on river habitats prior to mitigation are now likely to be reduced in light of the increased buffer. There are no changes to the assessment of Potential Effects or Residual Effects for hedgerow HPI from the March 2021 Assessment. See updated assessment for river HPI only in Table 4-2 .
Roosting Bats: Retained trees with bat roosting suitability may be subject to lighting and noise disturbance during construction. Construction of haul roads may result in accidental damage to retained trees with bat roosting suitability, potentially resulting in damage or destruction of a roost, and individual bat mortality.	Removal of the access tracks within the Site. While the provision of internal access tracks has been removed, access points will still be constructed off Barkham Ride, and a track will be constructed to allow continued access to High Barn Farm.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment. While the extent of access tracks has been reduced, the impacts of this on the Potential Effects and Residual Effects from March 2021 are considered to be negligible and as such, the previous assessment remain valid with regards to the access points and the High Barn Farm access track.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Commuting and Foraging Bats: Temporary loss of foraging habitat through clearance of grazed grassland. Light and noise pollution during construction may deter bats from using retained corridors and foraging areas.	Retention of the part of the Site adjacent to High Barn Farm as farmland will reduce the overall temporary loss of foraging habitat. However, the majority of the remaining fields within the Site boundary will be converted to PV installation, and will therefore still result in temporary loss of foraging habitat.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment. Despite the retention of farmland in the south-west of the Site, there will still be temporary loss of foraging habitat during the construction phase. However, the difference is considered marginal and as such no re-assessment is required.
Badger: Retained setts, commuting and foraging badgers may be subject to disturbance from artificial lighting, and open excavations may lead to badger mortality. Badgers may excavate or recolonise new setts within the Site prior to the construction phase, and these setts may be at risk of destruction or disturbance depending on the location.	The reduction in the extent of the solar array and the realignment of the greenway will see reduced likely construction impacts to identified badger setts within the Site.	Yes, the Potential Effects on badger prior to mitigation are now likely to be reduced as a result of the retention of land in the south of the Site, and the realignment of the greenway. See updated assessment in Table 4-2 .
Other Mammals (SPI): Unavoidable temporary loss of foraging and commuting habitat, and risk of mortality or injury as a result of construction excavations.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
Breeding Birds: Unavoidable temporary loss of nesting habitat through partial hedgerow and grassland clearance. Risk of damage or destruction of active bird nests during site clearance in the nesting season. Disturbance of confirmed barn owl <i>Tyto alba</i> nest site outside of the Site boundary.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Reptiles: Minor unavoidable loss of suitable habitat through partial hedgerow clearance. Site clearance in areas of suitable reptile habitat may result in killing or injury of individual reptiles.	None.	Removal of access tracks unlikely to result in a change to the Potential Effects on reptiles. However, a reassessment of Effects has been undertaken to incorporate greater consideration of adder, in response to consultation comments from WBC Ecology Officer. See updated assessment in Table 4-2.
Amphibians: Low risk of Site clearance of suitable terrestrial habitat within 500m of Waterbodies 3, 19 and 20, resulting in killing or injury of individual amphibians including great crested newt <i>Triturus cristatus</i> and common toad <i>Bufo bufo</i> . Unavoidable loss of suitable habitat through partial hedgerow clearance.	Retention of the south of the Site adjacent to High Barn Farm will ensure that all suitable terrestrial habitat within 500m of Waterbody 3 will be protected from development through its continued use as grazing land.	Yes, the Potential Effects on amphibians prior to mitigation are now likely to be reduced as a result of the retention of land in the south of the Site, and the magnitude of change may be reduced as a result of reduced hedgerow breaches. See updated assessment in Table 4-2.
Terrestrial Invertebrates: Minor unavoidable loss of suitable habitat through partial hedgerow clearance and grassland clearance.	None.	No changes to the assessment of Potential Effects or Residual Effects from March 2021 Assessment.
Operational Phase		
Statutory Designated Sites: Qualifying features could be detrimentally affected by surface run-off contamination from on-Site leaks and spillages.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
Non-statutory Designated Sites: Nature conservation value of sites could be detrimentally affected by surface run-off contamination from on-Site leaks and spillages.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Off-Site Habitats: Habitats could be detrimentally affected by surface run-off contamination from on-Site leaks and spillages.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
On-Site Habitats: Habitats could be detrimentally affected by surface run-off contamination from on-Site leaks and spillages. Proposed landscaping is expected to provide enhancements to retained hedgerows and the Barkham Brook.	Under the Revised Development designs, there is an increased buffer between the Barkham Brook and the Site fencing (minimum of 10m). This buffer will ensure that the Barkham Brook is protected from potential adverse effects during the operational phase and allows for a wider area of targeted landscape enhancements. Amendments have also been made to the planting schedules and layout of proposed landscaping.	Yes, the Potential Adverse Effects on river habitat prior to mitigation is now likely to be reduced as a result of the 10m buffer from the Barkham Brook, and the Potential Beneficial Effects on hedgerows are likely to be increased. See updated assessment in Table 4-3.
Roosting Bats: Proposed woodland carbon sink planting is expected to provide additional roosting opportunities for bats. Any operational lighting which spills onto retained trees has the potential to deter bats from leaving roosts, if present.	The extent of tree planting has been marginally reduced under the Revised Development designs, to allow for the continued operation of High Barn Farm in the south of the Site and to avoid screening of heritage assets in the north-west of the Site. However, carbon sink woodland planting is still proposed in the far south of the Site which is likely to provide roosting opportunities for roosting bats in the long term. The realignment of the greenway across the centre of the Site and the removal of most internal access tracks has resulted in increased buffers from retained hedgerows and treelines, particularly, along Barkham Ride and field boundaries in the northern half of the Site.	Yes, Potential Adverse Effects of artificial lighting on roosting bats prior to mitigation are likely to be reduced as a result of increased buffers. See updated assessment in Table 4-3.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Commuting and Foraging Bats: Provision of grassland planting, hedgerow planting and woodland carbon sink planting is expected to provide additional commuting and foraging opportunities for bats. Artificial lighting for security and maintenance purposes which spills onto retained and newly landscaped vegetated areas could deter bats from using commuting corridors or foraging areas.	The extent of species-rich grassland planting has been reduced under the designs for the Revised Development, as a result of the proposed greenway realignment through the centre of the Site. The realignment of the greenway across the centre of the Site and the removal of most internal access tracks has resulted in increased vegetated buffers from retained hedgerows and treelines, particularly, along Barkham Ride and field boundaries in the northern half of the Site.	Yes, Potential Adverse Effects of artificial lighting on commuting and foraging habitat prior to mitigation are likely to be reduced as a result of increased buffers. There may also be a change in the Potential Beneficial Effects for commuting and foraging bats as a result of the updated Environmental Masterplan (Figure 3-1). See updated assessment in Table 4-3.
Badger: Proposed landscaping is expected to provide additional habitat for sett creation as well as commuting and foraging activity. Artificial lighting could spill on to retained and newly landscaped vegetated areas, which may deter badgers from leaving setts or using commuting or foraging habitats.	The reduction in the extent of the solar arrays mean that the main sett is protected from artificial light spill, although other identified retained setts within the Site may still be impacted by this. The potential siting of badger gates within the security fence will be considered during detailed design. There has been a reduction in the extent of the proposed woodland and species-rich grassland planting.	Yes, Potential Adverse Effects of artificial lighting on setts and commuting/foraging habitat prior to mitigation are likely to be reduced as a result of increased buffers. There may also be a change in the Potential Beneficial Effects for commuting and foraging badgers as a result of the updated Environmental Masterplan (Figure 3-1). See updated assessment in Table 4-3.
Other Mammals (SPI): Operational lighting could deter hedgehog from using new or retained habitats within the Site. Proposed landscaping is expected to provide additional habitat for hedgehog and brown hare.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
Breeding birds: Proposed landscaping is expected to provide additional nesting habitat. Operational light spill on active nets could result in abandonment of nests.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Reptiles: Proposed landscaping is expected to provide additional basking, foraging and shelter habitat for reptiles.	None.	The proposed landscape changes to the Revised Development are unlikely to change the assessment of Potential Effects or Residual Effects from the March 2021 Assessment. However, a reassessment of Effects has been undertaken to incorporate greater consideration of adder, in response to consultation comments from WBC Ecology Officer. See updated assessment in Table 4-3 .
Amphibians: Proposed landscaping is expected to provide additional terrestrial habitat for amphibians.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
Terrestrial Invertebrates Proposed landscaping is expected to provide enhanced habitat for terrestrial invertebrates.	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.

REASSESSMENT OF EFFECTS

- 4.6.2. **Tables 4-2 and 4-3** provide the reassessment of effects for the Revised Development for the elements identified above in **Table 4-1**.

CONSTRUCTION PHASE

Table 4-2 - Construction Phase Effects - Biodiversity

Element	Reassessment of Effects	Mitigation	Residual Effects
On-Site Habitats (River HPI only)	The Barkham Brook will be retained under the Revised Development and will be buffered from all Site clearance activities by a minimum of 10m based on the realignment of the solar farm perimeter fencing. As such, no direct effects are envisaged. However, given the 10m buffer area is still within the Site boundary, there is a low risk of pollution events or degradation from temporary storage of materials. The sensitivity of river HPI within the Site is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Small. Therefore, there is likely to be indirect, permanent Minor adverse effects on river HPI (not significant) prior to the implementation of mitigation measures.	A Construction and Environmental Management Plan (CEMP) will be produced for the Proposed Development in advance of the construction phase. The CEMP will include best practice measures to minimise the effect of water pollution events. Measures to avoid temporary storage of construction materials within 20m of the Barkham Brook will also be included within the CEMP.	The sensitivity of river HPI is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible effects on river HPI (not significant) following the implementation of mitigation measures.
Badger	Under the Revised Development, all identified badger setts will be retained and buffered from development. In particular, the large main badger sett (Sett 1 on Figure 2 in Appendix 4-1: Badger Survey (Restricted)) will not be within 30m of any construction activities or soft landscaping works. As before, construction activities will also be avoided within 30m of potential Setts 5 and 6, and soft landscaping works will not occur within 10m of these two setts. Construction of the realigned greenway will now not occur within 30m of any of the setts identified within the Site.	A pre-works walkover survey will be conducted in 2021 prior to the construction phase (anticipated to be in January 2022) to check the status of Setts 5 and 6 which were not subject to monitoring, and to check the presence of any new setts within the construction area. In the event that new setts are identified, the proposed activities within 30m of such setts will be assessed for their potential impacts. Where detrimental impacts cannot be avoided, a licence to close the setts between	The sensitivity of badgers is considered to be Low, and the magnitude of change following the implementation of mitigation is considered to be Negligible. Therefore, there is likely to be Negligible effects on badgers (not significant) following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
	It is understood that steel security/deer fencing will be installed along the perimeter of the solar farm extent during the construction phase, but this will be set in from Site boundary and is therefore unlikely to restrict badger movement across the Site outside of this fencing. Badgers are a dynamic species and as such, over time, new setts can be excavated, or disused setts can become reoccupied. Should this occur prior to the construction phase, there is a risk that construction activities could result in the direct loss of new or re-occupied setts, or vibration or noise disturbance within 30m of any new or re-occupied sett. Additionally, badgers attempting to commute or forage across the Site during the construction phase may suffer injury or mortality from open excavations, or be deterred by artificial lighting. The sensitivity of badgers is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct and indirect, permanent and short-term temporary Minor adverse effects on badgers (not significant) prior to the implementation of mitigation measures.	July and November will be sought from Natural England. Any works to close or disturb a sett under licence from Natural England will be completed in accordance with the approved mitigation strategy for the licence. Measures will be included in the CEMP to minimise the impact of Site activity to badgers. This will include ensuring open excavations or trenches are covered overnight, or otherwise providing a means of egress. Deep excavations will be covered overnight. Where the use of artificial lighting is unavoidable during the construction phase, this will be subject to a sensitive lighting strategy which will seek to avoid light spill onto known setts and vegetated areas outside of the perimeter fencing. The lighting strategy will be reviewed by an ecologist prior to implementation.	
Reptiles	The majority of the Site comprises open grazed fields which are considered to be unsuitable for reptiles. Areas which do afford suitability for reptiles, including field boundaries and hedgerow field layers will largely be retained during the construction phase. However, Site clearance activities to prepare for the installation of access	A Precautionary Method of Works (PMoW) document will be produced for inclusion within the CEMP. The PMoW will set out measures for sensitive vegetation clearance with regards to reptiles, including two-stage vegetation clearance of	The sensitivity of reptiles is considered to be Low, and the magnitude of change following mitigation is considered to be Small. Therefore, there is likely to be short-term temporary Minor residual effects on reptiles (not significant)

Element	Reassessment of Effects	Mitigation	Residual Effects
	points and solar panel mounting frames, as well as excavations for cable laying within the solar farm area, have the potential to result in killing or injury to reptiles. Additionally, in the few instances where field boundaries will be impacted (e.g. minor hedgerow breaches to facilitate informal access routes), there will be unavoidable loss of suitable foraging habitat for reptiles. Where these breaches will occur, there is a risk of injury or disturbance to hibernating adder. Adder populations are known to be present in California Country Park to the south of the Site, and as such may commute into suitable habitat within the Site. Although landscaping is expected to compensate for this loss of foraging habitat and hibernacula, it will not become established in the construction phase. The sensitivity of reptiles is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Large. Therefore, there is likely to be direct, permanent Minor to Moderate adverse effects on reptiles (significant) prior to the implementation of mitigation measures.	suitable reptile habitat (hedgerows and vegetation along field boundaries) within the reptile active season, using hand tools. The two-stage cut would comprise an initial strip of vegetation down to 200mm above ground level, followed by a second cut down to ground level, completed over a minimum of two days to enable reptiles to safely disperse away from the works area. Vegetation clearance works completed under the PMoW will be supervised by a suitably experienced ecologist where necessary, to minimise the risk of killing or injury to reptiles. Any reptiles encountered during the vegetation clearance works would be moved to suitable areas of retained habitat within the Site. The reptile active season runs indicatively between March and October inclusive. Under the programme of works for the Revised Development, Site clearance activities are proposed between January and May 2022. Wherever possible, clearance of suitable reptile habitat (including hibernation habitat) will be undertaken in the period March to May 2022 inclusive to avoid disturbance of hibernating reptiles including adder. Should clearance of suitable habitat be	following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
		unavoidable during the hibernation season (November to February inclusive), the ecologist supervising the works will thoroughly inspect the vegetation prior to clearance for the presence of hibernating reptiles, including adder. In the unlikely event that hibernating reptiles are encountered, these will be taken into care for the remainder of the hibernation season and will be re-released into retained areas of suitable habitat within the Site when conditions are suitable at the start of the following active season.	
Amphibians	Great crested newts were confirmed to be present within Waterbody 3 to the south of the Site and may therefore be present within suitable areas of the 500m 'distant' terrestrial habitat zone which fall within the Site (see Figure 6-3: Great Crested Newt Mitigation Plan of the March 2021 ES). Under the Revised Development, all areas of the 500m 'distant' terrestrial habitat zone within the Site fall inside land which will be retained for operational farming. Therefore, it is considered reasonably unlikely that population of great crested newt identified in Waterbody 3 will be impacted by the Revised Development. It is considered reasonably likely that great crested newt are absent from Waterbodies 17-20, which could not be accessed for survey. Only the cable route section of the Site (with habitats unsuitable for great crested newt) is present within 500m of Waterbodies 17 and 18. However,	To mitigate for the low but non-negligible risk of amphibians within suitable terrestrial habitat within the Site, a PMoW document will be produced for inclusion within the CEMP based on distant terrestrial habitat within the Site. As with reptiles, the PMoW will set out measures for sensitive vegetation clearance of suitable habitat (hedgerows and vegetation along field boundaries) using hand tools. The two-stage cut would comprise an initial cut down to 200mm above ground level, followed by a second cut down to ground level completed over a minimum of two days to enable any amphibians present to disperse safely away from the works area.	The sensitivity of amphibians is considered to be Low, and the magnitude of change following mitigation is considered to be Small. Therefore, there is likely to be direct, short-term temporary Minor adverse residual effects on amphibians (not significant) following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
	in the unlikely event that an isolated population of great crested newt persists in Waterbodies 19 and 20, there is a risk that Site clearance activities within 500m of these waterbodies (see Figure 6-3: Great Crested Newt Mitigation Plan of the March 2021 ES) may result in the loss of suitable terrestrial habitat and the potential killing or injury of individuals. Suitable terrestrial habitat is considered to comprise hedgerows and field boundaries where the sward height is higher due to reduced grazing activity. Such areas are considered to be broadly retained under the Environmental Masterplan (Figure 3-1) for the Revised Development. However, it is possible that great crested newt will commute across more closely grazed areas and hence may be affected by Site clearance activities. Suitable terrestrial habitat for great crested newt within the Site is also considered to be suitable to support common toad during terrestrial life stages, and therefore Site clearance activities may also result in the killing or injury of this species. Additionally, where field boundaries will be impacted to facilitate the informal access routes, there will be unavoidable loss of suitable terrestrial habitat for amphibians. Landscaping is expected to compensate for this loss, but it will not become established during the construction phase. The sensitivity of amphibians is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct and indirect,	All vegetation to be cleared will be subject to a thorough finger-tip search by a suitably experienced ecologist prior to clearance to identify the presence of any amphibians. In the even that great crested newt are encountered during vegetation clearance, all clearance works on Site will immediately cease and advice will be sought from Natural England regarding the requirement for a European Protected Species Licence (EPSL).	

Element	Reassessment of Effects	Mitigation	Residual Effects
	permanent and temporary short-term Minor adverse effects (not significant) prior to the implementation of mitigation measures.		

OPERATIONAL PHASE

Table 4-3 - Operational Phase Effects - Biodiversity

Element	Reassessment of Effects	Mitigation	Residual Effects
On-Site Habitats	Leaks and spillages which may incidentally occur during maintenance of the solar farm could result in physical contamination of surface and ground water, which could in turn lead to subsequent degradation of habitat quality of retained hedgerow HPI and river HPI. The minor loss of hedgerows incurred during the construction phase will be compensated for by the planting of new native hedgerows to demarcate solar arrays in the south of the Site. In addition, existing retained hedgerows are proposed to be enhanced through planting to fill in gaps and will be further separated from the solar farm through the provision of a native planting buffer. The proposed hedgerow planting works will comprise seven native species and the buffer planting will include nine species. This includes planting mixes targeted to the relevant soil conditions, including the provision of gorse <i>Ulex europaeus</i> and broom <i>Genista lydia</i>) to the hedgerow buffer planting in the south of the Site. As such, it is considered that the value of hedgerow HPI within the Site will	As detailed in the Flood Risk Assessment and Surface Water Drainage Strategy, any potential physical contamination of the water environment would be managed through the regular maintenance of proposed SuDS. Provided that these SuDS are in place for the commencement of the operational phase, it is considered that on-Site habitats will be sufficiently protected from the risks of operational leaks or spills. Upon completion of the detailed design, a Landscape and Environmental Management Plan (LEMP) will be produced for the Revised Development, which will detail appropriate management measures and regimes for newly created habitats, including the hedgerow planting and the Barkham Brook buffer enhancements. The	The sensitivity of hedgerow HPI and river HPI is considered to be Low, and the magnitude of change following mitigation is considered to be Large. Therefore, there is likely to be direct permanent Minor to Moderate beneficial residual effects on hedgerow HPI and river HPI (significant) with regards to the proposed landscaping and Negligible residual effects (not significant) of pollution or contamination following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
	likely increase as a result of the proposed landscaping works. The Barkham Brook is now considered to be sufficiently buffered from the Revised Development. However, general landscaping measures are proposed within the 10m buffer zone in the Environmental Masterplan (Figure 3-1). This includes wet woodland canopy and understorey planting, and a wetland meadow grassland mix. The sensitivity of river HPI and hedgerow HPI is Low and the magnitude of change in the absence of mitigation is considered to be Large. Therefore, there is likely to be indirect, permanent Minor to Moderate adverse effects (significant) and direct, permanent Minor to Moderate beneficial effects (significant) on river HPI and hedgerow HPI prior to the implementation of mitigation measures.	LEMP will also detail the management regime for created habitats, to ensure that habitat quality is maintained throughout the lifespan of the Proposed Development.	
Roosting Bats	The lighting strategy for the operation of the Revised Development has not yet been finalised, but it is understood that limited operational lighting will be required for security and maintenance purposes. Any light spill onto retained or newly planted trees may deter bats from leaving roosts (if present), with subsequent impacts on growth and survival rates of young bats (Ref. 4.2). Under the Revised Development, the greenway alignment now runs along the centre of the Site and as such, trees with high and moderate bat roosting suitability (trees T26, T26 and T28 on Figure 2 in Appendix 6-2: Preliminary Bat Roost Assessment of the March 2021 ES) will now sit	A sensitive lighting strategy will be created for operational lighting associated with the Revised Development, to ensure that impacts to roosting bats are minimised. The lighting strategy will be informed by best practice guidance (Ref. 4.2) and will be reviewed by an ecologist prior to implementation. In particular, the lighting strategy will re-iterate the avoidance of illumination of the greenway so as to minimise light spill on high and moderate suitability trees identified adjacent to the route.	The sensitivity of roosting bats is considered to be Low, and the magnitude of change following mitigation is considered to be Negligible with regards to lighting and Medium with regards to landscaping. Therefore, there is likely to be Negligible effects on roosting bats (not significant) as a result of operational lighting, and direct permanent Minor beneficial effects (not significant) on roosting bats as a result of proposed landscaping, following mitigation.

Element	Reassessment of Effects	Mitigation	Residual Effects
	adjacent to the greenway. The greenway will be unlit throughout its length, and as such trees with bat roosting suitability along its length will be further buffered from artificial lighting within the solar farm area. The Revised Development proposed landscaping, expected to establish during the operational phase, includes specimen planting of large-leaved lime and approximately 2.89ha of carbon sink planting. The carbon sink planting includes planting of the following species which could be expected to development potential roosting features for roosting bats as they mature (Ref. 4.3), and therefore increase roosting provision across the Site: - Field maple, which can develop knot-holes, tear-outs and wounds found to support bats throughout the year, including species recorded commuting or foraging across the Site during the bat activity survey (barbastelle <i>Barbastella barbastellus</i>, common pipistrelle <i>Pipistrellus pipistrellus</i>, soprano pipistrelle <i>Pipistrellus pygmaeus</i>, brown long-eared bat <i>Plecotus auritus</i> and <i>Myotis</i> species). - Pedunculate oak, which can develop a range of potential roosting features from damage and decay found to support bats throughout the year, including species recorded commuting or foraging across the Site during the bat activity survey (barbastelle, common pipistrelle, noctule <i>Nyctalus noctula</i>, soprano pipistrelle, Nathusius' pipistrelle <i>Pipistrellus nathusii</i>, brown long-eared bat and <i>Myotis</i> species).	Additionally, the following general good practice elements will likely be included in the strategy: - Siting of luminaires to avoid unnecessary light spill on retained or newly planted trees; - Luminaires to lack UV elements when manufactured, and should not use metal halide or fluorescent sources; - LED luminaires to be used wherever possible due to lower intensity and dimming capabilities; - All lighting to use a warm white spectrum to reduce blue light components, and should feature a peak wavelength higher than 550nm to avoid the component of light most disturbing to bats; - Lighting to not be in permanent operation throughout the night, with motion-sensing or timed controls wherever possible; and - Lighting column heights to be carefully considered to minimise light spill, with luminaires mounted on the horizontal to avoid upwards light spill. Upon completion of the detailed design, a LEMP will be produced for the Revised Development which will detail appropriate management measures and regimes for newly	

Element	Reassessment of Effects	Mitigation	Residual Effects
	The sensitivity of roosting bats is considered to be Low, and the magnitude of change in absence of mitigation is considered to Medium with regards to lighting and landscaping. Therefore, there is likely to be direct, permanent Minor adverse effects on roosting bats (not significant) as a result of operational lighting, and direct permanent Minor beneficial effects (not significant) on roosting bats as a result of proposed landscaping.	created habitats, including the specimen tree and carbon sink planting. The LEMP will also detail the management regime for newly created habitats, to ensure that habitat quality is maintained throughout the lifespan of the Revised Development.	
Commuting and Foraging Bats	Operational lighting required for security or maintenance purposes which directly illuminates retained and newly planted habitats has the potential to deter bats from using established commuting routes or foraging resources. In particular, operational light spill onto retained or newly planted hedgerows, treelines, and vegetated corridors (including the buffer planting and species-rich grassland proposed beneath the electricity pylons) could detrimentally affect commuting and foraging bats. Operational lighting would be particularly detrimental along the treeline at Barkham Ride (Location 2 from Appendix 6-3: Bat Activity Report of the March 2021 ES) which was found to be of particular importance to commuting and/or foraging common pipistrelle, soprano pipistrelle and barbastelle, a species of particular conservation concern, and is likely to be an important feature for bat activity in the wider locale. Under the Revised Development, the greenway has been realigned to cut across the centre of the Site, with an informal grass path parallel to the north of Barkham Ride. The greenway and grass path will be unlit and will	A sensitive lighting strategy will be created for operational lighting associated with the Revised Development to ensure that impacts to commuting and foraging bats are minimised. The lighting strategy will be informed by best practice guidance (Ref. 4.2) and will be reviewed by an ecologist prior to implementation. In particular, the lighting strategy will avoid illumination of the greenway, and will avoid any further illumination along Barkham Ride. The lighting strategy will also include general good practice measures as outlined above for roosting bats. Upon completion of the detailed design, a LEMP will be produced for the Revised Development which will detail appropriate management measures and regimes for newly created habitats, including the new hedgerows, buffer planting and Barkham Brook enhancements. The	The sensitivity of commuting and foraging bats is considered to be Low, and the magnitude of change following mitigation is considered to be Negligible with regards to lighting and Large with regards to landscaping. Therefore, there is likely to be Negligible effects on commuting and foraging bats (not significant) as a result of operational lighting, and direct permanent Minor to Moderate beneficial effects (significant) on commuting and foraging bats as a result of proposed landscaping, following mitigation.

Element	Reassessment of Effects	Mitigation	Residual Effects
	therefore further buffer this important feature for bats from artificial lighting associated with the solar arrays. The proposed landscaping includes a number of features likely to be of benefit to commuting and foraging bats. While the extent of the carbon sink planting in the south of the Site has been reduced under the Revised Development, this will still provide a valuable vegetated corridor in the south-east of the Site, with the existing treelines in the operational farmland area retained. Additionally, connectivity for commuting bats will be enhanced through the provision of new hedgerows and gapping up of existing hedgerows. Planting of meadow grassland across the Site (including beneath the solar array and in the carbon sink understorey) and species-rich grassland areas along the centre of the Site are likely to attract a greater diversity and abundance of invertebrate prey than is currently provided by the grazed fields. The proposed enhancements adjacent to the Barkham Brook are also likely to provide enhanced commuting and foraging opportunities for species associated with water, including soprano pipistrelle and Daubenton's bat <i>Myotis daubentonii</i> recorded in the local area during the desk study. The sensitivity of commuting and foraging bats is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Medium with regards to lighting and Large with regards to landscaping. Therefore, there is likely to be direct, permanent Minor adverse effects on commuting and foraging bats (not significant) as a result of operational lighting, and	LEMP will also detail the management regime for newly created habitats, to ensure that habitat quality is maintained throughout the lifespan of the Revised Development and that considerations for protected species which habitats might support are factored in.	

Element	Reassessment of Effects	Mitigation	Residual Effects
	direct permanent Minor to Moderate beneficial effects (significant) as a result of proposed landscaping, in the absence of mitigation.		
Badger	The main badger sett will be retained within operational farmland and therefore no effects from artificial lighting are envisaged on this sett. However, operational light spill still has the potential to deter badgers from leaving the remaining identified setts within the Site, and may deter badgers from using established commuting routes or foraging resources (including areas of retained and newly planted vegetation). Perimeter fencing will not be dug into the ground, and therefore there is the potential for badgers recorded within the Site (and populations likely to be present within the wider area) to make use of the proposed landscaping which will be established during the operational phase. The use of badger gates in fencing at targeted points (including in the far south of the Site near to the main sett, as well as potential Setts 5 and 6, and in the north of the Site near to Sett 4) will be considered during detailed design to further encourage the use of the proposed landscaping by badgers. Extensive meadow planting and species-rich grassland planting are considered likely to enhance the foraging opportunities for badger, while carbon sink planting will provide an additional area for sett creation. The sensitivity of badgers is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Small with regards to lighting and Large with regards to landscaping. Therefore, there is likely to be direct,	The sensitive lighting strategy produced for the Revised Development will seek to minimise the effects of operational lighting on badgers. The strategy will seek to avoid light spill on retained badger setts, and minimising spill on to areas of retained and new landscaping which could support badger setts, or areas which could be used by badgers for foraging or commuting. The lighting strategy will be reviewed by an ecologist prior to implementation. Upon completion of detailed design, a LEMP will be produced for the Proposed Development which will detail appropriate management measures and regimes for newly created habitats, including consideration for protected species which such habitats might support.	The sensitivity of badgers is considered to be Low, and the magnitude of change following mitigation is considered to be Negligible with regards to lighting and Large with regards to landscaping. Therefore, there is likely to be Negligible effects on badgers (not significant) as a result of operational lighting, and direct permanent Minor to Moderate beneficial effects (significant) on badgers as a result of proposed landscaping, following implementation.

Element	Reassessment of Effects	Mitigation	Residual Effects
	permanent Minor adverse effects on badgers (not significant) as a result of operational lighting, and direct permanent Minor to Moderate beneficial effects (significant) on badgers as a result of proposed landscaping, in the absence of mitigation.		
Reptiles	Due to the nature of the Revised Development, no negative effects on reptiles are envisaged during the operational phase. The proposed landscaping which is expected to establish during the operational phase is expected to enhance the value of the Site for reptiles. For example, the expanse of grassland proposed is likely to provide basking and foraging opportunities for reptiles across the Site, but particularly where the vegetation community will be more complex within areas of species-rich grassland planting and the scrub mix planting in the south of the Site. It is considered that the solar array itself will provide suitable shaded areas in addition to the new hedgerow and native buffer planting, which are likely to increase the shelter opportunities for reptiles to avoid predation. Proposed wet woodland and wetland meadow planting adjacent to the Barkham Brook are also likely to enhance the foraging opportunities for grass snake <i>Natrix helvetica</i>. The scrub planting in the south of the Site features several heathland species, including gorse and common broom species, which are expected to enhance the Site in a limited way for adder. The network of landscaping, including hedgerow planting, grassland seeding and native buffer planting is also expected to enhance ecological	During detailed design, suitable areas in new and retained habitats will be designated for the placement of reptile hibernacula, including log piles and small excavations covered with rubble and earth, to provide enhanced hibernation opportunities for reptiles across the Site. Wherever possible, the hibernacula will be partially buried in the earth to encourage use by adder, and will be particularly targeted within the area of carbon sink planting and scrub mix planting, owing to the connectivity with known adder populations in California Country Park. Upon completion of detailed design, a LEMP will be produced for the Revised Development which will detail appropriate management measures and regimes for newly created habitats (including reptile refugia), to ensure that habitat quality is maintained throughout the lifespan of the Revised Development, and that considerations for protected species	The sensitivity of reptiles is considered to be Low, and the magnitude of change following mitigation is considered to be Medium. Therefore, there is likely to be direct, permanent Minor beneficial effects (not significant) on reptiles following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
	corridors across the Site and connectivity to suitable areas outside of the Site including Longmoor Bog Site of Special Scientific Interest (SSSI) and Rook's Nest Wood Suitable Alternative Natural Greenspace (SANG). The sensitivity of reptiles is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct, permanent Minor beneficial effects (not significant) on reptiles prior to the implementation of mitigation measures.	which habitats might support are factored in.	

4.7. DIFFICULTIES AND UNCERTAINTIES

4.7.1. The limitations and assumptions remain the same as previously submitted in the March 2021 ES.

4.8. SUMMARY

4.8.1. **Table 4-5** summarises the reassessment for Biodiversity.

Table 4-4 - Summary of Effects for Biodiversity

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
Construction Phase				
On-Site Habitats (River HPI only)	Low risk of construction activities degrading the Barkham Brook through run-off pollution.	Minor Adverse (not significant) I / P	Production of a CEMP to include environmental best practice measures.	Negligible (not significant) I / P
Badger	Badger populations within the Site may excavate new setts prior to the construction phase, with any new setts potentially subject to destruction or disturbance as a result of construction activities (depending on location). Retained setts and commuting and foraging badgers may be subject to disturbance from artificial lighting. Open excavations within the Site may result in injury or mortality to badgers.	Minor Adverse (not significant) D & I / P & T ST	Pre-construction walkover survey to identify any new or re-colonised setts within the construction area. Avoidance of impacts to identified setts wherever possible, or otherwise obtain licence to close relevant setts from Natural England. All works to close setts to be completed in accordance with the mitigation strategy submitted to and agreed by Natural England. Production of a CEMP to include environmental best practice measures. Provision of a sensitive lighting strategy to avoid or otherwise minimise light spill.	Negligible (not significant) D & I / P & T ST
Reptiles	Vegetation and Site clearance in areas of suitable reptile habitat	Minor to Moderate	Production of a PMoW to include appropriate working	Minor Adverse (not significant)

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
	may result in the killing or injury of individual reptiles, including hibernating adder. Unavoidable loss of suitable habitat through partial hedgerow clearance. Landscaping which may provide a replacement for lost nesting habitat is unlikely to become fully established during the construction phase.	Adverse (significant) D / P	methods for vegetation clearance with regards to reptiles.	ST / T
Amphibians	Low risk of Site clearance of suitable terrestrial habitat within 500m of Waterbodies 19 and 20 resulting in the killing or injury of individual amphibians, including great crested newt and common toad. Unavoidable loss of suitable habitat through partial hedgerow clearance. Landscaping which may provide a replacement for lost nesting habitat is unlikely to become fully established during the construction phase.	Minor Adverse (not significant) D & I / P & T ST	Production of a PMoW to include appropriate working methods for vegetation clearance with regards to amphibians. Works to cease immediately and advice from Natural England in the unlikely event that great crested newt are encountered during Site clearance.	Minor Adverse (not significant) D / T ST
Operational Phase				
On-Site Habitats	Leaks and spillages occurring resulting in physical contamination of surface waterbodies could detrimentally affect the nature conservation value of on-Site habitats. Proposed landscaping is expected to provide enhancements to retained hedgerows and the Barkham Brook within the Site.	Minor to Moderate Adverse (significant) for river HPI and hedgerow HPI I / P Minor to Moderate Beneficial (significant) for	Sufficient SuDS will be provided within the Site and will be appropriately maintained throughout the lifespan of the Proposed Development. Newly created habitats will be subject to management and monitoring in accordance with a	Negligible (not significant) for river HPI and hedgerow HPI with regards to contamination I / P Minor to Moderate Beneficial (Significant) for river HPI and hedgerow HPI

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
		river HPI and hedgerow HPI D / P	LEMP produced for the Proposed Development.	with regards to landscaping D / P
Roosting Bats	Proposed landscaping is expected to provide additional roosting opportunities for bats, as new specimen and woodland carbon sink planting matures and develops potential roosting features. However, artificial lighting associated with security and maintenance has the potential to spill on to retained and newly planted trees, which can deter roosting bats from emerging from the roost to feed. If this impact is prolonged, there may be detrimental impacts on the growth and survival rates of young bats.	Minor Adverse (not significant) with regards to operational lighting D / P Minor Beneficial (not significant) with regards to proposed landscaping D / P	A sensitive lighting strategy will be produced for operational lighting, which will seek to avoid or minimise light spill onto vegetated areas and to use appropriate luminaires and lighting regimes. The lighting strategy will be reviewed by an ecologist for suitability prior to implementation. Newly created habitats will be subject to management and monitoring in accordance with a LEMP produced for the Proposed Development.	Negligible (not significant) with regards to operational lighting D / P Minor Beneficial (not significant) with regards to proposed landscaping D / P
Commuting and Foraging Bats	Proposed landscaping is expected to provide additional commuting and foraging opportunities for bats, through the provision of species-rich and meadow grassland planting, as well as new hedgerow planting, carbon sink woodland planting and buffer planting. However, artificial lighting associated with security and maintenance has the potential to spill on to retained and newly landscaped vegetated areas, which can deter commuting and	Minor Adverse (not significant) with regards to operational lighting D / P Minor to Moderate Beneficial (significant) with regards to proposed landscaping D / P	A sensitive lighting strategy will be produced for operational lighting, which will seek to avoid or minimise light spill onto vegetated areas and to use appropriate luminaires and lighting regimes. The lighting strategy will be reviewed by an ecologist for suitability prior to implementation. Newly created habitats will be subject to management and monitoring in accordance with a	Negligible (not significant) with regards to operational lighting D / P Minor to Moderate Beneficial (significant) with regards to proposed landscaping D / P

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
	foraging bats from using these areas.		LEMP produced for the Proposed Development.	
Badger	Proposed landscaping is expected to provide additional habitat for badger sett creation, as well as badger commuting and foraging activity, through the provision of species-rich and meadow grassland planting, as well as new hedgerow planting, carbon sink woodland planting and buffer planting. The perimeter fencing is not expected to be a barrier to badgers as it will not be dug below ground level. However, artificial lighting associated with security and maintenance has the potential to spill on to retained and newly landscaped vegetated areas, which could deter badgers from leaving setts or from using areas for foraging or commuting.	Minor Adverse (not significant) with regards to operational lighting D / P Minor to Moderate Beneficial (significant) with regards to proposed landscaping D / P	A sensitive lighting strategy will be produced for operational lighting, which will seek to avoid or minimise light spill onto vegetated areas and to use appropriate luminaires and lighting regimes. The lighting strategy will be reviewed by an ecologist for suitability prior to implementation. Suitable locations for badger gates within the security fencing will be considered at detailed design stage. Newly created habitats will be subject to management and monitoring in accordance with a LEMP produced for the Proposed Development.	Negligible (not significant) with regards to operational lighting Minor to Moderate Beneficial (significant) with regards to proposed landscaping D / P
Reptiles	Proposed landscaping is expected to provide additional basking, foraging and shelter habitat for reptiles, including provision of new meadow and species-rich grassland, hedgerow and native buffer planting, and carbon sink woodland planting, as well as reptile refugia provision.	Minor Beneficial (not significant) D / P	Newly created habitats will be subject to management and monitoring in accordance with a LEMP produced for the Proposed Development.	Minor Beneficial (not significant) D / P

Key to table:

+ / - = Beneficial or Adverse P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable.

4.9. REFERENCES

- **Reference 4.1:** The Mammal Society (2017) Ecobat data tool. Available from: <http://www.ecobat.org.uk/>. [Accessed July 2021].
- **Reference 4.2:** Institute of Lighting Professionals (2018) Guidance Note 08/18: Bats and artificial lighting in the UK. Bat Conservation Trust, London.
- **Reference 4.3:** Bat Tree Habitat Key (2020) Bat Tree Habitat Key – 4th Edition. AEcol, Bridgwater.
- **Reference 4.4:** Wokingham Borough Council (2014) Wokingham Borough Council Development Plan – Adopted Managing Development Delivery Local Plan (February 2014).

5. CULTURAL HERITAGE

5.1. INTRODUCTION

- 5.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from and to the Revised Development upon Cultural Heritage.

5.2. CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION

- 5.2.1. A meeting was held with officers on 9th June 2021 to discuss consultation responses on heritage and landscape following the submission of the planning application. This was followed by a design meeting held on 18th June 2021 to discuss and agree changes to the Proposed Development with respect to cultural heritage and landscape constraints.

SCOPE

- 5.2.2. Following a review of the design changes described in **Table 2-1**, the associated figures contained in **Appendix 2-1** and the consultation feedback on heritage and landscape from WBC officers, no changes to the scope of assessment have been made following the previously submitted March 2021 ES. The following areas of scope require updates due to the Revised Development:
- Assessment of potential effects, additional mitigation, residual effects and monitoring during construction; and
 - Assessment of potential effects, additional mitigation, residual effects and monitoring during operational phase.
- 5.2.3. The Historic Environment Desk-Based Assessment (HEDBA) has also been updated (March 2021 ES Appendix 7-1). The updated HEDBA is attached as **Appendix 5-1** to this Addendum.
- 5.2.4. The extent of the study area remains the same as that stated in paragraphs 7.2.12 and 7.2.13 of the previously submitted March 2021 ES.

METHODOLOGY

- 5.2.5. The methodology for the baseline and construction/operational phase assessments remain the same as previously submitted in the March 2021 ES.

SIGNIFICANCE CRITERIA

- 5.2.6. The significance criteria remain the same as that set out in Table 7-3 of the previously submitted March 2021 ES.

5.3. LEGISLATIVE FRAMEWORK, POLICY AND GUIDANCE

- 5.3.1. The below legislative and planning policy change has occurred since the March 2021 ES was submitted and has been considered in this assessment:
- Revised National Planning Policy Framework (NPPF) was published on 20th July 2021 (**Ref 2.1**). Section 16 'Conserving and enhancing the historic environment' was updated as part of the revised NPPF.

5.4. BASELINE CONDITIONS

- 5.4.1. A geophysical survey was conducted in four land parcels of the Site in July 2021, comprising approximately 12ha. The results do not change the baseline and therefore the baseline conditions remain the same as previously submitted in the March 2021 ES.

5.5. SENSITIVE RECEPTORS

- 5.5.1. The sensitive receptors remain the same as previously submitted in the March 2021 ES.

5.6. ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

- 5.6.1. **Table 5-1** provides a summary of the effects previously assessed within the March 2021 ES and the impacts the Revised Development will have on these effects.

Table 5-1 - Summary of the Effects Previously Assessed – Cultural Heritage

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Direct, permanent, long-term minor adverse residual effect on Pillbox on Commonfield Lane ('not significant') during operational phase.	N/A	No.
Direct, permanent, long-term moderate adverse residual effect on Moated site and associated enclosure at Church Farm ('significant') during operational phase.	Proposed retained and enhanced native planting buffer, as well as an increased buffer area at the moated site's north-east and south-east boundary, in the form of meadow planting. Re-aligned Greenway and relocation of sub-station.	No.
Direct, permanent, long-term moderate adverse residual effect on Church Cottage ('significant') during operational phase.	Proposed increased buffer area at the asset's south-east boundary, in the form of meadow planting. Re-aligned Greenway and relocation of sub-station.	No.
Direct, permanent, long-term moderate adverse residual effect on the Church of St James ('significant') during operational phase.	Proposed retained and enhanced native planting and a green buffer area. Proposed increased buffer area between the churchyard and the solar panels, in the form of wildflower planting.	No.
Direct, permanent, long-term minor adverse residual effect on Brook Farm House ('not significant') during operational phase.	Proposed retained and enhanced native planting and a green buffer.	No.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Direct, permanent, long-term moderate adverse residual effect on Barkham Square ('significant') during operational phase.	Proposed retained and enhanced native planting and green buffer. Relocation of sub-station.	No.
Direct, permanent, long-term minor adverse residual effect on Wall to Barkham Manor ('not significant') during operational phase.	N/A	No.
Direct, permanent, long-term minor adverse residual effect on Barkham Manor ('not significant') during operational phase.	N/A	No.
Direct, permanent, long-term minor adverse residual effect on Bearwood College registered park and garden ('not significant') during operational phase.	N/A	No.
Direct, permanent, long-term moderate adverse effects during construction — Prehistoric remains	Possible use of concrete pad foundations, which sit on the ground surface, rather than piled foundations, for the photo-voltaic cells. Use of alternative construction technique only to be considered if significant heritage assets are found which would prevent use of traditional piled foundations.	Yes.
Direct, permanent, long-term moderate adverse effects during construction — Roman remains	Possible use of concrete pad foundations, which sit on the ground surface, rather than piled foundations, for the photo-voltaic cells. Use of alternative construction technique only to be considered if significant heritage assets are found which would prevent use of traditional piled foundations.	Yes.
Direct, permanent, long-term moderate adverse effects during construction — Early medieval remains	Possible use of concrete pad foundations, which sit on the ground surface, rather than piled foundations, for the photo-voltaic cells. Use of alternative construction technique only to be considered if significant heritage assets are found which would	Yes.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
	prevent use of traditional piled foundations.	
Direct, permanent, long-term moderate adverse effects during construction – Later medieval remains	Proposed retained and enhanced native planting buffer, as well as an increased buffer area at the moated site's north-east and south-east boundary, in the form of meadow planting. Possible use of concrete pad foundations, which sit on the ground surface, rather than piled foundations, for the photo-voltaic cells. Use of alternative construction technique only to be considered if significant heritage assets are found which would prevent use of traditional piled foundations.	Yes.
Direct, permanent, long-term minor adverse effects during construction – Post-medieval remains	Possible use of concrete pad foundations which sit on the ground surface, rather than piled foundations, for the photo-voltaic cells. Use of alternative construction technique only to be considered if significant heritage assets are found which would prevent use of traditional piled foundations.	Yes.

REASSESSMENT OF EFFECTS

5.6.2. Tables 5-2 below provides the reassessment of effects for the Revised Development.

CONSTRUCTION PHASE

Table 5-2 - Construction Phase Effects – Cultural Heritage

Element	Reassessment of Effects	Mitigation	Residual Effects
Prehistoric remains	There are no additional effects from those noted in the March 2021 ES.	Archaeological evaluation by geophysical survey of areas not surveyed in July 2021 and targeted trial trenching will be undertaken.	Negligible (not significant)

		If remains of very high significance are present, warranting preservation in situ, design adjustments may be required. For example, concrete pad foundations which sit on the ground surface, rather than piled foundations, will be used for the photo-voltaic cells. For remains of lesser significance mitigation could comprise targeted archaeological excavation in advance of construction or a watching brief during ground works. This would ensure that significant archaeological assets are preserved by record, prior to removal.	
Roman remains	There are no additional effects from those noted in the March 2021 ES.	Archaeological evaluation by geophysical survey of areas not surveyed in July 2021 and targeted trial trenching will be undertaken. If remains of very high significance are present, warranting preservation in situ, design adjustments may be required. For example, concrete pad foundations which sit on the ground surface, rather than piled foundations, will be used for the photo-voltaic cells. For remains of lesser significance mitigation could comprise targeted archaeological excavation in advance of construction or a watching brief during ground works. This would ensure that significant archaeological assets are preserved by record, prior to removal.	Negligible (not significant)

Early medieval; remains	There are no additional effects from those noted in the March 2021 ES.	Archaeological evaluation by geophysical survey of areas not surveyed in July 2021 and targeted trial trenching will be undertaken. If remains of very high significance are present, warranting preservation in situ, design adjustments may be required. For example, concrete pad foundations which sit on the ground surface, rather than piled foundations, will be used for the photo-voltaic cells. For remains of lesser significance mitigation could comprise targeted archaeological excavation in advance of construction or a watching brief during ground works. This would ensure that significant archaeological assets are preserved by record, prior to removal.	Negligible (not significant)
Later medieval remains	There are no additional effects from those noted in the March 2021 ES.	Archaeological evaluation by geophysical survey of areas not surveyed in July 2021 and targeted trial trenching will be undertaken. If remains of very high significance are present, warranting preservation in situ, design adjustments may be required. For example, concrete pad foundations which sit on the ground surface, rather than piled foundations, will be used for the photo-voltaic cells. For remains of lesser significance mitigation could comprise targeted archaeological excavation in advance of construction or a watching brief during ground works. This would	Negligible (not significant)

		ensure that significant archaeological assets are preserved by record, prior to removal.	
Post-medieval remains	There are no additional effects from those noted in the March 2021 ES.	Archaeological evaluation by geophysical survey of areas not surveyed in July 2021 and targeted trial trenching will be undertaken. If remains of very high significance are present, warranting preservation in situ, design adjustments may be required. For example, concrete pad foundations which sit on the ground surface, rather than piled foundations, will be used for the photo-voltaic cells. For remains of lesser significance mitigation could comprise targeted archaeological excavation in advance of construction or a watching brief during ground works. This would ensure that significant archaeological assets are preserved by record, prior to removal.	Negligible (not significant)
Moated site and associated enclosure at Church Farm (scheduled monument)	The proposed retained and enhanced native planting buffer, as well as an increased buffer area at the moated site's north-east and south-east boundary, in the form of meadow planting would remove any possible impact from root action on the Scheduled Monument	No further mitigation required.	Negligible (not significant)

5.7. DIFFICULTIES AND UNCERTAINTIES

5.7.1. The limitations and assumptions remain the same as previously submitted in the March 2021 ES.

5.8. SUMMARY

5.8.1. **Table 5-3** summarises the reassessment for Cultural Heritage.

Table 5-3 - Summary of Effects for Cultural Heritage

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
Construction Phase				
Prehistoric remains	There are no additional effects from those noted in the March 2021 ES.	Foundation construction, PV mounting piles and new service trenches resulting in a moderate adverse effect (significant) . P / D / LT	Archaeological evaluation by geophysical survey of areas not surveyed in July 2021 and targeted trial trenching will be undertaken.	Negligible (not significant) N/A
Roman remains	There are no additional effects from those noted in the March 2021 ES.	Foundation construction, PV mounting piles and new service trenches resulting in a moderate adverse effect (significant) . P / D / LT	If remains of very high significance are present, warranting preservation in situ, design adjustments may be required. For example, concrete pad foundations which sit on the ground surface, rather than piled foundations, will be used for the photo-voltaic cells.	Negligible (not significant) N/A
Early medieval; remains	There are no additional effects from those noted in the March 2021 ES.	Foundation construction, PV mounting piles and new service trenches resulting in a moderate adverse effect (significant) . P / D / LT	For remains of lesser significance mitigation could comprise targeted archaeological excavation in advance of construction or a watching brief during ground works. This would ensure that significant archaeological assets are preserved by record, prior to removal.	Negligible (not significant) N/A
Later medieval remains	There are no additional effects from those noted in the March 2021 ES.	Foundation construction, PV mounting piles and new service trenches resulting in a moderate adverse effect (significant) . P / D / LT		Negligible (not significant) N/A
Post-medieval remains	There are no additional effects from those noted in the March 2021 ES.	Foundation construction, PV mounting piles and new service trenches resulting in a moderate adverse effect (significant) . P / D / LT		Negligible (not significant) N/A

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
Moated site and associated enclosure at Church Farm (scheduled monument)	The proposed retained and enhanced native planting buffer, as well as an increased buffer area at the moated site's north-east and south-east boundary, in the form of meadow planting would remove any possible impact from root action on the Scheduled Monument	Foundation construction, PV mounting piles and new service trenches resulting in a minor adverse effect (significant) . P / D / LT	No further mitigation required.	Negligible (not significant) N/A

Key to table:

+ / - = Beneficial or Adverse P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable.

6. LANDSCAPE AND VISUAL IMPACT ASSESSMENT

6.1. INTRODUCTION

- 6.1.1. This chapter reports the outcome of the assessment of likely significant effects arising from and to the Revised Development upon landscape and visual impacts.

6.2. CONSULTATION, SCOPE, METHODOLOGY AND SIGNIFICANCE CRITERIA

CONSULTATION

- 6.2.1. Consultee feedback on the Proposed Development has been received since the submission of the planning application in March 2021. The comments received broadly relate to the landscape proposals as follows:

- A request to amend the landscape design adjacent to Church Cottages, removing proposed screen planting in response to concerns over the impact planting would have on heritage assets and to maintain the open views currently received by the cottages;
- A request to amend the landscape design around Church Cottages to increase the buffer between the cottages and the solar panels to 25m and removal of the greenway;
- A request for an additional viewpoint and visualisation from Barkham Ride looking towards St. James' Church and Church Cottages;
- A request to amend the landscape design around the watercourse to help the proposal meet the 10% BNG for wetland habitat;
- Removal of part of the site next to High Barn Farm and the realignment of the Greenway east of the overhead power line and new connection to bridleway (BR11) provided on the northern side of Barkham Ride; and
- Consideration of planting species mixes to recognise different soils/geology.

SCOPE

- 6.2.2. Following a review of the design changes described in **Table 2-1**, the associated figures contained in **Appendix 2-1** and the consultation feedback, no changes to the scope of assessment have been made following the previously submitted March 2021 ES, other than the addition of a visual sensitive receptor, as detailed in Section 6.5 below. The following areas of scope require updates due to the Revised Development:

- Landscape Character Assessment; and
- Visual Impact Assessment.

- 6.2.3. The following ES figures have been updated and are attached in **Appendix 6-1**:

- **Figure 8-7:** Viewpoint Location Plan; and
- **Figure 8-9:** Visual Assessment Photomontages.

- 6.2.4. The extent of the study area remains the same as that stated in paragraph 8.2.8 of the previously submitted March 2021 ES.

METHODOLOGY

- 6.2.5. The methodology for the baseline and construction/operational phase assessments remain the same as previously submitted in the March 2021 ES.

SIGNIFICANCE CRITERIA

- 6.2.6. The significance criteria remain the same as that set out in paragraph 8.2.36 of the previously submitted March 2021 ES.

6.3. LEGISLATIVE FRAMEWORK, POLICY AND GUIDANCE

- 6.3.1. The below legislative and planning policy change has occurred since the March 2021 ES was submitted and has been considered in this assessment:
- Revised National Planning Policy Framework (NPPF) was published on 20th July 2021 (**Ref 2.1**).

6.4. BASELINE CONDITIONS

- 6.4.1. The baseline conditions remain the same as previously submitted in the March 2021 ES.

6.5. SENSITIVE RECEPTORS

- 6.5.1. The landscape sensitive receptors remain the same as previously submitted in the March 2021 ES. The visual sensitive receptors remain the same as previously submitted in the March 2021 ES, with the addition of visual receptor 17, from Barkham Ride looking north.

6.6. ASSESSMENT OF POTENTIAL EFFECTS, MITIGATION AND RESIDUAL EFFECTS

- 6.6.1. **Table 6-1** provides a summary of the effects previously assessed within the March 2021 ES and the impacts the Revised Development will have on these effects.

Table 6-1 - Summary of the Effects Previously Assessed - LVIA

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Landscape Character Area: J2: Arborfield Cross and Barkham Settled and Farmed Clay	Retention of the part of the Site adjacent to High Barn Farm as farmland will reduce the overall loss of agricultural land. However, the majority of the remaining fields within the Site boundary will be converted to PV installation, and will therefore still result in an impact to landscape character.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment. Despite the retention of farmland in the south-west of the Site, there will still be some loss of agricultural land in the remaining site. The assessment of impact on this landscape character area at both construction and operation are not likely to be impacted by the changes.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
Landscape Character Area: M1: Finchampstead Forested and Settled Sands	Retention of the part of the Site adjacent to High Barn Farm as farmland will reduce the area of land converted to PV that lies adjacent to the character area. However, the majority of the remaining fields within the Site boundary will be converted to PV installation, and will therefore still result in an impact to landscape character.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment. Despite the retention of farmland in the south-west of the Site, there will still be areas of the remaining site converted to PV near the landscape character area. The assessment of impact on this landscape character area at both construction and operation are not likely to be impacted by the changes.
R1 Barkham Ride in the vicinity of Barkham Ride Car Dealers – Transport receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R2 Public Right of Way BR14 – Recreational receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R3 Oregon Walk and Maryland – Residential receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R4 Public Right of Way BR14 (looking north) – Recreational receptor	Retention of the part of the Site adjacent to High Barn Farm as farmland will reduce the area of land converted to PV that lie adjacent to the PRoW.	Yes, the Potential Effects on receptor R4 prior to mitigation are now likely to be reduced as a result of the retention of land in the south of the Site.
R5 Archer Grove – Residential receptor	Retention of the part of the Site adjacent to High Barn Farm as farmland will reduce the area of land converted to PV that lie adjacent to the PRoW.	Yes, the Potential Effects on receptor R5 prior to mitigation are now likely to be reduced as a result of the retention of land in the south of the Site.
R6 Junction of Commonfield Lane/ Barkham Ride – Transport receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R7 Public Right of Way BR11 (looking east) – Recreational receptor	Removal of proposed additional planting adjacent to PRoW (BR11).	The Potential Effects on receptor R7 prior to mitigation are now likely to be increased as a result of the amendments to the planting proposals.

Effect assessed in March 2021 ES	Description of Change in Revised Development	Are the Changes likely to affect the March 2021 Assessment?
R8 Church Cottages – Residential receptor	Removal of proposed additional planting adjacent to the Church Cottages and increase in buffer between the property and solar panels.	The Potential Effects on receptor R8 prior to mitigation are now likely to be increased as a result of the amendments to the planting proposals and PV layout.
R9 Public Right of Way FP10a – Recreational receptor	Removal of proposed semi-mature tree planting adjacent to the PRow.	No changes to the assessment of Potential Effects prior to mitigation. Residual Effects likely to increase from the March 2021 Assessment.
R10 Public Right of Way FP10 – Recreational receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R11 Public Right of Way FP9 – Recreational receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R12 Church of St. James – Recreational receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R13 Public Right of Way FP7 – Recreational receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R14 Barkham Road – Transport receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R15 Barkham Road – Residential receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.
R16 Public Right of Way BR14 (looking north) – Recreational receptor	None.	No changes to the assessment of Potential Effects or Residual Effects from the March 2021 Assessment.

REASSESSMENT OF EFFECTS

6.6.2. Table 6-2 and Table 6-3 below provide the reassessment of effects for the Revised Development.

CONSTRUCTION PHASE

Table 6-2 - Construction Phase Effects - LVIA

Element	Reassessment of Effects	Mitigation	Residual Effects
R4 Public Right of Way BR14 (looking north) – Recreational receptor	Due to the removal of the PV panels in the field directly north of the visual receptor the construction related activities involved in the solar farm would be located further to the east. There is a low risk of peripheral glimpsed views from this location to the construction activities. The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to be Negligible. Therefore, there is likely to be indirect, temporary Minor adverse effects on receptor R4 (not significant) prior to the implementation of mitigation measures.	A Construction Environmental Management Plan (CEMP) will be produced for the Proposed Development in advance of the construction phase. The CEMP will include best practice measures to minimise the effect of dust, noise, and light on the surrounding environment.	The sensitivity of visual receptor R4 is considered to be High, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be a Negligible effect on receptor R4 (not significant) following the implementation of mitigation measures.
R5 Archer Grove – Residential receptor	Due to the removal of the PV panels in the field directly east of the visual receptor the construction related activities involved in the solar farm would be located further to the east beyond existing field boundaries. There is a low risk of glimpsed distant views from this location to the construction activities. The sensitivity of the visual receptor is considered to be Medium, and the magnitude of change in the absence of mitigation is considered to be Negligible. Therefore, there is likely to be indirect, temporary Negligible adverse effects on receptor	A Construction Environmental Management Plan (CEMP) will be produced for the Proposed Development in advance of the construction phase. The CEMP will include best practice measures to minimise the effect of dust, noise, and light on the surrounding environment.	The sensitivity of visual receptor R5 is considered to be Medium, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be a Negligible effect on receptor R5 (not significant) following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
	R5 (not significant) prior to the implementation of mitigation measures.		
R7 Public Right of Way BR11 (looking east) – Recreational receptor	The screen planting proposed in the previous planning application submitted in March 2021 is now removed. The risk of direct views from this location to the construction activities is high. The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct, temporary Moderate adverse effects on receptor R7 (significant) prior to the implementation of mitigation measures.	A Construction Environmental Management Plan (CEMP) will be produced for the Proposed Development in advance of the construction phase. The CEMP will include best practice measures to minimise the effect of dust, noise, and light on the surrounding environment.	The sensitivity of visual receptor R7 is considered to be High, and the magnitude of change, following mitigation, is considered to be Medium. Therefore, there is likely to be a Moderate adverse effect on receptor R7 (significant) following the implementation of mitigation measures.
R8 Church Cottages – Residential receptor	The screen planting proposed in the previous planning application submitted in March 2021 is now removed, however the buffer between the properties and the PV panels has been increased. The risk of direct views from this location to the construction activities is high. The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct, temporary Moderate adverse effects on receptor R8 (significant) prior to the implementation of mitigation measures.	A Construction Environmental Management Plan (CEMP) will be produced for the Proposed Development in advance of the construction phase. The CEMP will include best practice measures to minimise the effect of dust, noise, and light on the surrounding environment.	The sensitivity of visual receptor R8 is considered to be High, and the magnitude of change, following mitigation, is considered to be Medium. Therefore, there is likely to be a Moderate adverse effect on receptor R8 (significant) following the implementation of mitigation measures.
R9 Public Right of Way FP10a – Recreational receptor	The semi-mature tree planting proposed in the previous planning application submitted in March 2021 is now removed due to issues with overshadowing the solar panels. The risk of direct views from this location to the construction activities is high.	A Construction Environmental Management Plan (CEMP) will be produced for the Proposed Development in advance of the construction phase. The CEMP will include best practice measures to	The sensitivity of visual receptor R9 is considered to be High, and the magnitude of change, following mitigation, is considered to be Medium. Therefore, there is likely to be a Moderate adverse effect on

Element	Reassessment of Effects	Mitigation	Residual Effects
	The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct, temporary Moderate adverse effects on receptor R9 (significant) prior to the implementation of mitigation measures.	minimise the effect of dust, noise, and light on the surrounding environment.	receptor R9 (significant) following the implementation of mitigation measures.
R17 Barkham Ride - Transport receptor	The sensitivity of this additional visual receptor is considered to be low. It is not a designated view and does not have any culturally or locally important associations. The existing direct views across open fields towards the church cottages are experienced intermittently between stretches of existing hedgerow. The receptors include those travelling on Barkham Ride with some appreciation of their surroundings, but views will be transient and secondary to their employment (typically of getting from A to B). The susceptibility of the view to the change of the nature of the Proposed Development is therefore low. Views of construction activities will be noticeable but not the focal point within the view and experienced through existing vegetation. The temporary nature of construction also results in the magnitude of effect being reduced. The magnitude of change in the absence of mitigation during construction is considered to be Small. The sensitivity of the visual receptor is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Small. Therefore, there is likely to be indirect, temporary Minor adverse effects on receptor R17 (not	A Construction Environmental Management Plan (CEMP) will be produced for the Proposed Development in advance of the construction phase. The CEMP will include best practice measures to minimise the effect of dust, noise, and light on the surrounding environment.	The sensitivity of visual receptor R17 is considered to be Low, and the magnitude of change, following mitigation, is considered to be Small. Therefore, there is likely to be a Minor adverse effect on receptor R17 (not significant) following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
	significant) prior to the implementation of mitigation measures.		

OPERATIONAL PHASE

Table 6-3 - Operational Phase Effects - LVIA

Element	Reassessment of Effects	Mitigation	Residual Effects
R4 Public Right of Way BR14 (looking north) – Recreational receptor	Due to the removal of the PV panels in the field directly north of the visual receptor the solar farm would be located further to the east beyond existing retained field boundaries. There is a low risk of peripheral glimpsed views from this location to the PV panels. The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to be Low. Therefore, there is likely to be indirect, permanent Minor adverse effects on receptor R4 (not significant) prior to the implementation of mitigation measures.	The landscape masterplan for the Proposed Development has been updated to include a band of scrub planting beyond the existing field boundaries and between the receptor and the solar panels. This scrub planting would be relatively low in height but still provide screening to the receptor.	The sensitivity of visual receptor R4 is considered to be High, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be a Negligible effect on receptor R4 (not significant) following the implementation of mitigation measures.
R5 Archer Grove – Residential receptor	Due to the removal of the PV panels in the field directly east of the visual receptor the solar farm would be located further to the east beyond existing retained field boundaries. There is a low risk of glimpsed views from this location to the PV panels. The sensitivity of the visual receptor is considered to be Medium, and the magnitude of change in the absence of mitigation is considered to be Low. Therefore, there is likely to be indirect, permanent	The landscape masterplan for the Proposed Development has been updated to include a band of scrub planting beyond the existing field boundaries and between the receptor and the solar panels. This scrub planting would be relatively low in height but still provide screening to the receptor.	The sensitivity of visual receptor R5 is considered to be Medium, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be a Negligible effect on receptor R5 (not significant) following the implementation of mitigation measures.

Element	Reassessment of Effects	Mitigation	Residual Effects
	Minor adverse effects on receptor R5 (not significant) prior to the implementation of mitigation measures.		
R7 Public Right of Way BR11 (looking east) – Recreational receptor	The screen planting proposed between the visual receptor and the solar panels in the previous planning application submitted in March 2021 is now removed. The risk of direct views from this location to the solar farm is high. The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to be High. Therefore, there is likely to be direct, temporary Major adverse effects on receptor R7 (significant) prior to the implementation of mitigation measures.	The mitigation planting proposed in the planning application submitted in March 2021 has been removed to maintain the open views from the PRoW. Wildflower meadow is proposed between the PRoW and the solar farm.	The sensitivity of visual receptor R7 is considered to be High, and the magnitude of change, following mitigation, is considered to be High. Therefore, there is likely to be a Major adverse effect on receptor R7 (significant) following the implementation of mitigation measures. It is noted, however, that the introduction of the proposed greenway will likely reduce the frequency of future use of PRoW BR11.
R8 Church Cottages – Residential receptor	The screen planting proposed in the previous planning application submitted in March 2021 is now removed, however the buffer between the properties and the PV panels has been increased. The risk of direct views from this location through existing vegetation to the solar farm is high. The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct, temporary Moderate adverse effects on receptor R8 (significant) prior to the implementation of mitigation measures.	The mitigation planting proposed in the planning application submitted in March 2021 has been removed to maintain the open views from the Church Cottages as well as ensuring no impact on the moat. Wildflower meadow is proposed between the properties and the solar farm.	The sensitivity of visual receptor R8 is considered to be High, and the magnitude of change, following mitigation, is considered to be Medium. Therefore, there is likely to be a Moderate adverse effect on receptor R8 (significant) following the implementation of mitigation measures.
R9 Public Right of Way FP10a –	The semi-mature tree planting proposed in the previous planning application submitted in March 2021 is now removed due to issues with	The removal of the proposed specimen trees from the landscape masterplan reduces the visual	The sensitivity of visual receptor R9 is considered to be High, and the magnitude of change, following

Element	Reassessment of Effects	Mitigation	Residual Effects
Recreational receptor	overshadowing the solar panels. The risk of direct views from this location to the construction activities is high. The sensitivity of the visual receptor is considered to be High, and the magnitude of change in the absence of mitigation is considered to remain Large. Therefore, there is likely to be direct, permanent Major adverse effects on receptor R9 (significant) prior to the implementation of mitigation measures.	amenity and interest for the users of the PRow, however the long distance views north-west towards Barkham are retained. Mitigation planting proposed is wildflower meadow.	mitigation, is considered to be Large. Therefore, there is likely to be a Major adverse effect on receptor R9 (significant) following the implementation of mitigation measures.
R17 Barkham Ride - Transport receptor	The sensitivity of this additional visual receptor is considered to be low. Visual receptors travelling on Barkham Ride will receive near distance intermittent views of the Proposed Development looking north. Views are screened for the most part by existing hedgerow between the field and Barkham Ride. A large portion of the existing open views is of arable fields with Church Cottages in the background. The introduction of built elements into the landscape will be a notable new feature in the open views and will form a noticeable contrast to the existing view. The magnitude of change in the absence of mitigation is considered to be Medium. The sensitivity of the visual receptor is considered to be Low, and the magnitude of change in the absence of mitigation is considered to be Medium. Therefore, there is likely to be direct, temporary Moderate adverse effects on receptor R17 (significant) prior to the implementation of mitigation measures.	The proposed enhancement to the existing hedgerow will have established by Year 15 and strengthen the screening effect along Barkham Ride. The only open view north will be where the proposed Greenway crosses the road and access is gained to the substation. Users of Barkham Ride will be screened from the Proposed Development for the most part, however, will receive direct views of the solar panels at this opening.	The sensitivity of visual receptor R17 is considered to be Low, and the magnitude of change, following mitigation, is considered to be Small. Therefore, there is likely to be a Minor adverse effect on receptor R17 (not significant) following the implementation of mitigation measures.

6.7. DIFFICULTIES AND UNCERTAINTIES

6.7.1. The limitations and assumptions remain the same as previously submitted in the March 2021 ES.

6.8. SUMMARY

6.8.1. **Table 6-4** summarises the reassessment for LVIA.

Table 6-4 - Summary of Effects for LVIA

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
Construction Phase				
R4 Public Right of Way BR14 (looking north) – Recreational receptor	There is a low risk of peripheral glimpsed views from this location to the construction activities.	Minor Adverse (not significant) - / T / I / ST	Production of a CEMP to include environmental best practice measures.	Negligible (not significant) T / I / ST
R5 Archer Grove – Residential receptor	There is a low risk of glimpsed distant views from this location to the construction activities.	Negligible (not significant) T / I / ST		Negligible (not significant) T / I / ST
R7 Public Right of Way BR11 (looking east) – Recreational receptor	The risk of direct views from this location to the construction activities is high.	Moderate adverse (significant) - / T / D / ST		Moderate adverse (significant) - / T / D / ST
R8 Church Cottages – Residential receptor	The risk of direct views from this location to the construction activities is high.	Moderate adverse (significant) - / T / D / ST		Moderate adverse (significant) - / T / D / ST
R9 Public Right of Way FP10a – Recreational receptor	The risk of direct views from this location to the construction activities is high.	Moderate adverse (significant) - / T / D / ST		Moderate adverse (significant) - / T / D / ST
R17 Barkham Ride - Transport receptor	There is a high risk of direct yet intermittent views from this location to the construction activities	Minor adverse (not significant) - / T / I / ST		Minor adverse (not significant) - / T / I / ST

Receptor	Description of Effects	Significance of Effects prior to Mitigation	Summary of Secondary Mitigation	Significance of Residual Effects
Operational Phase				
R4 Public Right of Way BR14 (looking north) – Recreational receptor	There is a low risk of peripheral glimpsed views from this location to the PV panels.	Minor adverse (not significant) - / P / I	Scrub planting beyond the existing field boundaries and between the receptor and the solar panels.	Negligible (not significant) N/A
R5 Archer Grove – Residential receptor	There is a low risk of glimpsed views from this location to the PV panels.	Minor adverse (not significant) - / P / I	Scrub planting beyond the existing field boundaries and between the receptor and the solar panels.	Negligible (not significant) N/A
R7 Public Right of Way BR11 (looking east) – Recreational receptor	The risk of direct views from this location to the solar farm is high.	Major adverse (significant) - / P / D / LT	No mitigation proposed between receptor and solar farm	Major adverse (significant) - / P / D / LT
R8 Church Cottages – Residential receptor	The risk of direct views from this location through existing vegetation to the solar farm is high.	Moderate adverse (significant) - / P / ID / LT	No mitigation proposed between receptor and solar farm	Moderate adverse (significant) - / P / ID / LT
R9 Public Right of Way FP10a – Recreational receptor	The risk of direct views from this location to the construction activities is high.	Major adverse (significant) - / P / D / LT	No mitigation proposed between receptor and solar farm	Major adverse (significant) - / P / D / LT
R17 Barkham Ride - Transport receptor	There is a high risk of direct yet intermittent views from this location to the solar farm.	Moderate adverse (significant) - / P / ID / LT	No mitigation proposed between receptor and solar farm	Minor adverse (not significant) - / P / ID / LT

Key to table:

+ / - = Beneficial or Adverse P / T = Permanent or Temporary, D / I = Direct or Indirect, ST / MT / LT = Short Term, Medium Term or Long Term, N/A = Not Applicable.

7. CUMULATIVE EFFECTS

7.1. INTRODUCTION

- 7.1.1. This chapter of the ES Addendum reports the likely significant cumulative effects resulting from the Revised Scheme and should be read alongside Chapter 9 – Cumulative Effects of the March 2021 ES. Cumulative effects can occur as either interactions between effects associated with a single development or interactions between the effects of a number of developments on the same receptor. Developments with the potential to result in cumulative effects are hereafter referred to as 'committed developments'. As with the March 2021 ES, two types of cumulative effect have been assessed (intra-project effects and inter-project effects).
- 7.1.2. This chapter draws together the findings from the technical chapters in this ES Addendum, defines inter-relationships between the committed developments in the surrounding area and establishes whether there are any other cumulative effects on sensitive receptors to those identified in the March 2021 ES. The approach to the assessment of interactions of environmental effects remains the same as in the March 2021 ES.
- 7.1.3. Six new committed developments have been identified in relation to the cumulative assessment for the Revised Development. **Table 7-1** provides detail on the additional committed developments considered in this ES Addendum, referenced as numbers 18-23, which are in addition to the list of committed developments included in Table 9-1 of the March 2021 ES. The location of committed developments is provided in updated ES **Figure 9-1** in **Appendix 9-1**.

Table 7-1 - Summary of Additional Committed Developments

Reference	Name of Committed Development	Proposed Development	Status	Approximate Distance from Site
18	211024: Princess Drive/ Princess Marina Drive Isacc Newton Road	Approval of reserved matters for 127 dwellings with appearance, access, landscaping and layout works. Site has access via the Lakeside Bus Loop.	Current	595m
19	210179: Evendons Road Golf Course	Full planning application with a 39 bedroom hotel with car parking, landscaping and an electrical substation.	Current	1,050m
20	190304 (old application ref: 140977): Sheerlands Road/ Nine Mile Ride Extension junction	Application for submission of details to comply with the following conditions of planning consent 140977 (O/2018/2280) dated 02/04/2015. Condition numbers 10 Materials, 12 measured survey, 14 hard & soft landscaping, 15 Aboricultural implications, 16 Tree protection 17 Aged & veteran trees, 18 landscape & ecology, 19 Hedgerow mitigation, Bat mitigation, 22 Ecological permeability, 23 Non native invasive species management, 26 Detailed design of roads, 28 Car/motorcycle parking, 29 cycle parking, 40 compensatory storage, 41 Design Floodplain, 42 safe	Old	1,340m

Reference	Name of Committed Development	Proposed Development	Status	Approximate Distance from Site
		access/egress, 43 foul & surface water, 44 sustainable drainage, 45 Full drainage systems, 46 wetland features, 51 code for sustainable homes & BREEAM, 52 Carbon Emissions, 53 Lifetime Homes, 54 Water butts/composting, 55 Reduce water consumption, 56 Refuse & recycling, 57 External lighting, 59 Noise.t. Old Application Reference: 140977		
21	203616: Corn Path Road	Construction of 135 dwellings, extension bus loop; emergency access via Sheerlands Road, associated internal access roads, parking, provision of Public Open Space	Current	1,375m
22	192325: Chapel Green Fields, Wescott Ward	Outling planning approval for hybrid application of up to 190 dwellings public open space and associated infrastructure and full application for suitable alternative natural greenspace	Current	1,395m
23	211889: Wick Hill	Outline Planning Approval for the construction of 32 dwellings including demolition of 2 existing buildings.	Current	1,681m

7.2. ASSESSMENT OF INTRA-PROJECT EFFECTS

7.2.1. The assessment of intra-project cumulative effects was scoped out of the March 2021 ES and cumulative assessment as a result of the following (as contained within Chapter 9: Cumulative Effects of the March 2021 ES):

'This is as a result of the limited number and nature of the environmental factors scoped into the [March 2021] ES. Both Chapter 6: Biodiversity and Chapter 7: Cultural Heritage chapters have assessed all relevant potential effects on ecological and cultural heritage receptors within their respective assessments. As a result, no intra-project assessments will be needed for these factors and Landscape and Visual Impact Assessment is the only factor with the potential for intra-project effects. Due to the intra-project assessment requiring more than one factor to be assessed, an intra-project assessment is possible.'

7.2.2. For this ES Addendum, the above reasoning still remains valid. As there are only three specialist chapters within this Addendum, two of which consider intra-project effects within their own chapters, an intra-project assessment is not possible. Therefore, intra-project effects have not been considered further within this cumulative assessment.

7.3. ASSESSMENT OF INTER-PROJECT EFFECTS

7.3.1. The assessment of inter-project has used the output of the technical assessments reported within **Chapters 4-6** of this ES Addendum, assuming implementation of the identified mitigation measures. A review of the residual effects of all technical assessments has been undertaken and compared

with inter-project effects reported in the March 2021 ES, and any changes as a result of the Revised Scheme have been identified below in **Table 7-2**.

Table 7-2 - Cumulative inter-project effects for the Revised Development

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
Biodiversity			
Statutory Designated Sites	It is considered that the Revised Development alone is expected to result in negligible (not significant) residual effects on Longmoor Bog SSSI and Local Nature Reserve (LNR) during both the construction and operational phase. Construction Phase In-Combination Pathways All of the additional schemes are situated over 500m from Longmoor Bog SSSI and LNR, with no major ecological or hydrological corridors connecting these sites. No direct or indirect construction impacts are therefore envisaged. Operational Phase In-Combination Pathways Four of the additional developments are for residential developments which therefore have the potential to increase recreational pressures on Longmoor Bog SSSI and LNR. However, under The Adopted Managing Development Delivery Local Plan (Ref. 4.4), residential developments allocated under the Local Plan would be required to deliver appropriate avoidance measures to address any likely significant effects to the Thames Basin Heaths Special Protection Area (SPA). Therefore, it is also envisaged that sufficient SANG would be allocated or otherwise created which would also alleviate recreational pressures to Longmoor Bog SSSI and LNR.	The sensitivity of statutory designated sites is considered to be High, and the magnitude of change, following mitigation, is considered to be negligible. Therefore, there is likely to be Negligible residual effects (not significant) on statutory designated sites following the implementation of mitigation measures.	The sensitivity of statutory designated sites is considered to be High, and the magnitude of change, following mitigation, is considered to be negligible. Therefore, there is likely to be Negligible residual effects (not significant) on statutory designated sites following the implementation of mitigation measures.
Non-statutory Designated Sites	It is considered that the Revised Development alone is expected to result in negligible (not significant) residual effects on Local Wildlife Sites (LWS) during both the construction and operational phase.	The sensitivity of non-statutory designated sites is considered to be Low, and the magnitude of change, following mitigation, is considered to be negligible.	The sensitivity of non-statutory designated sites is considered to be Low, and the magnitude of change, following mitigation, is considered to be negligible.

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
	Construction Phase In-Combination Pathways Construction of the additional developments have the potential to result in adverse effects on LWS (e.g. direct land take, air pollution, dust pollution or water pollution) within 2km of the Site, particularly where these schemes are in close proximity to LWS. For example, the Evendons Road Golf Course development is within approximately 200m of The Moors (including Sand Martins Golf Course Edge) LWS. However, it is expected that all of the additional developments will include embedded mitigation to minimise impacts of construction-associated pollution to off-site receptors. The Sheerlands Road/Nine Mile Ride scheme is directly adjacent to Hogwood Shaw LWS, but as this specific development refers to the discharge of planning conditions, it is assumed that mitigation to the LWS has been factored in. Operational Phase In-Combination Pathways As with statutory designated sites, the additional residential schemes could result in increased recreational pressures on existing LWS. However, it is expected that sufficient SANG provision will be made to alleviate recreational pressures from these developments on the Thames Basin Heaths SPA, with subsequent benefits also expected for LWS.	Therefore, there is likely to be Negligible residual effects (not significant) on non-statutory designated sites following the implementation of mitigation measures.	Therefore, there is likely to be Negligible residual effects (not significant) on non-statutory designated sites following the implementation of mitigation measures.

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
Off-Site Habitats	It is considered that the Revised Development alone is expected to result in negligible (not significant) residual effects on notable off-Site habitats during both the construction and operational phase. Construction Phase In-Combination Pathways Construction of the additional developments have the potential to result in adverse effects on off-Site habitats (e.g. direct land take, air pollution, dust pollution or water pollution) within 2km of the Site, particularly where these developments are in close proximity to LWS. For example, the Wick Hill development appears to incorporate parcels of deciduous woodland HPI, and is in close proximity to a parcel of ancient woodland. However, it is expected that all of the additional developments will include embedded mitigation to minimise impacts of construction-associated pollution to off-site receptors, and to compensate for the loss of HPI through replanting in line with BNG requirements, in accordance with national planning policy. Operational Phase In-Combination Pathways The provision of SANG (either already allocated or proposed to be provided) associated with the additional developments is expected to provide suitable outdoor space for new residents, such that recreational on off-Site habitats are considered to be negligible.	The sensitivity of off-Site habitats is considered to be up to Medium, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on off-Site habitats following the implementation of mitigation measures.	The sensitivity of off-Site habitats is considered to be up to Medium, and the magnitude of change, following mitigation, is considered to be negligible. Therefore, there is likely to be Negligible residual effects (not significant) on off-Site habitats following the implementation of mitigation measures.

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
On-Site Habitats	It is considered that the Revised Development alone is expected to result in Minor adverse (not significant) residual effects on hedgerow HPI and Negligible adverse residual effects on river HPI during both the construction and operational phase, and Minor to Moderate beneficial residual effects on both hedgerow HPI and river HPI during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site), and are not linked to the Site through hydrological corridors. Therefore, no direct or indirect effects on hedgerow HPI or river HPI within the Site are envisaged during construction of the developments. Operational Phase In-Combination Pathways Although the greenway associated with the Revised Development will provide public access around the outside of the solar arrays, no negative effects of recreational pressures from the additional residential developments are envisaged on retained hedgerow HPI and river HPI within the Site.	The sensitivity of on-Site habitats is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on on-Site habitats following the implementation of mitigation measures.	The sensitivity of on-Site habitats is considered to be up to Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on on-Site habitats following the implementation of mitigation measures.

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
Roosting Bats	It is considered that the Revised Development alone is expected to result in Negligible (not significant) residual effects on roosting bats during both the construction phase, and Minor beneficial effects on roosting bats during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site). Therefore, no direct or indirect effects on roosting bats within the Site are envisaged during construction of the developments. Operational Phase In-Combination Pathways No negative effects of recreational pressures from the additional residential developments are envisaged on roosting bats which may be present within the Site.	The sensitivity of roosting bats is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on roosting bats following the implementation of mitigation measures.	The sensitivity of roosting bats is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on roosting bats following the implementation of mitigation measures.
Commuting and Foraging Bats	It is considered that the Revised Development alone is expected to result in Minor adverse (not significant) residual effects on commuting and foraging bats both the construction phase, and Minor to Moderate beneficial (significant) effects on commuting bats during roosting bats during the operational phase. Construction Phase In-Combination Pathways If all of the additional developments were to proceed in conjunction with the Revised Development, there is a risk of wider habitat fragmentation and temporary loss of commuting and foraging habitats for bats in the wider locale, which would result in short-term	The sensitivity of commuting and foraging bats is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on commuting and foraging	The sensitivity of commuting and foraging bats is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on commuting and foraging

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
	adverse effects. However, effects are considered to be reasonably unlikely given that all developments are unlikely to be under construction at the same time and the majority of the Site clearance activities for the Revised Development are expected to occur during the bat hibernation season (January to March 2022). Operational Phase In-Combination Pathways It is expected that all of the additional proposed developments are likely to put in place sufficient lighting regimes and landscaping to mitigate the impacts on commuting and foraging bats in their respective locales, and as such these developments are unlikely to affect commuting and foraging bats using the Site.	bats following the implementation of mitigation measures.	bats following the implementation of mitigation measures.
Badger	It is considered that the Revised Development alone is expected to result in Negligible (not significant) residual adverse effects on badgers during the construction phase, and Minor to Moderate (significant) beneficial effects on badgers during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site). Therefore, it is expected that badgers within the Site and the immediate locale will be unaffected by the construction of these developments. Operational Phase In-Combination Pathway Given the minimum distance separating the Site from the additional developments, it is considered that the operation of these developments is unlikely to impact badgers within the Site and immediate locale.	The sensitivity of badgers is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on badgers following the implementation of mitigation measures.	The sensitivity of badgers is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on badgers following the implementation of mitigation measures.

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
Other Mammals (SPI)	It is considered that the Revised Development alone is expected to result in Minor residual adverse effects on other mammals (SPI) during the construction phase and Minor beneficial effects on other mammals (SPI) during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site). Therefore, it is expected that other mammals (SPI) within the Site and the immediate locale will be unaffected by the construction of these schemes. Operational Phase In-Combination Pathway Given the minimum distance separating the Site from the additional developments, it is considered that the operation of these schemes is unlikely to impact other mammals SPI within the Site and immediate locale.	The sensitivity of other mammals (SPI) is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on other mammals (SPI) following the implementation of mitigation measures.	The sensitivity of other mammals (SPI) is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on other mammals (SPI) following the implementation of mitigation measures.
Breeding Birds	It is considered that the Revised Development alone is expected to result in Minor (not significant) residual adverse effects on breeding birds during the construction phase and Minor (not significant) beneficial effects on breeding birds during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site). Therefore, it is expected that breeding birds within the Site and the	The sensitivity of breeding birds is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on breeding birds following the	The sensitivity of breeding birds is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on breeding birds following the

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
	immediate locale will be unaffected by the construction of these developments. Operational Phase In-Combination Pathway Given the minimum distance separating the Site from the additional developments, it is considered that the operation of these developments is unlikely to impact breeding birds within the Site and immediate locale.	implementation of mitigation measures.	implementation of mitigation measures.
Reptiles	It is considered that the Revised Development alone is expected to result in Negligible (not significant) residual adverse effects on reptiles during the construction phase and Negligible (not significant) beneficial effects on reptiles during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site). Therefore, it is expected that reptiles which may be present within the Site and the immediate locale will be unaffected by the construction of these developments. Operational Phase In-Combination Pathway Given the minimum distance separating the Site from the additional developments, it is considered that the operation of these developments is unlikely to impact reptiles which may be present within the Site and immediate locale.	The sensitivity of reptiles is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on reptiles following the implementation of mitigation measures.	The sensitivity of reptiles is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on reptiles following the implementation of mitigation measures.

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
Amphibians	It is considered that the Revised Development alone is expected to result in Negligible (not significant) residual adverse effects on amphibians during the construction phase and Minor (not significant) beneficial effects on amphibians during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site). Therefore, it is expected that amphibians which may be present within terrestrial habitats in the Site and the immediate locale will be unaffected by the construction of these developments. Operational Phase In-Combination Pathway Given the minimum distance separating the Site from the additional developments, it is considered that the operation of these developments is unlikely to impact amphibians which may be present within the Site and immediate locale.	The sensitivity of amphibians is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on amphibians following the implementation of mitigation measures.	The sensitivity of amphibians is considered to be Low, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on amphibians following the implementation of mitigation measures.
Terrestrial Invertebrates	It is considered that the Revised Development alone is expected to result in Negligible (not significant) residual adverse effects on terrestrial invertebrates during the construction phase and Negligible (not significant) beneficial effects on terrestrial invertebrates during the operational phase. Construction Phase In-Combination Pathways All additional developments are separated from the Site by a minimum of 1km (apart from 'Princess Drive/Princess Marina Drive, Isaac Newton Road' which is approximately 600m west of the Site). Therefore, it is expected that terrestrial invertebrates which may be	The sensitivity of terrestrial invertebrates is considered to be Negligible, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on terrestrial invertebrates following the	The sensitivity of terrestrial invertebrates is considered to be Negligible, and the magnitude of change, following mitigation, is considered to be Negligible. Therefore, there is likely to be Negligible residual effects (not significant) on terrestrial invertebrates following the

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
	present within habitats in the Site and the immediate locale will be unaffected by the construction of these developments. Operational Phase In-Combination Pathway Given the minimum distance separating the Site from the additional developments, it is considered that the operation of these developments is unlikely to impact terrestrial invertebrates which may be present within the Site and immediate locale.	implementation of mitigation measures.	implementation of mitigation measures.
Heritage			
No additional cumulative effects have been identified for the cultural heritage assets scoped into this assessment.			
Landscape			
Landscape Character Areas - J2: Arborfield Cross and Barkham Settled and Farmed Clay and M1: Finchampstead Forested and Settled Sands	It is considered that the Revised Development alone is expected to result in negligible to minor (not significant) residual adverse effects on LCA J2 Arborfield and Barkham Settled and Farmed Clay and LCA M1 Finchampstead Forest and Settled Sands during both the construction and operational phase. Construction Phase In-Combination Pathways All of the additional developments are situated in or near to the character areas but are relatively minor in scale relative to the LCAs. No direct or indirect construction related impacts from cumulative developments are therefore envisaged. Operational Phase In-Combination Pathways	The sensitivity of LCAs are considered to be medium, and the magnitude of change, following mitigation, is considered to be Negligible to Medium. Therefore, there is likely to be Minor Adverse residual effects (not significant) on LCAs following the implementation of mitigation measures.	The sensitivity of LCAs is considered to be medium, and the magnitude of change, following mitigation, is Negligible to Medium. Therefore, there is likely to be Negligible to Minor Adverse residual effect on LCAs (not significant) following the implementation of mitigation measures.

Sensitive Receptors	Discussion of Potential Cumulative Residual Effect Pathways	Significance and Nature of Cumulative Residual Effects (Construction)	Significance and Nature of Cumulative Residual Effects (Operation)
	Four of the six additional developments are for residential developments which therefore have the potential to change the character of the LCA. It is considered, however that the scale and location of the committed developments, either within, or near to existing residential or built up areas, result in these developments having minimal impact on the LCAs.		
Visual Receptors	It is considered that the Revised Development alone is expected to result in negligible (not significant) to major (significant) residual adverse effects on visual receptors during both the construction and operational phase. Construction Phase In-Combination Pathways All of the additional developments are situated at least 1km from the main solar farm site with minimal visual connection to the Site. No direct or indirect construction related impacts from cumulative developments are therefore envisaged. Operational Phase In-Combination Pathways The majority of the additional developments are residential developments which have the potential to change views received within the landscape. It is considered, however that the scale and location of the committed developments, either within, or near to existing residential or built up areas, result in these developments having a negligible cumulative visual impact on sensitive receptors.	The sensitivity of visual receptors is considered to be low to high, and the magnitude of change, following mitigation, is considered to be Negligible to Medium. Therefore, there is likely to be Minor Adverse residual effects (not significant) on visual receptors following the implementation of mitigation measures.	The sensitivity of receptors is considered to be low to high, and the magnitude of change, following mitigation, is Negligible to High. Therefore, there is likely to be Negligible to Moderate Adverse residual effect on visual receptors (not significant) following the implementation of mitigation measures.

7.4. LIMITATIONS AND ASSUMPTIONS

7.4.1. There are no changes to the limitations and assumptions set out in the March 2021 ES.

7.5. SUMMARY

7.5.1. Intra-project effects have been scoped out of the cumulative assessment due to the small number and nature of the ES chapters.

7.5.2. No significant inter-project residual cumulative effects have been identified as part of this assessment, as a result of the design changes or the additional committed developments identified since submission of the March 2021 ES. Landscape and visual is the only technical chapter which identifies effects above negligible, but these are considered to be not significant.

8. SUMMARY OF EFFECTS AND MITIGATION MEASURES

8.1. INTRODUCTION

- 8.1.1. A summary of the likely significant environmental effects arising from the Proposed Development was set out in Chapter 10: Summary of the March 2021 ES. The chapter also provided a summary of the mitigation measures identified within each of the technical chapters. This chapter of the ES Addendum sets out changes to the likely significance of environmental effects arising from the Revised Development and should be read in conjunction with the March 2021 ES.
- 8.1.2. The 2021 planning application and its corresponding ES have been reviewed and the significant effects of the material changes against each topic chapter have been assessed and concluded in **Table 8-1**. This has been presented against the chapter number of each original assessment within the ES.

Table 8-1 - Summary of Effects

March 2021 ES Chapter Number	ES Chapter Heading	Likely effect of the material changes	Change in residual effect (no change, negligible, change, significant change)
6	Biodiversity	The Revised Development has resulted in a reconsideration of impacts to on-Site HPI, roosting bats, commuting and foraging bats, badgers, amphibians and reptiles, as a result of the updated site layout and landscaping proposals. While these receptors have been re-assessed in light of the Revised Development, the changes proposed are ultimately considered to be minor and have not resulted in changes of residual impacts for any receptor re-assessed.	No change.
7	Cultural Heritage	The Revised Development has resulted in a reconsideration of impacts to above ground and below ground heritage assets as a result of updated site layout and landscaping proposals. These receptors have been re-assessed in light of the Revised Development, although the changes proposed with respect to above ground heritage assets are ultimately considered to be minor and have not resulted in changes of residual impacts for any receptor re-assessed.	No change.

March 2021 ES Chapter Number	ES Chapter Heading	Likely effect of the material changes	Change in residual effect (no change, negligible, change, significant change)
8	Landscape and Visual Impact Assessment	The Revised Development has resulted in a reconsideration of impacts to landscape and visual receptors, as a result of the updated site layout and landscaping proposals. One additional viewpoint has been added and assessed following stakeholder feedback. The landscape receptors are considered to have no change in impact while 5 no. visual receptors are considered to have changes in impacts due to the revised site layout and landscaping proposals. At construction, the residual impacts on these receptors range from Negligible to Moderate. At operation the residual impacts range from Negligible to Major Adverse.	Reduced impact in visual receptors R4 and R5. Increase in impact on receptors R7, R8, and R9. Impact on additional receptor R17 likely to be Minor Adverse (not significant) following mitigation.
9	Cumulative Effects	The Revised Development has resulted in a reconsideration of cumulative effects as a result of the design changes and additional committed developments identified since submission of the March 2021 ES. No significant inter-project residual cumulative effects have been identified as part of this assessment. Landscape and visual is the only technical chapter which identifies effects above negligible, but these are considered to be not significant.	No change.

8.2. MITIGATION

- 8.2.1. No new or amended significant environmental effects are likely for the Revised Development and, therefore, the mitigation proposals as presented within Chapter 10 of the March 2021 ES are still relevant.

8.3. CONCLUSIONS

- 8.3.1. The design changes to the Proposed Development have been reviewed to establish if it is likely there would be any significant effects on the environment as a result.
- 8.3.2. The review has established there would be no likely significant effects beyond those considered and reported in the March 2021 ES and there would be no change in the nature or order of impacts and effects reported.
- 8.3.3. It has, therefore, been concluded that the March 2021 ES and this ES Addendum contain the relevant environmental information to accompany the amended planning application relating to the currently proposed Revised Development.



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