



CAPITA

West Sussex County Council

A29 Realignment Scheme - Phase 1

Construction Environmental Management Plan

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### Construction Environmental Management Plan

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# CONTENTS

Revisions .....	ii
Acronyms and Definitions .....	1
1 Introduction .....	3
1.1 Purpose of the CEMP .....	4
1.2 Scheme Location & Description .....	5
1.3 Purpose and Content .....	9
2 Proposed Scheme Construction .....	9
2.1 Indicative Programme for Carrying Out The Works .....	9
2.2 Construction Methodology .....	10
2.3 Temporary Construction Site Compound & Storage Areas .....	17
2.4 Erection & Maintenance of Security Fencing .....	18
2.5 Delivery Management Strategy .....	19
2.6 Construction Site Compound Land Reinstatement .....	20
2.7 Temporary Construction Land .....	21
2.8 Construction Traffic Management Plan .....	23
2.9 Construction Traffic Access .....	24
2.10 PROW Management During the Works .....	26
2.11 Construction Worker Travel Plan .....	27
2.12 Construction Stage Drainage Strategy .....	28
2.13 Control of Dust and Debris .....	30
2.14 Control of Noise (Including Vibration) .....	32
2.15 Details of Temporary Floodlighting .....	33
3 Project Team Roles & Responsibilities .....	35
3.1 Construction Team .....	35
3.2 Environmental Team Requirements .....	35
3.3 Roles and Responsibilities .....	39
3.4 Environmental Instruction, Awareness Information and Training .....	40
3.5 Ecological Management Plan (Appendix C) .....	40
4 General Procedures .....	42
4.1 Specific Proposals .....	42
4.2 Environmental Accidents and Emergencies .....	42

4.3	Arrangements for Public Engagement & Consultation.....	43
4.4	Risk Assessments .....	45
4.5	Method Statements .....	45
4.6	Environmental and Social Targets.....	46
4.7	Training, Awareness and Competence.....	46
4.8	Consents, Commitments and Permissions .....	47
5	Record of Environmental Impacts, Mitigation and Monitoring .....	48
5.1	Geotechnical Investigations and Remediation Strategy .....	48
5.2	Site Inspections .....	50
5.3	Managing Waste Resulting from Demolition & Construction Works ...	52
5.4	Environmental Site Monitoring.....	53
5.5	Register of Environmental Actions & Commitments .....	54

## Appendices

Appendix A	Site Compound Location & Details
Appendix B	Site Plans
Appendix C	Ecological Management Plan
Appendix D	Arboricultural Method Statement
Appendix E	CEMP Review, Legal Requirements, Training & Site Monitoring Tables
Appendix F	Environmental Aspects and Impacts Register
Appendix G	Register of Consents, Undertakings and Assurances
Appendix H	Emergency Procedures & Contact Details
Appendix I	Scheme Specific Social Value & KPI Targets
Appendix J	Construction Stage Drainage Strategy
Appendix K	Hydrogeological Detailed Quantitative Risk Assessment
Appendix L	Precautionary Method of Works for Building B5
Appendix M	Precautionary Method of Works – Scheme Wide

## Acronyms and Definitions

Acronym	Definition
ADC	Arun District Council
AMS	Arboricultural Method Statement
BPM	Best Practicable Measures
BS	British Standard
CEMP	Construction Environmental Management Plan
CIRIA	Construction Industry Research and Information Association
CL:AIRE	Contaminated Land: Applications in Real Environments
CLMP	Contaminated Land Management Plan
CLOCS	Construction Logistics and Community Safety National Standard
CTMP	Construction Traffic Management Plan
CWTP	Construction Worker Travel Plan
DMRB	Design Manual for Roads and Bridges
EA	Environment Agency
EDMP	Environmental Design Mitigation Plan
EHO	Environment Health Officer
EMP	Ecological Management Plan
FORS	Fleet Operator Recognition Scheme
IAN	Interim Advice Note
INNS	Invasive Non-native Species
IEEM	Institute of Ecology and Environmental Management
JCE	Jackson Civil Engineering
KPI	Key Performance Indicator
LEMP	Landscape and Ecological Management Plan (separate document provided by WSP)
MMP	Material Management Plan
NEC	New Engineering Contract
PLO	Public Liaison Officer
PRF	Potential Roosting Feature
PRoW	Public Right of Way
QMS	Quality Management System
RAMS	Risk Assessments and Method Statements
REAC	Register of Environmental Actions and Commitments
RPA	Root Protection Area
SuDS	Sustainable Drainage Systems

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SWMP	Site Waste Management Plan
TBT	Toolbox Talk
TPO	Tree Preservation Order
UK	United Kingdom
WSCC	West Sussex County Council
WSI	Written Scheme of Investigation

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# 1 Introduction

Jackson Civil Engineering (JCE) has been appointed by West Sussex County Council (WSCC) to prepare a Construction Environment Management Plan (CEMP) for the realignment of the A29 (referred to as the “Scheme”), to the north of Eastergate and the north-west of Barnham, villages north of Bognor Regis (Phase 1).

The Scheme requires the construction of a new carriageway via a new roundabout along the existing Fontwell Avenue, Eastergate, approximately 1.5km in length to form a single lane carriageway travelling south to a new roundabout at the existing Barnham Road. Other key characteristics of the Scheme include a new 7.3m wide carriageway with a new footway/cycleway, landscaping and planting, and environmental mitigation works.

This CEMP has been developed from a draft/outline CEMP that JCE received from WSP in October 2020.

In October 2021 WSCC requested that this CEMP is updated and submitted to discharge Planning Condition no 3 of the Schemes Planning Application (application ref – WSCC/052/20). This condition states:

**Construction Environmental Management Plan (CEMP)**

*No development shall be carried out until an updated Construction Environmental Management Plan – CEMP (in general accordance with the submitted Outline Construction Environmental Management Plan – Ref. 70079718 V04 dated April 2021) has been submitted to and approved in writing by the County Planning Authority. Thereafter the approved CEMP shall be implemented and adhered to throughout the entire construction period.*

*The CEMP shall address the environmental management of the construction works and describe how construction activities will be managed in accordance with relevant standards and best practice to safeguard the environment and mitigate the effects of construction works. It shall incorporate all Environmental Action/Mitigation and Construction Monitoring measures as set out in Table 5-2 of the Outline Construction Environmental Management Plan (Ref. 70079718 V04 dated April 2021), all identified Secondary Mitigation measures for the CEMP as set out in Table 15-1 of Chapter 15 of the Environmental Statement, and all Species Specific Mitigation as set out in the Outline Ecological Management Plan (Ref. 7006779 dated April 2021).*

*Further, it shall include, but not be limited to, the following:*

- *An indicative programme for carrying out the works;*
- *Details of the arrangements for public engagement / consultation both prior to and continued liaison during the construction works;*
- *Measures to minimise the noise (including vibration) generated by the construction process to include hours of work, proposed method of piling for any foundations, the careful selection of plant and machinery and use of noise mitigation barrier(s);*
- *Details of any floodlighting, including location, height, type and direction of light sources and intensity of illumination;*
- *The provision of temporary contractors' compounds, including details of their location, use, layout, and any temporary buildings required;*



- *Hours of working, including permitted times for deliveries;*
- *Storage of plant and materials used in constructing the development;*
- *The erection and maintenance of security hoarding;*
- *Measures to control the emission of dust and dirt during construction;*
- *A Scheme for managing waste resulting from demolition and construction works i.e. no burning permitted;*
- *Provision for all works to be carried out under the supervision of an Environmental Clerk of works, Ecological Clerk of Works, Project Arboriculturist and provide for the appointment of a Public Liaison Officer and specify their respective roles and responsibilities;*
- *PROW management to include full details of any temporary crossing arrangements and provision reinstatement in consultation with the WSCC PROW team;*
- *Construction Phase Drainage Strategy;*
- *Geotechnical Investigations and remediation strategy; and*
- *Precautionary Method of works (PMoW for Bats/birds/reptiles/invertebrates – protected and notable species).*

*Reason: To ensure any impact of construction works are, as far as possible, minimised and mitigated in accordance with the submitted Environmental Impact Assessment, in the interests of the amenities and environment of the locality and to avoid the potential for pollution of land/water.*

## 1.1 Purpose of the CEMP

The environmental management of the construction works associated with the Scheme shall be delivered through this Construction Environmental Management Plan (CEMP). This CEMP therefore describes how construction activities should be undertaken and managed in accordance with:

- Design Manual for Roads and Bridges (DMRB), Volume 11, Section 2, Part 5, titled ‘Assessment and Management of Environmental Effects’;
- DMRB, Volume 11, Section 2, Part 6, titled ‘Reporting of Environmental Impact Assessments’; and
- LA 120 Environmental Management Plans (formally IAN 183/16 (W) Environmental Management Plan) Revision 1.

JCE and their framework partner Capita are responsible for reviewing the environmental requirements in this CEMP, and developing the construction methodology in light of those requirements. JCE will be responsible for safeguarding the environment and for mitigating the effects of the construction works (the ‘works’) by implementing general environmental requirements of this CEMP. JCE will continually review and update the CEMP, and incorporate

it into the companies Quality Management System (QMS) and/or Environmental Management System (EMS).

## 1.2 Scheme Location & Description

The area to be directly impacted by the Scheme (the total construction footprint of the works) is referred to herein as 'the Site'. The Site is located within a rural/suburban area to the north of Eastergate and the north-west of Barnham, both villages north of Bognor Regis. The Site comprises arable fields, woodland, orchard and areas of managed grassland. The Site is bound by agricultural fields to the north, the B2233 (Barnham Road) to the south, the A29 to the west and the rear of residential properties on Murrell Gardens to the east. The Site is also located in close proximity to Environment Agency (EA) recognised inland rivers-

1. Barnham Rife Ditch, located at the immediate east boundary of the site, and forms the discharge point of new drainage pond 3. Site compound C is also proposed to be positioned close to this watercourse;
2. Lidsey Rife, located to the west and south west of the site;
3. School watercourse, located at the immediate southern boundary of the site, and forms the discharge point of new drainage pond 4. Site compound A is proposed to be positioned close to the School Watercourse also.

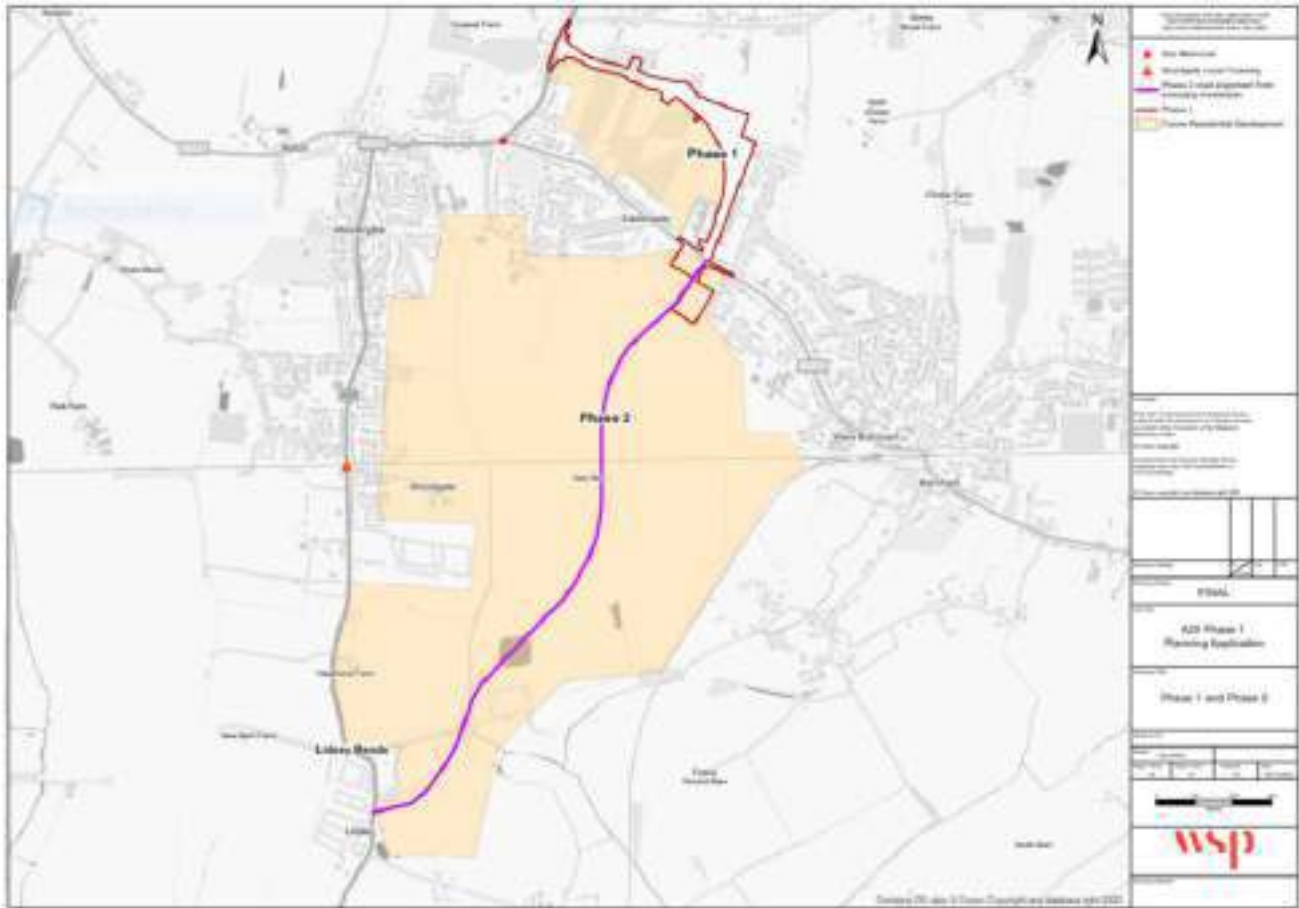
The Site is not currently used for agricultural purposes.

The Site location is shown in Appendix A , showing proposed locations of site compounds "A", "B", and "C".

Further detail of the Site Boundary and Proposed Scheme can be seen in the Site Plans provided in Appendix B.

The A29 Realignment Scheme will be delivered in two phases as shown in Figure 1 below. Phase 1 is 1.3km long from the A29 south of Eastergate Lane to a new junction with Barnham Road, Phase 2 from Barnham Road to a new junction on the A29 south of Lidsey bends. The Scheme relates to Phase 1 (North) and is the primary focus of this CEMP.

**Figure 1 – Phase 1 and Phase 2 Alignment**



The Scheme includes the proposal to create a new approximately 1.3km, single carriageway road in an arc shape from north-west to south east, connecting with the eastern side of the A29 and the northern side of the B2233.

The Site is approximately 11.8 hectares (ha) in size, comprising 9.2ha of permanent land take and 2.6ha to be returned to the landowner following construction.

The realignment of the A29 (phases 1 and 2 together) will create capacity for expected traffic growth and will tackle planned and potential development to support the delivery of around 11,400 new dwellings and 104,000sqm of commercial development on permitted or planned development sites in this part of Arun District.

## 1.3 Purpose and Content

This plan provides an overarching framework for the environmental management during the works. It provides the following-

- A summary of the construction effects at sensitive receptors identified in WSP's Environmental Statement and the associated appendices;
- Mitigation measures to reduce construction effects at sensitive receptors, as identified in WSP's Environmental Statement and the associated appendices;
- Ecological Management Plan (Appendix C);
- Precautionary Method of Works (Appendix L and M); and
- Recommendations of further works, such as monitoring, to be undertaken prior to/during the works.

This is a "live document" and shall be subject to regular reviews and updating by JCE prior to and during construction activities (refer to Table E-1, Appendix E). As this scheme is a WSCC Major Project, there will be on-going, inter-departmental liaison on the scheme through the Project Board Updates.

The JCE Project Manager, with support from JCE's Environmental Manager, will be responsible for leading on reviews and updates of the CEMP. Each section will be reviewed and updated as necessary and an electronic version of the updated CEMP circulated to the project wide team, including Client team. Other requirements to be completed by JCE during the works are as follows-

- A register of legal requirements, training undertaken, and completion of site monitoring sheets (Appendix E);
- An Environmental Aspects and Impacts Register (Appendix F);
- A Register of Consents, Undertakings and Assurances (Appendix G);
- Emergency Contact details for the works (Appendix H);
- Register the construction site under the Considerate Constructors Scheme; and
- Comply with the Considerate Constructors Schemes' Code of Considerate Practice in providing the works.

The Environmental Aspects and Impacts Register is a record of all sensitive environmental features that have the potential to be affected by the works. The Register also includes information on how these features will be affected and the control measures required to mitigate any potential impacts.

A register of consents, undertaking and assurances, including a list of specific environmental licences, consents and applicable permits is included in Appendix G.

The emergency contact details for the works shall be clearly displayed at the site where the public can see them (see Appendix H).

All documentation in relation to the environmental management of the works shall be maintained by JCE and made available to the NEC Project Manager.

The performance of the CEMP in meeting environmental objectives and targets, mitigating environmental effects and in achieving effective environmental management shall be subject to review by the NEC Project Manager every two months, with Appendix E being used as a register of reviews.

## 2 Proposed Scheme Construction

### 2.1 Indicative Programme for Carrying Out The Works

Project timescales are still to be determined by the Client team, however the currently anticipated construction programme is as follows-

Stage	Programme
<b>Compound Construction (Barnham Road &amp; Fontwell Avenue)</b>	Early April 2023
<b>Site Clearance (including Folly Foot Farm Demolition + Vegetation Clearance)</b>	Late 2022 to Early 2023
<b>Installation of Ecological Enhancement Measures (outside of site boundary)</b>	Early April 2023
<b>Installation of Ecological Enhancement Measures (within site boundary)</b>	Late 2024 – Early 2025
<b>Utilities Diversion</b>	Mid July to Late October 2023
<b>Excavation and Earthworks</b>	Late July 2023 to Mid 2025
<b>Construction of Road Including Drainage</b>	Mid 2023 to Early 2025
<b>Installation of New Permanent Acoustic Barrier</b>	Early to Mid 2024
<b>Installation of Street Lighting</b>	Late 2024
<b>Landscaping</b>	Late 2024 – Early 2025
<b>Road Opening</b>	Early 2025

The normal site working (construction) hours are proposed to be:

- Monday to Friday 07:00 to 18:00 (Noise Generating Activities (as defined by BS 5228) will be limited to an 08:00 start); and
- Saturdays 08:00 to 13:00.

“Normal” site operations are expected to be limited to the hours above. However, there are expected to be some works outside the hours specified above (including night-time working). For these elements prior consent and agreement on working methods will be sought and agreed with WSCC and Arun EHO with any Section 61 applications made to the EHO accordingly on a case-by-case basis in advance, under Section 61 of the Control of Pollution Act 1974. Night works are expected to be limited to surfacing works at tie-in’s to existing carriageways (at the two roundabouts) so to limit disruption to traffic. However instead of weekday night closures the site team will also investigate the possibility of utilising Saturday / Sunday daytime closures instead.



The final agreed strategy is dependant on further discussions with WSCC Street Works Team closer to the time of the works occurring.

With regards to any night time works, residents shall be informed of the works via the measures set out in section 4.3 below and any potential requirements for night working will be notified at least 10 days in advance.

No vehicles will be on site before 07:00 each day. The hours from 07:00 – 07:30 each day shall be limited to personal worker preparations for starting works (i.e. PPE, daily works briefings, toolbox talks, permit briefings etc.). Construction vehicle and plant movements will commence after 07:30 each day only. Noisy operations as defined above will not commence until after 08:00 each day.

Contact details for the site will be made available to residents via local letter drops, and regular updates on emails so concerns or complaints can be directed to the site team directly, all as per the measures set out in section 4.3 below.

## 2.2 Construction Methodology

The construction of the Scheme will include the following elements. Please note however that dates stated are still to be confirmed so are subject to change.

### **Set Up Construction Compound and Access – Early April 2023**

These works will take place in the area of the existing Fleurie Nursery Ltd – Springfield Site and on the formal site of the Folly Foot Farm property, as shown in Appendix A.

A temporary noise barrier will first be installed (attached to Heras fence panels) as shown in Figure 2 below, along the boundary to protect the existing building from compound noise.



**Figure 2 - Compound A Temporary Noise Barrier Location**

Fleurie Nursery Ltd – Springfield Site Nursey site – the existing topsoil shall be stripped and stockpiled, and hardstanding (compacted 6F2 material) shall be placed by mechanical excavator in places. A separation membrane shall be laid between the compacted 6F2 and the existing subsoil.

This area of the nursery site includes strips of concrete footways in places so it's currently envisaged that these could be utilised with areas in-between infilled with concrete so to provide car parking and footway areas. Existing topography would be assessed (we haven't been given full access to these areas as yet to survey), such that a suitable drainage solution be provided to deal with any surface run-off caused by any hardstanding we install. This would likely comprise of a perimeter filter drain to soakaway.

Temporary Heras fence panels shall be erected to secure the site compound boundary with suitable secured gated entrance. It should be noted that existing hedgerows exist on part of the proposed main site compound perimeter – these will be left in place to provide additional screening.

Note – fencing shall not only be installed around the site perimeter so to secure it (currently anticipated to comprise of heras fence panels), but also around all construction works to protect the surrounding retained habitats, so this will be for all general areas as well as those specified in these sections. All site perimeter security fencing will be installed as soon as the land becomes available (WSCC to advise on this) but it's currently anticipated that this will be prior to the main construction works commencing. All fencing will be regularly inspected and maintained throughout the construction period.

Former Site of the Folly Foot Farm Property – Its currently anticipated that WSCC obtain access in Autumn 2022. Following demolition of the property and clearance of existing hardstanding areas, any remaining existing top soil (from rear garden etc.) shall be stripped and stockpiled/removed from site by mechanical excavator. Temporary heras fence panels shall be erected to secure the boundary to prevent incursion

- **Vegetation Clearance – Late 2022 – Early 2023**

All vegetation clearance works shall be undertaken in accordance with the mitigations and Best Practice Measures (BPM)'s set out in section 5.5 - Environmental Actions & Commitments.

These works will take place in the site compound locations only to begin with as preparation for the site compound areas, as shown in section 2.3 below. However additional vegetation clearance shall also take place throughout the Scheme (excluding existing badger sett areas) to remove existing trees and hedgerows (excluding trees with Tree Preservation Order's (TPO's)), working from the locations of the two site compound areas and working into the site.

Retained trees and hedgerow (as identified within the schemes Site Clearance Drawings) will be protected in accordance with BS5837:2012, which will include the erection of protective fencing encompassing all associated root protection areas. The Arboricultural Method Statement in Appendix D describes the requirements for restricted working zones, and Appendix B of that report includes tree protection plans which shows the locations of tree protection fencing. British Standard BS5837:2012 Trees in Relation to Construction includes protective fencing requirements, it is however recognised that BS5837 is read quite prescriptively and can be considered quite excessive in this context. The fencing specifically described in the BS is what is often expected, but the BS does allow for less substantial fencing where appropriate. It is therefore suggested that a meeting is held on site early in the construction programme with the WSCC Project Arboriculturist so that a tree and hedge protection plan can be agreed and



implemented. However it's currently envisaged that this protection fencing will be formed using Heras fencing panels.

The majority of the site areas east of the existing PRow are suitable for reptile habitat. Within all of these areas, mitigation is to entail the clearance of vegetation outside of the sensitive hibernation season (indicatively November to February inclusive, but weather dependent). Where tall herbaceous vegetation is cleared during the active season for reptiles, then WSP have advised that these areas will be undertaken in two stages over at least two consecutive days. It will include an initial cut down to 150mm, with the second cut reducing vegetation as close as possible down to ground level in order to progressively render habitat unsuitable for reptiles. Any refugia will be dismantled by hand with all works undertaken under the supervision of the project ecologist (provided by the Employer) to minimise the risk of killing or injury to reptiles. The project ecologist shall monitor these works and advise if any further measures are required (such as the installation of reptile fencing, carpet tiles etc.).

Prior to any tree removal, all trees within and immediately adjacent to the site boundary will be re-inspected by the Project Ecologist to assess their suitability to support roosting bats as at which point the ecological constraints mapping provided by WSP (within the Ecological Management Plan) – see Appendix C) will be updated by the Employer.

Trees assessed as having low suitability to support bat roosts will be soft-felled by suitably qualified arborists, following an at-height inspection of any potential roost features to confirm the absence of roosting bats (and evidence of roosting bats). Trees assessed as having moderate or high suitability to support bat roosts will be subject to a climbing inspection. This is to enable a thorough assessment of suitability and to search for evidence indicating the presence of roosting bats. If at this stage the suitability is downgraded to low, the trees will be soft felled by suitably qualified arborists as above. However, in the event that the presence of a bat roost is highlighted as still having moderate or high suitability, the requirement for works affecting the roost would be reconsidered by the Employer to identify whether adverse effects can be avoided. If they cannot, a licence from Natural England will be progressed by WSP.

Where possible, site clearance works will be undertaken outside of the breeding bird season (September to February inclusive), however this will be predominately dictated by the Employer's acquisition of land and hence confirmed construction start dates. It's therefore currently anticipated that some clearance works may need to proceed within March to August inclusive, therefore will be undertaken under the supervision of an ecologist provided by the Employer, in accordance with a specific set of RAMS. If/where an active bird nest is identified, it shall be left in situ and an appropriate buffer using heras panel fencing with appropriate signage (indicatively 5m) will be placed around it. No vegetation clearance works will take place until the young have fledged and the nest is no longer actively in use. Examples of suitable nesting habitat comprises woodland, scrub, hedgerow, trees and tall grassland / ruderal vegetation.

As outlined in Table 3, all of the above works shall be supervised by an Environmental Clerk of the Works (ECoW).

Further general mitigation measures are contained within the Scheme Wide PMoW (see Appendix M).

- **Demolition of the Folly Foot Farm Property & Associated Outbuilding – Late 2022**

These demolition works shall take place only once Instruction is received from the Employer giving access to the land, currently anticipated to be in September 2022. A detailed demolition plan shall be prepared providing specific details concerning the methodology and different

processes involved with these works, but it should be noted that no record or as-built drawings have been made available for these structures and therefore their material make-up and possible hazardous components are unknown. At the time of preparing this CEMP access to the property has not been provided to carry out any surveys. Additional surveys, including "Asbestos Refurbishment / Demolition Surveys" as necessary will therefore be carried out by the Contractor prior to any works being carried out on these buildings to help determine any further environmental, site safety controls and Safe System of Work. These will all be submitted to the WSCC Project Manager for Acceptance at least 4 weeks prior to these demolition works commencing. However, its currently anticipated that the stages involved in this demolition works would be as follows –

1. All necessary surveys carried out on agreement for access – anticipated Autumn-2022;
2. Disconnection of all utilities will be carried out;
3. Staged demolition of the buildings would take place to recover, reuse and recycle all materials where possible, commencing with the roof slates, roofing felt, timber battens and timber roof trusses. These will be progressively demolished using a 360° excavator fitted with hydraulic selector grab attachment. The timbers will be set down in a processing area to be cut into shorter lengths.
4. The buildings would be taken down in a controlled manner, ensuring minimal disturbance to adjacent property (the use of acoustic barriers for dust and noise suppression shall be provided at the request of the EHO);
5. When the roofs have been removed the walls to 1<sup>st</sup> floor, then down to ground level will be demolished using the 360° excavator fitted with hydraulic selector grab attachment.
6. The demolition operation will be executed in a controlled manner working from one end of the building towards the other.
7. Materials will fall within a designated drop zone. Hardcore bunds will be created with the debris arising to control the spread of demolition debris at ground level.
8. Fine water sprays from hoses at ground level will be pointed at the working face to control dust migration in the drop zones and loading areas.
9. The quantity of water emitted by the sprays will be regulated and controlled to prevent any flooding at ground level.
10. Recycled materials and waste will be kept separate and disposed of independently. Materials will be regularly cleared and not be allowed to accumulate against external walls causing overloading. Burning of site generated waste will not be permitted.
11. If of a suitable quality the bricks will be transferred to a processing area away from the demolition to be salvaged. The bricks will be cleaned, stacked on pallets then shrink wrapped to be removed from site for recycling.
12. Underground services and drainage will be removed, and the area cleared to allow for the further construction stages.

Local environments will be considered during the planning phases of the demolition works including the proximity to sensitive receptors. Noisy plant and equipment will be sited as far as reasonably practicable from sensitive receptors and will be of the latest design, equipped with noise silencing technology.

An existing building with a confirmed bat roost (building "B5" as shown in Appendix L – Precautionary Method of Works for Building B5) is positioned >30m from the properties requiring demolition. The Scheme has been designed to retain building B5, and thereby avoid direct loss of this roost. Mitigation measures as set out within the PMoW (see Appendix L) will be utilised to reduce the impacts of disturbance from construction activities to the roost.

The majority of the planned construction works fall outside of a standard 20m "buffer zone for bats", but a limited amount of works will need to be undertaken adjacent to the building (within 5m). These works (not just these demolition works) that are anticipated to fall within the

proximity of building B5 (indicatively 20m), will be discussed well in advance with the project ecologist and in line with the Building B5 PMoW (prepared by the Employer – see Appendix L) to ensure that disturbance is avoided / minimised.

As Building B5 supports a transitional/summer roost and therefore is used opportunistically by a small number of bats, B5 is considered unsuitable to support hibernating bats. As such, it is considered that a low numbers of bats will be actively using building B5 between the summer active season (May to September inclusive), and that bats are considered unlikely to be present within building B5 during the typical hibernation period (October/November to April inclusive, depending on prevailing weather conditions).

Where construction activities within 20m of building B5 are unavoidable within the summer roosting season (May to September inclusive), these will be conducted during daytime hours. Such works will be completed no later than one hour before sunset each working day so as to avoid discouraging bats to emerge from the roost through construction activities. It is understood that this is to apply to a small section of works including earthworks and part of the road construction programme. More general mitigation measures are provided within the PMoW, along with an “Unexpected Discovery Procedure”.

- **Installation of Ecological Enhancement Measures**

Soon after the site compounds have been set up the installation of the ecological enhancement measures outside of the site boundary will be completed (early April 2023). These make up the vast majority of all scheme ecological mitigations and consist of the installation of bird & bat boxes. Permissions will be sought from all land owners to agree to land access and methods of installation. Then following substantial completion of earthworks and landscaping activities the remaining ecological mitigation measures will be installed (thought to be late 2024 and early 2025). These predominately comprise of providing deadwood features for invertebrates and reptile refugia/hibernacula. The installation of all will be undertaken under the supervision of the Project Ecologist.

- **Excavation and Earthworks – Late July 2023 – Mid 2025**

These works shall commence at the southern end of the site, working north from B2233 Barnham Road. It will commence with both off-line and on-line works from the existing B2233 Barnham Road carriageway under traffic management. Large excavators and 8-wheel tipper lorries will make up the majority of the plant. The works are a traditional cut and fill, but there will be a large quantity of fill material requiring import to site. A proportion of existing material is expected to be re-used within the works, but much of this is expected to need conditioning (either wetting or drying) before being accepted as part of new embankment works. Material conditioning and storage (including topsoil storage) areas shall all be as indicated in Appendix A. A temporary noise barrier (attached to Heras fencing) shall be installed along the boundary to the site as shown approximately in Figure 3 below, and kept in place until the new permanent noise barrier is installed. This temporary barrier may require “lifting” up the new embankment as it is constructed.



**Figure 3 - Temporary Noise Barrier Location Along Eastern Boundary of Site**

A key risk to surface water on this site is run off of silt or mud. There are several high risk operations that the site team shall need to plan in order to reduce the impacts associated with surface water control. Ground and surface water risks also arise from high pH levels in concrete wash-water. Concrete washout will only occur in designated areas into suitably lined skips. Further information concerning mitigation measures is contained within table 5 below.

The cut earthworks at Fontwell Avenue roundabout have the added advantage that they remove a portion of contaminated materials present within the upper parts of backfill to a historic infilled gravel quarry. This is a small, reasonably well-defined tear shaped feature, lying under the central-eastern part of the roundabout. A watching brief will be in place to confirm that excessively organic contaminated materials (likely tarmac pieces and rubber articles) are not present (in relation to pre-set environmental soil acceptance levels) in the made ground making up the formation. The soil acceptance levels have been developed as part of Controlled Waters Detailed Quantitative Risk Assessment (DQRA) and these levels have been issued to the EA for agreement prior to excavation commencing on site. These levels have been formally accepted by EA and included in the project Specification Appendix 6. A MMP (materials management plan) will be compiled by the site team as part of the Stage 2 contract prior to any works starting on site. In addition to formation inspection, a number of validator trial pits are planned to be excavated and soil samples tested to assist validation measures.

These works will generate potentially large lorry movements around site and to the local road network – this includes a portion of material generated by the works requiring immediate removal from the site. It's currently anticipated that soil shall be taken to Biffa waste recycling facility in Redhill, some 50 miles from site. JCE have not been made aware of any restrictions regarding use of local roads for lorries, however there is a 3.6m height restriction in place on the existing B2233 Barnham Road south east of the site at the railway overbridge. Lorries shall use main "A" roads where possible. Further information concerning construction traffic routes and traffic management is contained in the Schemes Construction Traffic Management Plan.

- **Drainage Works (including works at new ponds) – June 2023 – December 2024**

Drainage works are required throughout the Scheme, with the majority of the works within new verges of the carriageway. These comprise new swales, ditches, pipe work and combined kerb and drainage units. Works will be carried out using excavators and will be made safe using traditional trench boxes. Larger, deeper excavations are required to construct the required new ponds, interceptors and infiltration facilities. For the larger ponds, it's currently anticipated that open cut excavations will be undertaken, for the smaller interceptor works steel sheets will be



pushed and supported with frames. New infiltration facilities are being installed close to the new Fontwell Avenue Roundabout – these are only approximately 2.5m deep and so it's currently anticipated that these shall be excavated with battered side slopes.

Concrete and/or mud has the potential to be deposited onto the carriageway when vehicle tyres leave the soft verges along the site. This shall be continually monitored, and suitable wheel washing facilities and road sweeping shall be provided during the works to ensure both working areas and carriageways are kept clean.

The construction of the Scheme in general has the potential to adversely impact on the water quality of water resources as a result of construction activities that cause accidental leaks and spillages or harmful substances. This also includes the risk of potential increase in physical contamination (i.e. sedimentation) of surface water bodies due to ground disturbance. Sensitive water receptors that could be impacted by pollution are surface water bodies (Barnham Lane Ditch, Lidsey Rife and School Ditch) and groundwater bodies (Superficial Deposits). The pollution of both surface and groundwater bodies may be exacerbated by accidental spillages.

The use of BPM, as described in section 5.4 below shall be adopted during these works to mitigate against these environmental risks, which include measures such as –

- Excavation elements shall be constructed during the summer months where possible;
- Wherever possible, plant and machinery shall be kept away from the drainage system and watercourses. Plant nappies and appropriate spill kits will be provided at all work points where plant is being utilised. All hydraulic excavators will use biodegradable oils;
- Care shall be taken to ensure that wet concrete does not come into contact with surface water or near the streams and drainage ditches. Concrete shall be poured in dry weather and consideration will be given to the use of fast curing concrete where deemed necessary;
- If ground contamination is encountered during construction works, work shall stop immediately and measures will be taken to prevent disturbance and mobilisation of contaminants, until the contamination has been treated in-situ or removed for off-site treatment – the Contractor's design consultant will be called to site in such instances to review. Planning condition 10 requires that if during the works contamination not previously identified is found, no further works (unless otherwise agreed in writing with the County Planning Authority) are to be carried out until a remediation strategy detailing how contamination will be dealt with is submitted to and approved by the County Planning Authority, in conjunction with the Environment Agency;
- The implementation of a temporary drainage strategy to prevent uncontrolled runoff (see Appendix J);
- Surface water run-off from within the Site shall be managed to prevent uncontrolled migration of pollutants to waterbodies (see Appendix J);
- Locating stockpiles and materials storage a minimum of 10m from any watercourses or drainage lines; and
- If dewatering is required, water shall be passed through an appropriate sediment control system prior to discharge.

Subsequent to initial ground investigations for the Scheme, additional investigation in the area of the future Fontwell Avenue roundabout and drainage facilities has encountered contaminated soils. This area was previously inaccessible to the initial site investigation and this initial work did not originally find any land quality issues, though desk studies had highlighted the presence of an infilled gravel pit in the area.

A Hydrogeological Detailed Quantitative Risk Assessment for the scheme has been prepared in order to quantify the risk posed to controlled waters receptors from the soil concentrations identified at the Fontwell Avenue roundabout site post remediation, and to derive site specific target levels to inform any further assessment. This is provided in Appendix K. The report has

been reviewed and approved by the Environment Agency, and a validation report will be required at the end of the scheme.

- **Road Construction and Resurfacing – Mid 2023 – Early 2025**

Under traffic management, at tie-in points the existing road surface shall be removed using a milling machine, allowing the new road surface to be directly overlaid onto the sub layers of the existing carriageway. Planings shall be disposed directly into an 8-wheel tipper for removal off site for recycling. As part of the ground investigation works cores were taken at existing carriageway tie-in points. These determined the possible presence of tar in the deeper layers of existing road layers at both Fontwell Avenue and Barnham Road, so all excavated material shall be stock piled and segregated prior to disposal.

This obviously has potential to be a very noisy and dusty site operation. JCE will not cause excessive dust from the milling operations, sweeping of pavements or any other operations. Free floating dust shall be kept to a minimum and if required will be dampened with water sprays. Plant will be sited and screened where necessary to minimise dust emission to adjoining areas.

The majority of the removal of the existing road surface works are envisaged to be carried out during the day, however it is anticipated that some night works will be required - agreement will be sought by the Contractor with both WSCC and Arun District Council (ADC), in accordance with our communication plan.

The Environmental Health Officer at ADC is Joanne Lewis, contact details as follows –

Joanne Lewis | Senior Environmental Health Officer, Arun District Council | Location: Arun Civic Centre, Maltravers Road, Littlehampton, BN17 5LF Internal: 37666 | External: +44 (0) 1903 737666 | E-mail: [joanne.lewis@arun.gov.uk](mailto:joanne.lewis@arun.gov.uk)

A Section 61 application will be compiled by Jackson and sent to WSCC for approval 4 weeks before these related works on site begin. If required a more informal agreement with ADC shall be implemented, and the relevant authority shall be informed by the Project Manager.

Traditional construction methods shall be used for surfacing works. It is expected that some surfacing works shall be required to be completed at night, so both noise and light nuisance could be generated whilst undertaking these works. See sections below for further details on noise and lighting controls.

All temporary site lighting shall be kept at the minimum brightness necessary for adequate safety and security. Lighting will be located and directed in a manner to ensure that it does not intrude on nearby properties or retained habitat that bats will use for foraging and commuting purposes (these areas shall be communicated to the JCE Project Manager by the ECoW prior to construction works commencing). Where lights are used, effective luminaires or other directional light accessories (shields, hoods or cowls) will be employed to ensure the above.

Compaction rollers and asphalt delivery vehicles shall all work with trained banksman so to keep working areas free of pedestrians, to guide drivers, and so to avoid the need for reversing alarms to be used at night. Portable radios or similar communication systems shall also be considered for use.

It is anticipated that some resurfacing works will be completed during full weekend closures. This is so as to minimise night time working whilst also mitigating traffic management related

delays to the public. During these works existing access shall be maintained for all frontages within the closure areas.

## 2.3 Temporary Construction Site Compounds & Storage Areas

There will be two temporary site compounds used during the works, with a further separate area dedicated for material storage, refer to Appendix A , where further details are provided concerning currently envisaged layout and temporary accommodation. The compounds are known as:

**Compound A (the main compound)** will be located just south of Barnham Road on the existing Fleurie Nursery site. The key benefit of this site is that it already has a dedicated access and egress point from Barnham Road.

- The purpose of this main site compound would be to house the main site offices, welfare, a small stores and car parking facilities only. There would be no large deliveries of materials or plant made to this site compound area.
- This compound would be secured with perimeter heras fencing panels and a secure gated entrance, with security being present during non-working times.
- A length of temporary noise barrier will be provided at the interface with existing properties, as shown in figure 2 above and Appendix A.
- Vehicular access into this site compound would be directly off Barnham Road using the existing nursery access to begin with. This would be a short term measure only during the time the site compound is being set up. Once the new roundabout is under construction it is anticipated an access will be provided through the works then ultimately along the southern leg of the new Barnham Road roundabout.
- Suitable temporary signage will be displayed explaining traffic routing into the compound from Barnham Road, and once off Barnham Road where parking and office reception is located. This signage will be continually reviewed and updated throughout the works to match the evolving works and differing traffic management solutions/phases deployed on Barnham Road whilst constructing the new roundabout.
- For construction vehicles intending to travel to the site compound and leaving the site compound, they will be directed away from Barnham village. This means that when leaving the site compound these vehicle types will be directed to turn left only onto Barnham Road.
- For large plant and material deliveries a dedicated well-signed works access shall be provided into the site on the northern side of Barnham Road where the proposed new road intersects it. Here a suitably sized on-site reception/stacking area shall be provided where deliveries pull into and are greeted by banksman/gatekeeper who will deal with and direct them along the site. Egress of vehicles will be via the same access.

**Compound B**, located just off Fontwell Avenue.

- The purpose of this satellite compound would be to house a small welfare unit, a small stores and office which would be secured using heras fence panels. These will be mobile units, fully contained with their own generators and located just off Fontwell Avenue at the site of the Folly Foot Farm property.
- This will provide localised parking for site staff, welfare and storage for some small plant and materials.
- For deliveries to this area of works it's envisaged that another well-signed works access (managed similar to the southern access) off Fontwell Avenue would be established at the proposed roundabout location and position the office compound to the side of that.

- During the limited times where overnight use of lighting and generators will be necessary, they shall be positioned as far away as possible from houses and placed in acoustic enclosures. If construction phasing allows, temporary highway lighting will be investigated so to utilise the relocation of existing street lighting.

**Area C**, located half-way along the Scheme adjacent to Pond 3, offline from the new carriageway alignment. It is envisaged that this compound will be used for materials storage, predominately earthworks material for treating prior to being reused or taken off site.

Each compound will be in-situ for the whole duration of the construction works (as indicated within the programme). Compound reinstatement information is provided in section 2.6 below.

## 2.4 Erection & Maintenance of Security Fencing

Site security temporary fencing will be used around the site boundary and temporary compound areas, used to secure the site boundary and protect the public from the site works. They will also be used to display health and safety information and general construction works updates for the public to view. This will generally be in the form of heras fence panels whilst utilising suitable secured gated entrance. Temporary fencing locations surrounding the site compounds are shown in Appendix A.

In addition to the above, a temporary noise barrier will be installed (attached to Heras fence panels) as shown in Figure 2 above, along the south west boundary of the main site compound to protect the existing building from compound noise.

A temporary noise barrier (attached to Heras fencing) shall also be installed along the boundary to the site as shown approximately in Figure 3 above, and kept in place until the new permanent noise barrier is installed.

During times of dust generating activities, screens or barriers shall be erected that are, at least, as high as any stockpiles on the site. These will be in the form of heras fencing panels with suitable debris netting attached.

As part of the scheme's "permanent" works, temporary hoarding is required along the southern arm of the proposed Barnham Road Roundabout (as showing on fencing layout drawing A29-CAP-HPN-00-DR-C-0261). Its currently envisaged that this will be provided in solid timber hoarding with steel security gate, providing access to the temporary access track to pond 4.

All scheme temporary fencing will be continually visually inspected throughout the works and maintained as required.

## 2.5 Delivery Management Strategy

Jackson is a member of CLOCS, and as such we naturally aim to reduce the amount of transport usage supplying materials and removing waste from our sites. Where possible, JCE will use affiliated members of the CLOCS Scheme, so that contractors and vehicle operators are working together to minimise risk to vulnerable road users. Arrangements for deliveries to site in order to minimise disruption to the local community shall comprise of the following –



1. The delivery route for all HGV vehicles shall be provided via clear delivery instructions by the site team, indicating which dedicated works access (north or south) the delivery is to report to. This will be in accordance with an agreed traffic management plan;
2. Deliveries to and from the site shall only take place between the hours 08:00 to 17:30 Monday to Thursday, and 08:00 to 15:00 on Fridays. There shall be no demolition, clearance or construction work or deliveries to and from the site on Sundays or Bank Holidays;
3. Deliveries will be booked where possible so not to be within the first or last hour of the day based on the above timings, with the aim of reducing the number of deliveries during peak AM and PM periods;
4. Multiple deliveries, such as aggregate, shall be co-ordinated and staggered to avoid congestion at site entrances and on site;
5. Delivery arrangements, including access routes and controls, shall be clearly communicated to plant and material providers so they can be briefed to delivery drivers well in advance of all deliveries;
6. Positioning of advanced signage as required along access routes, guiding delivery vehicles to site, shall be agreed with the relevant approving authority and installed as such;
7. A gate man shall be posted at site entrance and crossing points, as required;
8. A HGV booking management system shall be implemented, with HGV's told not to arrive early and park up in an agreed location so not to cause obstruction to the local road network. This management system will also ensure vehicles are given allotted arrival times, so to stop lorries arriving at the same time and causing traffic issues to vehicular users; and
9. Jackson are a Silver member of FORS. Where possible Jackson will ensure that we are using safe and sustainable commercial vehicles. From car derived vans to heavy goods, Jackson is committed to maintain the best possible level of productivity and efficiency with the least impact on society and the environment.

## 2.6 Construction Site Compound Land Reinstatement

For each of the two site compounds and material storage areas used during the works (further details contained within Appendix A), the plans for land reinstatement at the end of the project are as follows –

- **Compound A (the main compound)** – as shown on our site plans provided in Appendix B, this area of land is marked as “temporary land use – to be left in a tidy state. No need to reinstate”. The reason for this is that it is anticipated that very soon after the phase 1 works have been completed, the phase 2 works will commence and as such there was no need to reinstate this area with landscaping features similar to what is already there if the phase 2 developer was to soon after arrive on site and convert the land back to a site compound. Therefore at the end of the phase 1 works we anticipate leaving the area as a hard standing, securely fenced off, such that the Southern Consortium (phase 2 developers) can arrive soon after (currently anticipated to be end 2024) and immediately start using the area. In

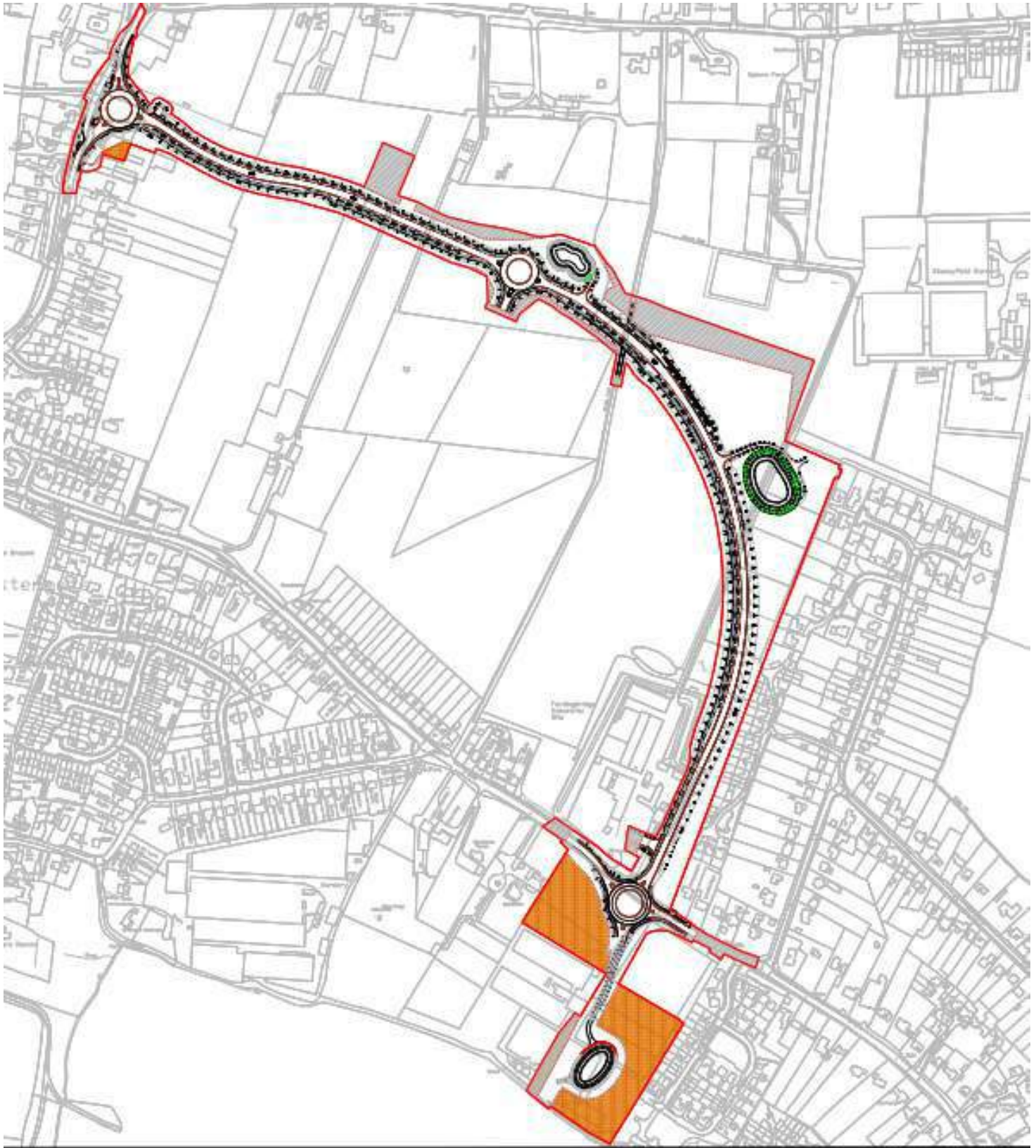
between the short time that the phase 1 works are completed and the phase 2 works commence the area will be kept in a tidy state i.e. there will be periodic litter picking and weeding activities taking place. Planning condition 18 requests further information on interim reinstatement and maintenance proposals for this area of the site prior to first public use of the phase 1 Scheme – further more detailed information will be provided via separate formal submission 3 months before the phase 1 completion date, once dates for the phase 1 and phase 2 works can be provided with more certainty.

- **Compound B (located just off Fontwell Avenue)** - similar to the arrangements for Compound A – this area of land is marked as “temporary land use to be left in a tidy state. No need to reinstate”. It’s currently anticipated that once the Phase 1 works have been completed, Barratts Homes will soon take over this land as part of their development. Therefore at the end of the phase 1 works we anticipate leaving the area as a hard standing (compacted 6F2 hardcore material) such that Barratts can arrive soon after and immediately start using the area. In between the short time that the phase 1 works are completed and the phase 2 works commence the area will be kept in a tidy state i.e. there will be periodic litter picking and weeding activities taking place. The area will remain fenced off and secure.
- **Area C**, located half-way along the Scheme adjacent to Pond 3. This area is planned for materials storage, predominately earthworks material for treating prior to being reused or taken off site, and will form part of the Schemes permanent works. Site Plan drawing A29-CAP-HPN-00-DR-C-0134 (see Appendix B) shows the landscaping design proposals for the area, which will predominately be made up of Wildflower Meadow Grass and Specimen Trees.

## 2.7 Temporary Construction Land

Temporary construction land falls within the red line boundary as shown in Figure 4 below.

Figure 4 – Temporary and Permanent Land Take



## 2.8 Construction Traffic Management Plan

Most of the Scheme will be constructed offline which will ensure minimal impacts to the existing road network. Details of our Scheme specific construction traffic management plans are presented in our Construction Traffic Management Plan (CTMP), which has been prepared and issued separately so to discharge the Schemes planning condition no 4. The CTMP provides details of the construction routes, control, management and monitoring measures, and arrangements for managing traffic movements and pedestrian access on site. In summary is sets out arrangements for the following –

1. Establish a HGV booking system and discuss/agree with suppliers so to control traffic flows - this will help manage vehicle movements to site so that these can be spaced / averaged out so to reduce peak numbers as much as possible. This may require stockpiling of materials;
2. Establish controlled crossing points at interfaces with existing Barnham Road & Fontwell Avenue access points;
3. Establish designated parking for site vehicles and visitors. Dedicated hard standings to include material off-loading areas;
4. Establish controlled haul road into main work area inclusive of designated crossing bays;
5. All excavators on site and HGV's entering working areas will have a banksman supervising movements so to keep aware of any pedestrian and workforce movements in proximity, and take necessary action if required;
6. A 10mph speed limit shall be implemented throughout site;
7. Pedestrian routes for operatives around site shall be segregated from plant where possible;
8. Details of routes, dedicated works areas and Compound locations including areas to sign in are clearly documented;
9. Suitable temporary traffic signage will be procured and erected at the A27 / A29 junction directing deliveries to site;
10. All delivery drivers will be instructed to call the site security / VBMS operative 20 mins prior to arrival to confirm their ETA;
11. Site team will provide clear delivery instructions indicating which dedicated works access (Compound A or B) the delivery is to report to;
12. Suitable temporary traffic signage will be procured and erected at the A27 / A29 junction directing deliveries to site. All delivery drivers will be instructed to call the site security / VBMS operative 20 mins prior to arrival to confirm their ETA; and
13. Full traffic management drawings will be prepared and approved by WSCC prior to the start on site date.

It is recognised that a key access route to the site shall be via the A27 which passes through the South Downs National Park.

A Construction Worker Travel Plan has also been prepared as part of the CTMP with the aim of reducing the amount of single occupancy private cars arriving at the work site.



## 2.9 Construction Traffic Access

### **Access to Compound A (Main Site Compound)**

Compound A shall be located within the existing Fleurie Nursery site. A key benefit of this site is that it already has a dedicated access and egress point from Barnham Road.

The purpose of this main site compound would be to house site offices, welfare, a small stores and car parking facilities only. There would be no large deliveries of materials or plant made to this site compound area.

Vehicular access into this site compound would be directly off Barnham Road using the existing nursery access to begin with. This would be a short term measure only during the time the site compound is being set up. Once the new roundabout is under construction an access will be provided through the works then ultimately along the southern leg of the new roundabout.

Suitable temporary signage will be displayed explaining traffic routing into the compound from Barnham Road, and once off Barnham Road where parking and office reception is located. This signage will be continually reviewed and updated throughout the works to match the evolving works and differing traffic management solutions/phases deployed on Barnham Road whilst constructing the new roundabout.

For construction vehicles intending to travel to the site compound and leaving the site compound, they will be directed away from Barnham village. This means that when leaving the site compound these vehicle types will be directed to turn left only onto Barnham Road.

For large plant and material deliveries a dedicated well-signed works access will be provided into the main site on the northern side of Barnham Road where the proposed new road intersects it. Here a suitably sized on-site reception/stacking area will be provided where deliveries pull into and are greeted by banksman/gatekeeper who will deal with the delivery and direct them along the site. Egress of vehicles will be via the same access.

All large or bulky materials will be delivered direct to the work face, and plant will be parked close to but not obstructing this access during non-working times so they are readily visible to the out of hours security.

All vehicles will access the main site entrance from the West on Barnham Road turning left into site. When exiting, all vehicles will be signed (and at times forced by traffic management provisions) to turn right, thus keeping construction traffic out of the Barnham Road village. The existing height restriction on the railway overbridge on Barnham Road east of the site will prevent large vehicles from travelling through Barnham village in any case.

All large vehicle deliveries will be pre-booked using a site specific vehicle booking management system and allocated a delivery time. This will eliminate multiple vehicles arriving on site at the same time, thus reduce traffic congestion and reduce the total numbers of vehicles on site at one time.

No site vehicles will be directed towards Barnham village. All delivery drivers will be emailed a map prior to attending site showing what site compound/access they are to attend and a specific time to arrive. This information will also be included within their subcontract orders prior to attending site for the first time. They will also be given a short briefing from site security explaining the one way systems in use and instructed where to offload. Vehicle marshals will be in attendance for all lorry movements on site.

### **Access to Main Works Site**

All large deliveries of materials or plant will be directed to the main works site rather than enter into site compound A. This will reduce the number of traffic movements needed to be made across the existing Barnham Road significantly whilst also eliminating the double handling of materials.

For large plant and material deliveries a dedicated well-signed works access will be provided into the site on the northern side of Barnham Road where the proposed new road intersects it. Here a suitably sized on-site reception/stacking area would be provided where deliveries pull into and are greeted by banksman/gatekeeper who will deal with the delivery and direct them along the site. Egress of vehicles will be via the same access.

All large or bulky materials will be delivered direct to the work face, and plant will be parked close to but not obstructing this access during non-working times so they are readily visible to the out of hours security.

All vehicles will access the main site entrance from the West on Barnham Road turning left into site. When exiting all vehicles will be signed (and at times forced by T/M provisions) to turn right, thus keeping construction traffic out of the Barnham Road village. The existing height restriction on the railway overbridge on Barnham Road east of the site will prevent large vehicles from travelling through Barnham village in any case. The construction team will monitor vehicle movements and if it is found that vehicles do use the village route then they will be excluded from returning to the site.

All large vehicle deliveries will be pre-booked using a site specific vehicle booking management system and allocated a delivery time. This will eliminate multiple vehicles arriving on site at the same time, thus reduce traffic congestion and reduce the total numbers of vehicles on site at one time.

No site vehicles will be directed towards Barnham village. All delivery drivers will be emailed a map prior to attending site showing what site compound/access they are to attend and a specific time to arrive. This information will also be included within their subcontract orders prior to attending site for the first time. They will also be given a short briefing from site security explaining the one way systems in use and instructed where to offload. Vehicle marshals will be in attendance for all lorry movements on site.

### **Access to Site Compound B**

Compound B is a smaller “satellite” compound which would include a small welfare unit, a small store and office which would be secured using heras fence panels.

There is an existing shared access driveway into this land (shared with next door neighbour Folly Farm), which is located directly off Fontwell Avenue. This existing vehicular access into compound B would be used to begin with. This would be a short term measure only during the time the site compound is being set up and it is anticipated vehicle movements utilising this existing access would be minimal. Once the new Fontwell Avenue roundabout is under construction it is anticipated that an access will be provided through the works (managed such as the well-signed works access to the southern access) off Fontwell Road at the proposed roundabout location and position the office compound to the side of that.

All large vehicle deliveries will be pre-booked using a site specific vehicle booking management system and allocated a delivery time, with pre-booked delivery times ensuring that traffic congestion is minimised.

Access to site compound B will be only allowed from the North using the A29 - no vehicles will be authorised to access site from the South (Barnham) due to the potential traffic congestion that may be caused by waiting on Fontwell Avenue to turn right into the access as noted above.

## 2.10 PROW Management During the Works

During the construction phase, PRowS and footpaths which intersect with the Site and those in the surrounding area will either be temporarily closed or have restricted access to users as outlined in Table 1 below.

Footpath	Interaction with the Scheme	Impact
<b>Existing Footpath PRow FP 318</b>	Bisected / crossed by the Scheme	The planned works both on and in the vicinity of the existing Public Right of Way will take place over several months and will sever the existing path in two with no obvious alternative short in length diversion routes available. A temporary closure will therefore be necessary.
<b>Existing pavement on the northern side of Barnham Road</b>	Bisected / crossed by the Scheme	The majority of works being undertaken here will be done “off-line” such that both existing road and footway will be unaffected. However, once the “off-line” works have been constructed pedestrians shall be diverted onto the new footpath whilst works are undertaken on the existing Barnham Road.
<b>Existing pavement on the eastern side of Fontwell Avenue</b>	Bisected / crossed by the Scheme	The vast majority of works being undertaken here will be done “off-line” such that both existing road and footway will be unaffected. However, once the “off-line” works have been constructed pedestrians shall be diverted onto the new footpath whilst works are undertaken on the existing Fontwell Avenue.

**Table 1 - Footpath / PRow Interaction**

With regards to existing footpath PRow FP 318, we have considered alternative routes whilst the temporary closure is in place but these would be very long, and furthermore there is no existing footpath on Eastergate Lane to provide a safe alternative route. A complete closure of this existing PRow will therefore be necessary – this approach has previously been agreed with Nick Scott (Principal Rights of Way Officer at WSCC).

During the works we will do all we can to minimise closure periods and re-open the PRow safely as soon as we can. We anticipate being able to keep this existing PRow open during the early phases of the scheme, (site set-up, vegetation clearance work and very early stages of

earthworks activities), meaning that the PRow could remain open until approximately mid-August 2023. Then as earthworks activities progressed into the area of the footpath the route would be closed completely and we anticipate it would not re-opened again until the scheme had been subsequently constructed to the point at which the formal Stage 2 Road Safety Audit had been carried out. This is due to both safety issues and construction build continuity. The new road at the intersection with the existing PRow is on embankment, meaning that heavy earth moving plant will be operating in the area. However, during the works JCE will offer regular site visits to the PRow officer to review the works and discuss re-opening and safety concerns. It may be possible for example to open the PRow earlier than stated above once footways are binder coursed (with suitable trip hazard preventions), but this would be confirmed during site visits and further discussions with the PRow officer.

Once the new PRow route was opened (anticipated to be late 2024 / early 2025) it would leave only final landscaping works to be carried out.

Heras type fencing will be used along the boundary of the newly diverted PRow during construction to ensure users do not stray onto the construction site. During PRow closures, suitable closure signage at the access points will be provided, updated and adequately maintained throughout the works.

Once the formal Road Safety Audit had been carried out and the PRow re-opened, there would be no need to reinstate the existing as it will be permanently diverted to its new alignment as part of the permanent works.

JCE shall prepare the necessary works to apply for a PRow closure, bearing in mind the 8 weeks' notice period required. The JCE PLO will also engage with the local community via letter drops and weekly newsletter updates to inform locals of particular construction activities that affect the PRow, including advanced notice of closure of the PRow, and new of the re-opening.

## 2.11 Construction Worker Travel Plan

A Construction Worker Travel Plan (CWTP) has been prepared and is included within the CTMP, with the aim of reducing the amount of single occupancy private cars arriving at the site.

Barnham Station is located approximately 0.6km to the southeast of the site. Furthermore, there are six bus services within the vicinity of the Scheme. This provides a good opportunity to promote use of public transport for the workforce to reach the site, and this is what the CWTP aims to encourage.

The CWTP sets out the projects aspirations for all staff, operatives and subcontractors to use public transport where possible to attend site.

During site inductions the CWTP will be introduced to all personal visiting the site. Local train and bus timetables will also be shared so to further encourage their use.

The CWTP also contains initiatives such as, the use of a mini bus to replace a number of private car movements with a single mini-bus pickup from the station and/or walking/cycling from the bus stops/station. Workers would also be encouraged to use alternative forms of transport such as walking or cycling as a way of promoting overall well-being and fitness. Initiatives like 'get off a stop early' – challenging personnel to get off the train or bus earlier than they normally would do to increase their levels of physical activity and wellbeing generally, will be encouraged. This would be included as part of the project's toolbox talk training programme.



A bike shed will also be provided within the main site compound to provide a safe and secure area for all bicycles.

## 2.12 Construction Stage Drainage Strategy

The Construction Stage Drainage Strategy is included in Appendix J. However in addition, the following measures/general principles will be put in place during the construction works so to carefully manage surface water run-off and ground water encountered during the construction works. .

**Spoil Management** – Due consideration shall be provided for potential for silt laden runoff from areas of temporary stockpiled and deposited spoil. Measures to be adopted in such areas shall include –

- Avoidance of placing temporary spoil stockpiles in close proximity to watercourses / drains;
- Requirement to cover clays with topsoil to prevent wash off of fine sediments;
- Provision of sediment settlement features down slope of stockpiled material until such times as potential for silt loading had reduced and / or vegetation has established.

### **Planning and Phasing of Drainage Works**

Unless proven technically unfeasible, both temporary and permanent drainage and silt management features shall be constructed prior to earthworks activities (including preliminary or enabling works) proceeding, including:

- For each drainage catchment, the downstream / outfalls / infiltration / attenuation facilities are generally to be constructed first, with drainage provisions then following on being installed "uphill";
- Road side drainage swales shall be installed in parallel with road construction activities. Note that this may require that drainage swales are reformed on an ongoing basis as temporary track and final road alignments are modified to their eventual finished design level;
- As a temporary situation until the site is developed with Barratt's proposed SuDS (which will manage all drainage within their site), a French drain is to be installed to allow any excess flows that cannot infiltrate, to discharge to the south west side of the A29 re-alignment embankment as land drainage. An overflow pipe crossing is proposed within the permanent works drainage design beneath the embankment, which connects into the proposed new drainage ditch to the existing Barnham Rife Ditch;

In addition, when working in areas of existing pavement, overall depths of pavement bound material and sub-base are to match the existing depths in order to maintain continuity of drainage at each pavement tie-in point. These areas shall be reviewed on site with the WSCC site supervisor so to ensure continuity of drainage is provided/maintained.

Temporary / permanent spoil management is to be planned in advance of earthworks and on an ongoing basis, in order to allow planning of drainage required in advance of spoil being deposited. Suitable prevention measures shall be provided at all times to prevent the

conveyance of silts to the infiltration facilities at Fontwell Avenue. All open excavations will incorporate sumps to allow rainwater runoff to be pumped through siltsocks to ground. In the event that suspended silts are below 2 microns a pipe reactor and floc blankets will be procured and placed in a bespoke trench to allow containment of the silt before the polished water is allowed to go to ground. Flocculants can be added to the pipe reactor and the floc blankets to ensure the silt is contained.

The use of BPM, as described in section 5.5 below shall be adopted during these works to mitigate against these drainage and water environmental risks, which include measures such as –

- Avoiding construction near watercourses / drains in wet weather whenever possible;
- Keeping cement and raw concrete out of watercourses;
- Runoff from excavations will NOT be pumped directly to watercourses. Where dewatering of excavations is required, water shall be pumped to the head of a treatment train (swale, basin, or detention pond) in order to receive full treatment prior to re-entry to the natural drainage system. Alternatively, bespoke dewatering facilities shall be produced where there are specific requirements for dewatering.

## 2.13 Control of Dust and Debris

Further to the measures provided in section 5.5 below, to ensure that dust and debris emission is controlled on site at all times, so to prevent dust and debris from being blown or otherwise deposited onto the local road network, the site team shall put following mitigation measures in place at all times during the construction phase of the project –

- The site layout shall be effectively planned as much as reasonably practicable so that machinery and dust causing activities are located away from potential receptors;
- A dedicated wheel washing system with rumble grids to dislodge accumulated dust and mud prior to leaving site shall be installed at both site compounds. All vehicles required to enter into construction areas will be subjected to wheel washing before leaving the site and entering onto the public highway. Wheel washing facilities will be operational throughout the period of construction. Please see below for further details on the proposed wheel washes to be utilised;
- In addition to the wheel washing systems being provided, a water-assisted dust sweeper shall be utilised on the local roads to ensure roads remain clear of debris and safe to road users;
- Material delivery vehicles entering and leaving sites shall be inspected to ensure that they are securely covered to prevent escape of materials during transport;
- Dedicated haul routes shall be regularly damped down with mobile dust suppression plant and regularly cleaned. An adequate water supply on site for effective dust / particulate matter mitigation and suppression (using recycled water where possible) will be made available at all times;
- Haul routes shall be regularly inspected for integrity, and any necessary surface repairs shall be instigated as soon as reasonably practicable;

- Concrete wash-out facilities shall be implemented within each site compound, so to allow concrete equipment to be washed off safely on site and prevent concrete waste debris from entering the public highway;
- Screens or barriers around dust activities of the site boundary shall be erected that are, at least, as high as any stockpiles on the site. These will be in the form of heras fence panels with suitable debris netting attached;
- Materials delivered to site (e.g. Type 1 aggregate) may need to be temporarily stockpiled on site before placement. This will especially be true if vehicle movements are spaced/averaged out so to avoid materials all being delivered to site in one go. Any material stockpiles on site shall be covered, seeded or fenced appropriately to prevent wind whipping;
- Suitable dust/air monitoring locations shall be agreed with WSCC, Arun DC and the EHO. Real-time dust and air quality pollutant monitors shall be put in place, checked regularly, and further mitigation measures implemented if deemed necessary. All will be on the advice of the Arun EHO;
- Only cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques, such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems, shall be used on site;
- Enclosed chutes and covered skips shall be used at all times;
- Any dust and/or air quality pollutant emission complaints shall be recorded and responded to as soon as is reasonably practicable;
- Regular site inspections shall be carried out so to monitor compliance with air quality and dust control procedures, recording inspection results. The inspection log shall be made available to the local authority when asked. The frequency of these inspections shall increase when activities with a high potential to produce dust and emissions are being carried out, and during prolonged dry or windy conditions.

### **Wheel Wash Specification**

It is anticipated that a drive through wheel wash bath system similar to that shown in figure 5 below will be used at each site compound.

The vehicles are cleaned as they drive over the rumble decks which shakes off the heaviest debris from the wheels before entering the bath. The bath then provides 3 full wheel rotations as the vehicles drive over the submerged rumble grids applying an effective cleaning to the tyres, mudflaps and undercarriage.

These units require no mains power and can be installed to any level hardstanding with ramps or can be installed at ground level, therefore giving us flexibility in positioning them on the site. These wheel wash systems have been successfully used recently on other Jackson sites.



Figure 5 - Example Wheel Wash System

## 2.14 Control of Noise (Including Vibration)

To ensure that noise and vibration is controlled on site at all times, the site team shall put following mitigation measures in place at all times during the construction phase of the project –

- The appropriate selection of plant, construction methods and programming: Only plant conforming with or better than relevant national or international standards, directives or recommendations on noise or vibration emissions will be used on the project;
- Construction plant will be maintained in good condition with regards to minimising noise output and workers exposed to harmful noise and vibration;
- Construction plant will be operated and maintained appropriately, having regard to the manufacturer's written recommendations or using other appropriate operation and maintenance programmes which reduce noise and vibration emissions. All vehicles and plant will be switched off when not in use;
- The permanent acoustic barrier shall be installed so to provide acoustic screening at the earliest opportunity that the programme allows, located in accordance with the scheme approved design drawings. Prior to the permanent acoustic barrier being installed, a temporary barrier shall be provided in the approximate location of the new barrier
- Vehicle and mechanical plant used for the works will be fitted with effective exhaust silencers, be maintained in good working order and operated in such a manner as to minimise noise emissions;
- Equipment that breaks concrete by munching or similar, rather than by percussion, will be used as far as is practicable;
- Where community complaints are recorded with respect to site noise, the relevant noise source will be identified and any additional feasible and reasonable measures available will be implemented to either reduce noise emissions or reduce the impact on receptors;
- The use of electrical items of plant instead of diesel plant shall be used where practicable and the work type allows it/are available;
- Deliveries shall be programmed where possible to arrive during daytime hours only;

- Plant and material off-loading areas shall be positioned such that they are as far away as reasonably practicable from local residents/properties. Care shall be taken when unloading vehicles/plant/materials to minimise noise;
- Delivery vehicles shall be routed so as to minimise disturbance to local residents, and these vehicles shall be prohibited from waiting within or in the vicinity of the site with their engines running;
- Lorries shall enter and exit work sites in a forward direction, except where space restriction does not permit this. This will assist in the minimisation of noise from reversing alarms;
- The site team shall work with the project’s Public Relations Officer so to establish relations with people living and working in the vicinity of the site. Such relations will be developed through keeping people fully informed of progress and by treating complaints fairly and quickly. Warning will be given prior to particularly noisy operations / night work being carried out, and contact details will be provided for site personnel having responsibility for addressing noise complaints.

Periodic monitoring by a suitably competent person throughout the construction phase shall be carried out to ensure that the above best practicable means are adhered to. This will include the use of noise monitoring equipment on site, and continued review of working methods and plant section. Baseline noise readings shall be taken prior to any works commencing, and these will be used in conjunction with Specification Appendix 1/9 to monitor noise.

Consultation shall take place between the site team and WSCC and ADC to discuss work activities, and if necessary JCE shall apply for a Section 61 Consent in accordance with the Control of Pollution Act 1974 to manage construction noise and vibration during the works.

## 2.15 Details of Temporary Floodlighting

It is envisaged that at times temporary construction lighting will be required to provide safe working conditions and to maintain security on the construction site - this will also assist in deterring break-in’s, vandalism and theft of plant and materials.

Use shall be minimal in extent and use. Table 2 below provides likely lighting source and potential impact information.

Phase of Works	Area of Works	Source	Impacts
Throughout	Site Compound Areas	Nominal standard 110v site safety lighting using low voltage fittings to perimeter site hoarding.	Light spill into residential and businesses Glare from lights onto public highway
Throughout	Site Areas	Mobile tower lights to illuminate specific areas.	Light spill into residential, businesses, and retained habitats

Road Surfacing	Existing Highways	Mobile tower lights to illuminate specific areas.	Light spill into residential and businesses Glare from lights onto public highway
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**Table 2 - Lighting Sources & Impacts**

“Permanent” lighting provided during the works will be predominately positioned at the Main Site Compound. Here the flood lighting used shall be highly directional and seek to minimise light spill and glare into the surrounding landscape. The use of these floodlights shall be kept to an absolute minimum, have timers fitted and switched-off when not in use.

Other construction lighting shall be designed such that, where practicable, all luminaires are installed internal to the site (such as on the inside of hoarding) and are directed towards the working area. Where lights are used, effective luminaires or other directional light accessories (shields, hoods or cowls) will be employed to ensure that light spillage, particularly onto adjacent retained habitats and residential areas, is prevented.

This lighting shall only be used during agreed construction works hours, except where lighting is required for out-of-hours security or safety reasons.

Mobile tower lighting units will be positioned around the site in strategic areas agreed with the WSCC Project Manager or WSCC NEC Site Supervisor. They will be high and facing downwards to prevent light overspill.

No lighting will be focused directly onto the highway, footpaths, residential and business properties. Continuous monitoring of the lighting will be carried out to ensure that the above statement is not compromised. The lighting towers will have restraining straps fitted bolts and pins or other type of fixing fitted to stop undue movement of the lighting heads in windy weather. These lights will be checked at the start of the shift for direction and adjusted accordingly if required.

Monitoring and Compliance of the lighting on site will be the responsibility of the JCE Project Manager. This will include visual inspections on a daily basis especially before lighting up and audits which will be carried out on a weekly basis and after periods of high winds and inclement weather.

Lighting shall adhere to industry best practice, including guidance from industry bodies (such as the Construction Industry Research and Information Association, CIRIA). CIRIA guidance, for example, notes that lighting on construction sites is typically required for security and safety, while at the same time being required to minimise impact on the surrounding environment in accordance with current best practice.

In addition to the above, construction operations are to be limited to daylight working hours where possible as detailed in section 2.1 above, with night works being avoided where possible to reduce lighting spill nuisance.

Typical tower lighting specification –



## LT9 | 4 x 1000W Metal Halide Lamps

TOTAL 360,000 LUMENS | MAST HEIGHT: 9000mm | YANMAR 3 CYLINDER ENGINE



### ELECTRICAL PERFORMANCE

Frequency	Hz	50Hz / Ph
Voltage	V	230
Phase	kVA (kW)	6.4 (6.4)
Circuit Breaker		3 Pole (inc Earth)
Power Factor		1.0 - Single Phase
Lamp Type		Metal Halide
Lamp Power	W	1000
Number of Lamps		4
Lamp Power	Lumens	360,000
Lamp IP Rating		IP65
Auxiliary Output		2 x 16A CEE
Auxiliary Input		30A CEE

### ALTERNATOR

Pole		4
Insulation		Class H
Enclosure		IP23
Voltage Regulator		AVR

### ENGINE

Rated Speed	RPM	1500
Output Rating	kW	7.5
Manufacturer and Model		Yanmar 3TNV76-GGEH
Fuel		Diesel
Injection		Direct
Aspiration		Natural
Cylinders		3
Cooling		Water
Air Filter		Dry
Engine Battery System	V	12
Battery Capacity	Ah	66
Starter Motor Power	kW	1.1

JCB LIGHTING TOWER TECHNICAL SPECIFICATIONS.

JCB reserves the right to change specifications without notice. Illustrations shown may include optional equipment and accessories.

Typical cabin & welfare lighting specification –



LED floodlights shall be used as they provide a high level of maintenance free illumination. Lower wattage fittings will also provide a useful level of local floodlighting, whilst the higher wattage fittings enable wider areas to be illuminated. Our proposed LED floodlights are pre-wired with a flexible cable and can be fed from a 110V or 230V supply.

## 3 Project Team Roles & Responsibilities

### 3.1 Construction Team

To fulfil the aims of this CEMP, and to ensure that all the environmental commitments for the construction of the works are met, it is important to ensure that the roles of all staff are clearly set out, and that prior to, and throughout the works, they are made aware of the environmental sensitivities and commitments that are required to be adhered to.

Following Contract Award, it will be the JCE Project Manager's responsibility to maintain and update this CEMP as and when required, setting out the latest information concerning roles and responsibilities, together with appropriate control measures, training and briefing procedures, risk assessments, stakeholder engagement and monitoring systems to be employed during planning and constructing the works for all relevant topic areas. As such, the CEMP will be treated as a live document, being updated as the works progress so to ensure that all construction activities are included and considered, whilst ensuring that measures to reduce environmental effects are integrated into the construction methods.

### 3.2 Environmental Team Requirements

This section provides further details on the roles and responsibilities of all key members of the Schemes' project environmental team (not just the JCE project team).

#### **JCE Project Manager, supported by the JCE Environment Manager**

The JCE Project Manager, with support from JCE's Regional QHSE Manager, supported by the company Environmental Manager, will be responsible for ensuring the works take place within the parameters as set out in the CEMP. The JCE Project Manager will take the lead in discharging the responsibilities listed below. The JCE Regional QHSE Manager, supported by the company Environment Manager shall provide a supporting role, visiting site as and when required.

They shall be responsible for:

- Developing the CEMP, on-going review and update of the CEMP and relevant procedures;
- Ensuring that all environmental standards and commitments are adhered to;
- Assist the JCE Site Agent with carrying out environmental inductions and training;
- Monitoring compliance of construction activities within the CEMP;
- Ensuring that appropriate SMART environmental targets are set and that progress towards achieving the targets is monitored;
- Conducting inspections and reporting non-compliances to the NEC Project Manager;
- Liaising with JCE's management and operatives on all matters of the environment;
- Monthly site inspections and issue of a monthly report of the on-going environmental activities until completion;



- Working to ensure commitments made during the design phase are carried through to construction;
- Working closely with the ECoW to ensure compliance with the CEMP, particularly with respect to root protection zones and no-go areas;
- Ensuring that all necessary works included within the CEMP are suitably catered for in the construction programme;
- Undertaking quarterly environmental audits throughout the works;
- Arranging for the undertaking of additional surveys as required associated with demolition works, including "Asbestos Refurbishment / Demolition Surveys" as necessary to help determine any further stringent site safety controls and Safe System of Work;
- Supporting WSCC on liaising with adjacent landowners;
- Sharing information with the WSCC Environment Team;
- Attending formal contract progress meetings and third-party interest groups as required; and
- Immediate reporting of non-compliances and alerting the EA in the event of an incident.

**Environmental Clerk of Works (role provided by the Employer)**

The Scheme Environmental Clerk of Works will be experienced in ecological and environmental assessment for highway/road projects, with recent experience on UK projects in environmentally sensitive areas.

They shall be responsible for:

- Working with the JCE Project Manager to assist with reviewing and updating the EMP (Appendix C) within the CEMP before construction;
- Overseeing implementation of the Task Specific Arboricultural Method Statement ( Appendix D);
- Providing briefings at appropriate intervals throughout the construction works of environmental risks and procedures to contractors undertaking the works;
- Monitoring clearance works and supervise higher risk activities;
- Working with the JCE Project Manager to review, update and maintain the Environmental Mitigation Plan throughout the works;
- Consult with machine operators prior to operating vegetation clearance machinery;
- Recording and reporting all environmental works;
- Maintenance of related records;
- Regular site inspections (minimum weekly);

- Attendance at any environmental incidents on site; and
- Reporting to the JCE Project Manager.
- Provide a watching brief for contamination and briefing of remediation method statement and procedures to contractors including the contaminated land monitoring activities.
- Liaising with the Project Arboriculturist and directly liaising with the WSCC County Ecologist and the County Arboriculturist; and
- Sharing all required information with the EHO.

### **Project Ecologist (role provided by the Employer)**

The Project Ecologist will be experienced in ecological assessment for highway/road projects, with recent experience on UK projects in environmentally sensitive areas. The role can be undertaken by the Environmental Clerk of Works if deemed appropriate by the Employer.

They shall be responsible for:

- Working with the JCE Project Manager to assist with reviewing and updating the EMP (Appendix C) within the CEMP before construction;
- Overseeing implementation of the Task Specific Arboricultural Method Statement (Appendix D) and ecological enhancement measures;
- Provide a briefing of ecological risks and procedures to contractors undertaking the works;
- Monitoring clearance works and supervise higher risk activities;
- Working with the JCE Project Manager to review, update and maintain the Environmental Mitigation Plan throughout the works;
- Consult with machine operators prior to operating vegetation clearance machinery;
- Check for potential hibernacula/refugia (such as discarded materials, logs and burrows) to be removed or destructively searched carefully outside hibernation season;
- Oversee clearance of habitat to confirm areas are unsuitable for hibernating animals;
- Check for potential hibernacula/refugia (such as discarded materials, logs and burrows) to be removed or destructively searched carefully outside hibernation season;
- Oversee clearance of habitat to confirm areas are unsuitable for hibernating animals;
- Carrying out pre-construction surveys and watching briefs on site as required in the EMP;
- Maintenance of related records;
- Reporting to the JCE Project Manager.

**Project Arboriculturist (role provided by the Employer)**

The Project Arboriculturist shall be responsible for:

- Interpreting tree protection requirements, advising on their implementation and providing technical review of any amendments to agreed details;
- Supervision of sensitive works in the vicinity of retained trees and root protection areas;
- Advising team with respect to specimens subject to Tree Preservation Orders (TPO), protection measures and monitoring requirements;
- Observing works in the vicinity of trees to be retained and maintaining records;
- Liaising with the Project Environmental Clerk of Works and directly liaising with the WSCC County Ecologist and the County Arboriculturist;
- Alerting the Environmental Manager with regard to stopping work where there is the potential for retained trees to be damaged, or where works represent a previously unidentified risk to retained trees; and
- Providing input into the Ecological Management Plan (Appendix C), work method statements and pruning schedule.

This role can be undertaken by the ECoW if they have the right qualifications and experience to cover the Project Arboriculturist's role. It is expected that the ECoW will undertake the "day to day" management of environmental matters on site, with the Project Arboriculturist undertaking more focused site visits when working adjacent to trees with TPO status.

**Public Liaison Officer**

JCE's Public Liaison Officer (PLO) shall carry out a supporting role to WSCC (the developer), aiding them in their liaison duties with the public and others. The PLO will develop and maintain the Communication Plan for the Scheme, in agreement with WSCC, which shall include an up to date register of community consultation including a list of complaints and actions. They shall also be responsible for providing information to WSCC for them to inform stakeholders of the works and programme and advising in the event of upcoming works with the potential for noise disturbance. JCE will also ensure that the EHO is a part of this process.

A weekly email progress update will be prepared by the PLO and reviewed by WSCC before being issued to stakeholders and residents who have "signed up" to regular updates. This approach has been undertaken on other recent WSCC Schemes and has proven very successful in managing expectation and updating the wider community. WSCC Officers then use the email to update the Schemes webpage on a weekly basis.

The PLO will provide a key role in informing local residents of any noisy or night works, who to contact if they have a noise (or any construction related) complaint, and also regular works updates via emails and / or newsletters to advise on works operations that week. Weekly email updates with a project newsletter shall be issued to stakeholders and residents who have "signed up" to regular updates – this is a practice we have successfully adopted on other recent WSCC schemes and has proven to be very successful in managing expectation and updating the wider community and also WSCC Officers, who have used the information to update the WSCC project specific webpage.

## 3.3 Roles and Responsibilities

Table 3 below outlines the key environmental roles and responsibilities:

**Table 3 – Environmental Roles and Responsibilities**

Activity	Responsible Person
<b>Ensure resources are made available to carry out environmental responsibilities</b>	NEC Project Manager
<b>Ensure measures detailed in the CEMP are carried out</b>	JCE Project Manager
<b>Produce the CEMP</b>	JCE Project Manager with Support from Capita
<b>Review and update the CEMP</b>	JCE Project Manager with Support from the JCE Environmental Manager
<b>Carry out Environmental Induction Training on site (as part of the overall site induction)</b>	JCE Project Manager
<b>Ensuring that all environmental standards and commitments are adhered to</b>	JCE Project Manager
<b>Carrying out site specific environmental training</b>	JCE Environmental Manager/Environmental Clerk of Works
<b>Carrying out monthly site environmental inspections</b>	Regional QHSE Manager
<b>Carrying out weekly site environmental inspections</b>	Environmental Clerk of Works
<b>Carrying out quarterly environmental audits</b>	Regional QHSE Manager, supported by the company JCE Environmental Manager
<b>Carrying out Waste Management Duties on site</b>	JCE Project Manager
<b>Carrying out regular site environmental checks</b>	JCE Project Manager
<b>Provide a watching brief for contamination and briefing of remediation method statement and procedures to contractors including the contaminated land monitoring activities.</b>	Environmental Clerk of Works

<b>Ensuring Risk Assessments/Method Statements (RAMS) take into account environmental aspects and risks on site</b>	JCE Project Manager
<b>Review/Provide environmental input RAMS</b>	JCE Project Manager
<b>Identify requirements for/inputting into/co-ordinating specific environmental RAMS for the works</b>	JCE Project Manager
<b>Producing specific environmental RAMS</b>	JCE Project Manager
<b>Ensure client instructions are implemented</b>	JCE Project Manager
<b>Carrying out Emergency Procedures</b>	JCE Project Manager
<b>Investigate Environmental Incidents</b>	JCE Project Manager with support from JCE Environment Manager
<b>Liaison with the Environment Agency</b>	JCE Project Manager
<b>Liaison with other interested parties/statutory bodies</b>	JCE Project Manager
<b>Arboricultural Monitoring</b>	JCE Project Manager/ Project Arboriculturist (or Environmental Clerk of Works if they are undertaking the role)
<b>Vegetation clearance ecological monitoring</b>	Project Ecologist

## 3.4 Environmental Instruction, Awareness Information and Training

All of JCE's environmental team shall be suitably trained for their roles, regarding competency requirements, environmental awareness, maintenance of training records, incident response procedures and use of spill kits in order to meet the environmental commitments set out in the CEMP. A record of training shall be maintained by JCE, with all site personnel undergoing pre-start aspect-specific tool box talks on the environmental issues related to the works and the CEMP.

JCE will be responsible for completing and maintaining this record of training (see Table E-2, Appendix E).

## 3.5 Ecological Management Plan (Appendix C)

An outline Ecological Management Plan (EMP) is available in Appendix C. The intent of the EMP is to –

- Provide an overview of the baseline ecological information for the Scheme and surrounding area; and

- Provide a mitigation plan to be implemented during construction and operation, based on the recommendations of baseline ecological assessments and the Chapter 9 Ecology and Nature Conservation of the associated Environmental Statement (ES) (WSP 2020b).

This EMP will be maintained/updated throughout the works by the JCE Project Manager.

## 4 General Procedures

### 4.1 Specific Proposals

Specific proposals for the operation, phasing, timing and sequencing of the works are detailed within JCE's Contract Programme and Construction Phase Plan (CPP). These documents shall be treated as live documents, such that proposals, methodologies and procedures remain flexible and be adapted throughout the works as necessary to accommodate changing needs and circumstances.

### 4.2 Environmental Accidents and Emergencies

In the event of an accidental release of hazardous materials, information regarding those materials, spill contaminated materials and spill response equipment shall be clearly stated on site. A procedure for a general response shall be included in JCE's CPP, stating the chain of command and standby operatives, and clearly advised to all staff.

A list of all nearby residential properties, downstream abstractors and other sensitive receptors that could be affected by an environmental incident shall be compiled and maintained by JCE.

The local community shall be informed about the environmental incident at the time if felt necessary by JCE.

If a serious accident occurs, the media and local community shall be issued with a fact sheet about the environmental incident, and the action taken by JCE to remedy the situation. This will be undertaken in accordance with the accepted Project's Communication Plan.

Details of the requirements for spill kits are as follows:

- Spill kits are to be held on site at all times;
- 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
- All operatives and site employees shall know what to do in the event of a spill. Spill response shall be in the site emergency procedures, the JCE spill action poster shall be displayed and training, including a dry run shall be done within two weeks of site start-up and whenever the site personnel changes significantly;
- Used spill kit equipment will be disposed of as hazardous waste; and
- Spill kits will be maintained and periodically inspected

Environmental incidents shall be recorded by JCE including:



- Nature of spill/leak/incident;
- Time/date;
- Exact location;
- Type of material released;
- Approximate volume released;
- Actions taken to prevent contamination;
- Individuals reported to; and
- Lessons learnt.

Lessons learnt shall be fed back to site staff through safety and environment briefings, and JCE's Project Manager / Environmental Manager shall if required amend procedures and update the CEMP accordingly.

Emergency procedures shall be tested monthly by the JCE Project Manager. Examples of procedures should include:

- The names and 24-hour contact details of all emergency response personnel and emergency services – Appendix I contains contact details and this shall be maintained/updated regularly throughout the works;
- The procedures for reporting and documents an emergency incident;
- Personnel responsibilities during an emergency incident; and
- The location of on-site information on hazardous materials and spill containment materials.

## 4.3 Arrangements for Public Engagement & Consultation

JCE's PLO shall support WSCC (the developer) with all aspects of community engagement during the construction period. The following tasks shall be required:

- Agreeing with WSCC a framework for managing communications with local residents;
- Providing weekly progress updates for WSCC review before being issued to stakeholders;
- Letter drops to inform local residents of particular construction activities, including advanced notice of the closure of the existing PRoW and when this will be re-opened. Review all traffic routes to ensure they are kept clean and clear;
- Establishing a point of contact, such as an email/webpage, for community engagement;
- Record any complaints on the site monitoring sheets (see Table E-3, Appendix E) and how they were dealt with; and
- Provide advance notice of work on site and proposed access arrangements.

The PLO will provide a key role in informing local residents of upcoming works (including advanced notice of any night works), who to contact if they have a construction related complaint, and also regular works updates via emails and / or newsletters to advise on works operations that week. They will provide this by providing weekly email updates with a project newsletter issued to stakeholders and residents who have "signed up" to regular updates, providing updates on the progress of the works and changes to traffic management layouts etc. Methods of communication include WSCC's internet pages, the distribution of leaflets to local businesses and other means as agreed with the WSCC's Project Manager and the WSCC NCE Site Supervisor. JCE will obtain approval from WSCC's Project Manager for all information to be published and ensure that the EHO are involved in this process.

All of our site personnel – including subcontractors – will be informed of our public communications strategies by our PLO but will be discouraged from talking directly to stakeholders and members of the public about the project. Our site personnel shall instead pass

on 24/7 communications contact details, for them to discuss or raise any areas of concerns with our PLO. Complaints and enquiries may sometimes require liaison with WSCC – in the first instance this shall be with WSCC's Project Manager.

When necessary, our PLO will provide any information as required, and maintain a close working partnership with WSCC's communications teams, supporting existing customer care and liaison procedures. Specific information – for example concerning programme changes, pedestrian/cycle access or traffic management proposals for the construction phase - will be discussed in detail and approved prior to communication to third parties.

Prior to commencement of the construction works, Jackson will provide the local residents with a mail drop outlining the following items:

- Key site personnel contract details (including emergency out of ours contact number);
- Explanation of the main site activities;
- Details of the "construction traffic route";
- Details of the working hours restrictions;
- Details of restrictions / diversion of public footpaths through/around the site;
- An estimated programme of works.

Regular engagement will take place with interested third parties including statutory and non-statutory bodies. Where required, RAMS shall be submitted to third parties for their review. WSCC shall lead on all external communication matters, with JCE providing a supporting role only as and when is required by WSCC direction.

In agreement with WSCC, contact details of the PLO will be made publicly available and advertised clearly. The PLO will maintain a register of queries and complaints from the public which will inform the day to day construction activities if necessary. The PLO will inform the JCE's Project Manager as and when complaints are received, at which point appropriate responses/mitigation shall be delivered to address the query/complaint, channelled through WSCC. These arrangements will be detailed in the Communication Plan. JCE shall register the site with the Considerate Constructors Scheme and this will be detailed in the Communication Plan, along with any Code of Construction Practice.

A dedicated e-mail address will also be set-up for electronic enquiries to be submitted to. The account will be administered solely by the PLO with viewing rights provided to the site manager and WSCC, so that they will be able to monitor any main concerns/issues being raised by stakeholders and act in a timely fashion after consultation with all parties.

At pre-arranged and agreed times during the works, local residents / stakeholders will be invited to site for them to view drawings, brochures and information on scheme activities. This will also provide them with the opportunity to meet our PLO face to face, so they can answer any queries and provide up to date information about the scheme's upcoming planned activities.

Engagement events shall be arranged throughout the project, arranged by our PLO in consultation with WSCC as required. These are envisaged to predominately comprise of –

- Monthly WSCC Member Briefings;
- Meetings with local businesses as required;
- Support at press events as required;
- Parish Council / Town Council Meetings as required.

Representatives from our site team shall be made available to attend these if necessary alongside our PLO.

Contact details are provided in this CEMP and shall be updated on a regular basis. These contact details will be displayed on the site notice board. A template for the Contact List is provided in Appendix H.

## 4.4 Risk Assessments

All activities undertaken on site shall be subject to a risk assessment which considers environmental impacts. Risk Assessments will be undertaken by JCE's trained staff. Depending on the start date for site works careful consideration will be given to the current COVID 19 situation, RA's will be compiled and populated.

Risk Assessments shall:

- Identify the significant environmental and Health & Safety impacts that can be anticipated;
- Assess the risk from the impacts;
- Identify the control measures to be taken and re-calculate the risk;
- Report where an inappropriate level of residual risk is identified so that action can be taken through either re-scheduling of work, alternative methods of working in order to reduce the risk to an acceptable level, or a design change;
- The results of risk assessments, and their residual risks are only considered acceptable if; the severity of outcome is reduced to the lowest practical level; the number of risk exposures are minimised; all reasonably practical measures have been taken and the residual risk rating is reduced to a minimum; and
- The findings of the risk assessment and in particular the necessary controls will be explained to all operatives before the commencement of the relevant tasks.

## 4.5 Method Statements

Method Statements shall be completed by JCE and/or subcontractors, by trained staff or other appropriate experienced personnel, in consultation with specialists. Their production shall include a review of the environmental/Health & Safety risk and commitments, so that appropriate controls measures are developed and included within the construction process.

Method Statements will be reviewed by the JCE's Project Manager, and where necessary, by an appropriate environmental specialist. Where appropriate, method statements will be submitted to the relevant authorities (for example Environment Agency, Natural England, an Environmental Health Officer and Emergency Planning Officer etc.) as required by the Employer.

Method Statements shall contain as a minimum:

- Location of the activity and access/egress arrangements;
- Work to be undertaken and methods of construction;
- Plant and materials to be used and how these will be stored;
- Use of construction compounds;
- Labour and supervision requirements;
- Health, safety and environmental considerations;
- Consent requirements; and

- Permit system requirements (ensuring the role of permit controller has been nominated from the JCE approved list of competent individuals).

## 4.6 Environmental and Social Targets

To help achieve and maintain high levels of environmental and social performance for the construction of the Scheme, Jackson work to be SMART;

- Specific
- Measurable
- Agreed
- Realistic
- Timed

Other specific targets have been set and are listed below in order of priority:

- Ensure no pollution incidents occur;
- Ensure no enforcement actions occur;
- Ensure waste is managed as high-up the waste hierarchy as is practicable; and
- Ensure all environmental mitigation is implemented and monitored where appropriate.

Scheme specific social value and KPI targets have been agreed with WSCC – these are included in Appendix I.

The achievement of these targets shall be reported in the Environmental Site Monitoring process.

## 4.7 Training, Awareness and Competence

The raising of environmental awareness is viewed as a crucial element of the CEMP. All of JCE's site staff shall undergo environmental awareness training by way of the pre-start induction process. This will identify the key environmental sensitivities and mitigation, including individual responsibilities for checking and reporting.

JCE shall ensure that all personnel engaged in activities that may have an impact on the environment are competent to carry out their duties or, where necessary, arrange for suitable training to be undertaken.

## 4.8 Consents, Commitments and Permissions

JCE shall maintain a schedule of consents or permits, and any associated conditions (see Appendix G), within the CEMP and ensure that they are appropriately briefed out to on-site personnel. This schedule will provide a record of consents and permissions from Statutory Bodies, other stakeholders and any commitments made to them.

## 5 Record of Environmental Impacts, Mitigation and Monitoring

The Register of Environmental Actions and Commitments (REAC) summarises the committed mitigation measures within the chapters of the Environmental Statement (ES) and associated appendices prepared by WSP as part of the Scheme's planning application. Where relevant, cross-references are provided to the 'Requirements' that will secure the commitments in the DCO/planning conditions.

The REAC is a live document, normally reviewed and updated every 6 months or before any significant changes, and as such will be updated as the project progresses in collaboration with the continual development and reviews of the CEMP. A REAC has been developed for this Scheme and is shown in table 6.

The REAC also aims to ensure that JCE complies with all relevant legislation for the construction phase of the Scheme. The relevant legislation is inclusive of but not limited to the following:

- Clean Air Act 1993 (as amended);
- Clean Neighbourhoods and Environment Act 2005 (as amended);
- Control of Pollution Act 2001;
- Environment Act 1995 (as amended);
- Environmental Protection Act 1990 (as amended);
- Land Drainage Act 1994;
- Planning and Compulsory Purchase Act 2004 (as amended);
- Protection of Badgers Act 1992 (as amended);
- The Conservation of Habitats and Species Regulations 2010 (as amended);
- The Environmental Permitting (England and Wales) Regulations 2010;
- The Hazardous Waste Regulations 2005 (as amended);
- The Waste (England and Wales) Regulations 2011.

In addition to the above, JCE shall refer to Highways England's DMRB, CIRIA Environmental Good Practice on Site C741, and Environmental Agency Pollution Prevention Guidance Notes (though no longer current, these continue to provide useful guidance for construction work).

### 5.1 Geotechnical Investigations and Remediation Strategy

Two main "rounds" of geotechnical investigation have been carried out during the design stages of the project. A Ground Investigation Report (GIR) was produced by WSP (Report number 70031782/GEO/004 dated January 2019) following initial ground investigation. A GIR addendum (A29-CAP-HGT-00-RP-GE-0044 dated December 2020) was then produced by Capita following supplementary ground investigation undertaken by Nicholls Colton. The report includes data summaries from the previous ground investigations undertaken along and in proximity to the alignment. From this report Capita then prepared the schemes Geotechnical Design Report (GDR) (Report number A29-CAP-HGT-00-RP-GE-0045 dated May 2021). This GDR summarises the schemes geotechnical design parameters, provides preliminary estimates of earthworks volumes, and gives assessments on the site won re-use of the different ground materials likely to be encountered/generated during the works.

The GDR also provides a detailed assessment of potential contamination and amelioration. A brief summary of the assessment and remediation actions are provided below.

Based on the aggregate soil sampling from the two separate ground investigations, areas of poor land quality at the site were identified and appear restricted to three areas:

1. Backfill comprising sand mixed with man-made objects to former gravel quarry under part of the A29 roundabout and part of the northern leg approach road. This material has trace asbestos and organic contamination;
2. Adjacent areas to the south and south west of the former quarry where tarmacadam entrained in either topsoil or made ground results in contamination; and
3. Segments of the bund located beside the Halo compound, which has a combination of plastic and metal artefacts and organic contamination.

### **Historic Infilled Gravel Pit**

The upper 1.5 m horizon of the historic infilled gravel pit, which is located under the western part of the A29 (Fontwell Avenue) roundabout and part of the roundabouts' northern approach road contains levels of organic contamination above UK guideline levels for parks type land use. The lines and levels of the scheme will involve excavation and removal of this material beneath the roundabout and part of the approach road to the north. Levels will be partly restored with either validated uncontaminated Class 1 material or Class 1 material derived from virgin excavated material. This will ameliorate human health risk here.

The planned cut operations will leave up to 1.20m of infilled quarry backfill in place and testing as part of the Autumn 2020 site investigation work suggests that this will deliver a low-risk source of leaching into the granular aquifer and a controlled waters detailed quantitative risk assessment (DQRA) was carried out to quantify this risk and provide a document for approval by the Environment Agency. This is provided in Appendix K and concludes that as over 600m<sup>3</sup> of material will be removed from the site, leaving a greatly depleted soil source at the site, as the higher concentrations were found in the shallow samples, the risk to controlled waters receptors following the highway development is considered to be relatively minimal. The report has been reviewed and approved by the Environment Agency.

In adjacent areas to the proposed A29 roundabout there is a disturbed zone of topsoil or made ground which is also impacted with organic chemicals. This disturbed topsoil lies between the north eastern, eastern, south eastern and southern parts of the roundabout (and its outer peripheral cycle way) and the edges of the site in the north–south direction and up to chainage 50.00m in the easterly direction. The topsoil layer either in situ or taken into stockpiles shall be treated as Class U1B material. Additional sampling will be undertaken as an enabling exercise as soon as site works commence, employing six trial pits to allow for delineation of contaminated materials. A portion of these pits may be provided as part of a parallel soakage testing phase of extra work.

### **Remaining Areas of Site**

The remedial plan for existing contaminated areas is to ensure there is a minimum 450mm thickness of uncontaminated topsoil and subsoil present over the footprint of landscaping areas on completion of the works.

The 450mm thickness can be provided in a number of ways to suit the lines and levels of the scheme. One acceptable solution being to provide 450mm of clean capping (topsoil being an acceptable part of the capping layer) and another solution would be to remove the contaminated layer in its entirety to reveal virgin soils. Any hard pavement, be it highway or cycle path would be deemed as providing adequate cover and hence it is the landscaping areas which require



treatment in this manner. The outcome of the treatment shall be captured within the scheme Geotechnical Feedback Report and also in Health and Safety file.

A watching brief is required during all excavation work within made ground materials. Particular areas of focus will be the A29 roundabout, the area opposite the Halo compound and the area around the entrance way to the Nursery off Barnham Road.

## 5.2 Site Inspections

Monthly/Weekly inspections of the site shall be conducted, by the JCE Project Manager, JCE Regional QHSE Manager and ECoW respectively, to ensure compliance with the CEMP and to minimise the risk of damage to the environment. All environmental incidents shall be reported to JCE Environment Manager. In addition, a watching brief will be maintained during earthworks activity to ensure that unexpected contaminated materials, if encountered, are managed in an appropriate manner and in accordance with statutory requirements.

The JCE Regional QHSE Manager shall carry out monthly inspections and complete an assessment of the work's environmental performance measured against environmental standards, relevant legislation and the CEMP objectives. The JCE Project Manager, supported by the JCE Regional QHSE Manager shall produce a monthly report detailing environmental performance and non-compliances.

The ECoW will undertake a programme of monitoring. This may include phone and email contact with the JCE Project Manager, regular site visits and direct monitoring of sensitive works.

The Project Arboriculturist (or ECoW if carrying out the role) shall also undertake a programme of monitoring when works are in close proximity to trees. The frequency will be determined by the intensity and proximity of works to trees and will be flexible enough to accommodate changes in the scheduling of tasks as they occur on the site. Further details can be found in the Task Specific Arboricultural Method Statement contained within Appendix D.

The number of arboricultural inspections required during the works is identified in the AMS and includes the following:

1. Checks of tree protection fences by an appointed person; and
2. Checks of ground protection measures by an appointed person.

The ECoW will monitor during vegetation clearance in line with the procedures detailed in the Task Specific Arboricultural Method Statement (contained within Appendix D).

Document control shall be in accordance with the QMS and copies of all environmental audit reports, consents and licenses shall be maintained by JCE's Project Manager. They will be held on site for review at any time.

JCE shall be responsible for assigning responsibility, investigating and addressing any non-conformances raised by the inspection within an agreed time frame and ensuring that corrective and preventative actions have been fully closed out.

JCE shall be responsible for updating and reviewing the CEMP on a regular basis. This must be recorded in the CEMP review table (see Table E-1 in Appendix E).

This CEMP includes details of how communication will be managed during the construction phase. This includes communication between JCE and WSCC's Client Manager, any

subcontractors and suppliers, the public, the proposed chain of command and protocols for submitting Environmental Records to WSCC’s Client Manager.

In order to ensure that environmental issues are communicated on site, table 4 below identifies the environmental training and on-going communication methods that shall be undertaken.

**Table 4 – Environmental Training and Communication**

Meeting/Briefing/Training	Frequency	Attendees
<b>Safety Health Environmental Topics within Progress Meetings</b>	Weekly/Monthly	Those identified with safety, health and environmental responsibilities
<b>Induction Training (which will include environmental aspects)</b>	On first visit to site	All persons attending site (site personnel, sub-contractors, clients, visitors)
<b>Risk Assessment and Method Statement briefings</b>	Every job task	All involved in task
<b>Environmental Toolbox Talks (TBT): Environmental TBTs will be carried out appropriate to the construction works being carried out on site at that time</b>	Every job task	All involved in task
<b>Environmental briefings (bulletins, alerts, lessons learnt, results of inspections/audits</b>	As required	As identified for personnel with environmental responsibilities
<b>Job specific training: Institute of Occupational Safety and Health Working with Environmental Responsibilities; Site Waste Management.</b>	As required	As identified for personnel with environmental responsibilities
<b>Project specific information, including the CEMP</b>	As required	Briefed out to all staff and displayed on notice boards

JCE shall manage the environmental impacts of all suppliers that provide services in relation to the works. The environmental stewardship of suppliers working with/for JCE shall be managed, monitored and reported through the application of Method Statements.

JCE shall co-operate fully with arrangements for auditing suppliers’ safety and environmental procedures. JCE’s Project Manager/Environment Manager shall advise the NEC Project Manager on external communication with regulatory bodies, the public, and any other external stakeholders on environmental matters.

## 5.3 Managing Waste Resulting from Demolition & Construction Works

The construction team shall prepare a Materials Management Plan (MMP) and Site Waste Management Plan (SWMP) for the Scheme. This will be prepared and submitted to the WSCC Project Manager for approval 2 weeks prior to on-site construction activities commencing. The SWMP will set out how different types of waste will be prevented, reduced or reused and recycled in accordance with the waste hierarchy, and will include the following:

- Roles and responsibilities;
- Types and volumes of waste reused, recycled and landfilled;
- Where the materials and waste have been reused, recycled and landfilled, both on and off site;
- Waste recovery and disposal facilities that will be used and their details of their permits/licences/exemptions, both on and off site;
- Waste recovery and disposal contractors that will be used and details of waste carriers licence;
- Any waste exemptions that are in place in order to enable waste to be reused;
- Waste transfer notes (WTNs) and waste consignment notes to ensure that all waste movements are accompanied by a WTN and that all the requisite information is provided;
- Scheme performance objectives and targets to ensure they are met;
- Forecasting, recording, monitoring and reviewing waste management on site;
- Facilities for segregation of waste;
- Monitoring requirements including:
  - Visual inspection of waste storage areas to ensure they are contained and managed properly;
  - Visual inspection of material recycling areas to ensure they are contained and managed properly;
  - Check workforce recycling bins and replace when required; and
  - Check all waste containers for leaks.

The MMP will be used to monitor the maximum reuse of natural soils and made ground. The format of the MMP will be appropriate to the scale of the works and in a format agreed with the JCE Environment Manager.

The MMP also forms part of the CL:AIRE DoW CoP This will be applied as appropriate to the site once the MMP has established what requirements may be required. This information will determine that the materials on site will not harm human health or pollute the environment and are no longer considered a waste.

## 5.4 Environmental Site Monitoring

JCE shall undertake on-site environmental monitoring to ensure high standards of environmental performance are maintained on-site. This shall be undertaken weekly. This will be confirmed with the site environmental monitoring sheets, which shall be completed and the results reviewed by JCE's Project Manager/Environment Manager and any actions must be completed as a matter of urgency. The monitoring shall involve the following:

- Visual Dust monitoring;

- Visual inspection of existing drains and road gullies to ensure no blockages from construction waste and pollution, as well as inspection of new drains if operational during construction;
- Inspection of waste management facilities;
- Inspection of plant spill kits and re-fuelling areas;
- Inspection of all tree and vegetation protection zones;
- Inspection of ecology fencing and any sensitive receptors; and
- Inspection of access roads and public highways to ensure cleanliness.

In addition, daily inspections of the aspects above shall be assigned to the JCE Site Agent, with the JCE Sub Agent acting as their deputy.

WSCC wishes to maintain high waste management performance levels on the site and targets shall be set for the construction period. Separate waste monitoring will be required, and this will involve the following:

- Visual inspection of waste storage areas to ensure they are contained and managed properly;
- Visual inspection of material recycling areas to ensure they are contained and managed properly;
- Check workforce recycling bins and replace when required;
- Check all waste containers for leaks;
- Ensure the Site Waste Management Plan (SWMP) is updated and all waste transfer notes are complete; and
- Ensure checks are undertaken to ensure waste is being transported to the correct waste disposal facilities.

A SWMP is not included in this CEMP, but shall be prepared as part of JCE's Project Management Plan.

The predicted environmental impacts during construction can be viewed in Appendix F.

## 5.5 Register of Environmental Actions & Commitments

Table 5 – Register of Environmental Actions & Commitments

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
<b>Air Quality</b>	<ul style="list-style-type: none"> <li>Changes in levels of dust and particulates at existing receptors due to on-site construction activities.</li> </ul>	<ul style="list-style-type: none"> <li>To minimise the risk of adverse impacts during construction from dust, industry best practice measures are to be employed. The measures used will depend on the circumstances but may compromise the following:                             <ul style="list-style-type: none"> <li>Damping down on dry surfaces, in-particular haul roads;</li> <li>Avoiding/minimising stockpiling of friable materials on-site in open areas;</li> <li>Locating stockpiles (if necessary) as far away from sensitive receptors as practicable;</li> <li>Seeding or screening of long-term inactive stockpiles;</li> <li>On-site speed restrictions to minimise dust entrainment;</li> <li>Sheeting/covering of lorries carrying potentially dusty materials;</li> <li>Wheel/chassis cleaning prior to exit onto the public highway;</li> <li>Requiring all on-site plant to comply with the latest EU emissions standards for non-road mobile machinery; and</li> <li>Requiring all contractor vehicles to be compliant with a minimum Euro emissions standard, for example Euro VI (6).</li> </ul> </li> <li><b><u>Site Management:</u></b></li> </ul>	<ul style="list-style-type: none"> <li>Monitoring to ensure effective implementation of mitigation measures throughout the construction stage - this will be undertaken by regular visual inspections to record the weather and ground conditions, activities taking place, mitigation measures being applied and any evidence of increased dust deposition and soiling in the area surrounding the works. Visual monitoring of dust deposition.</li> <li>Suitable dust/air monitoring locations shall be agreed with WSCC, Arun DC and the EHO.</li> <li>Inspection and monitoring report to be shared with the EHO.</li> <li>Plant hire team to specify in each plant hire request. Euro VI data sheets will be</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• Records of dust and air quality complaints to be kept, including likely causes and mitigation measures to reduce impacts if appropriate;</li> <li>• Keep site perimeter, fences etc. clean;</li> <li>• Visual inspections of dust deposition daily to ensure as far as is reasonably practicable, minimal dust is being generated at all times.</li> <li>• The complaints log should be made available to the local authority on request;</li> <li>• Any exceptional incidents that cause dust and/or air emissions, either on- or offsite should be recorded, and then the action taken to resolve the situation recorded in the log book.</li> <li>• Consideration must be given to monitoring of dust soiling at nearby residential properties, at locations agreed with the local authority. Linked to above for continued monitoring. Appropriate hoarding and/or dust busters shall be used as appropriate; and</li> <li>• Stabilisation of topsoil material bunds.</li> <li>• <b>Site Planning:</b> <ul style="list-style-type: none"> <li>• Consideration of weather conditions, dust generating potential of material to be excavated prior to commencement of works;</li> <li>• Plan site layout to maximise distance from plant/stockpiles etc. to sensitive receptors;</li> <li>• Dusty materials should be removed from site, profiled or covered as soon as possible;</li> </ul> </li> </ul>	<p>obtained to prove compliance. Achievement to be recorded within plant sheets.</p>



Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• Where practicable, use dust busters or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site; and</li> <li>• If work within 20m of residential properties cannot be avoided, erect solid screens at least as high as Stockpiles.</li> <li>• <b><u>Construction Traffic:</u></b> <ul style="list-style-type: none"> <li>• Loads entering and leaving the site with dust-generating potential should be covered and wheel washing facilities shall be made available;</li> <li>• No idling of vehicles;</li> <li>• Vehicles to comply with site speed limits;</li> <li>• Water assisted sweeping of local roads to be undertaken if material tracked out of site;</li> <li>• Install hard surfacing as soon as practicable on site and ensure that they are maintained in good condition;</li> <li>• Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable;</li> <li>• A Construction Traffic Management Plan (CTMP) incorporating construction logistics has been produced to manage the sustainable delivery of goods and materials; and reduce nuisance.</li> <li>• A Construction Worker Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing) has been prepared.</li> </ul> </li> <li>• <b><u>Site Activities:</u></b></li> </ul>	

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• Exposed soils should be protected from winds until sealed or re-vegetated;</li> <li>• Minimise dust generating activities by continually reviewing working methods, particularly near residential receptors/sensitive ecosystems during prolonged dry, dusty weather unless damping/other suppressants are used. Damping down will be regularly carried out in dry weather to ensure dust suppression;</li> <li>• Ensure an adequate water supply to site and use water as dust suppressant where applicable. It's not envisaged that grey water will be readily available, however this will be investigated further when on site and if appropriate will be abstracted in accordance with appropriate licencing regulations;</li> <li>• Ensure equipment suitable for clearing spills etc. is available at all times;</li> <li>• Use covered skips where practicable.</li> <li>• Ensure any site machinery is well maintained and in full working order; and</li> <li>• Sand and aggregates shall be stored away from sensitive receptors and screened/shielded.</li> <li>• <b><u>Earthworks:</u></b> <ul style="list-style-type: none"> <li>• Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;</li> <li>• Stockpile surface areas should be minimised (subject to health and safety and visual constraints regarding slope gradients and visual intrusion) to reduce area of surfaces exposed to wind pick-up;</li> </ul> </li> </ul>	

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>Where practicable, sheeting should be positioned around material stockpiles, and vehicle loading/unloading areas shall be positioned away from site boundaries and residential properties.</li> <li>During dry or windy weather, material stockpiles and exposed surfaces should be dampened down using a water spray to minimise the potential for wind pick-up.</li> <li><b>Construction Specific Measures:</b> <ul style="list-style-type: none"> <li>Avoid scabbling (roughening of concrete surfaces) if possible; and</li> </ul> </li> <li><b>Track Out Specific Measures:</b> <ul style="list-style-type: none"> <li>Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being in frequent use;</li> <li>Avoid dry sweeping of large areas; and</li> <li>Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.</li> <li>Traffic management measures will be required during the construction phase and shall be detailed in the PMP.</li> </ul> </li> </ul>	
<b>Noise and Vibration</b>	<ul style="list-style-type: none"> <li>Noise impacts on residential dwellings from on-site construction activities; and</li> <li>Vibration impacts on residential dwellings</li> </ul>	<ul style="list-style-type: none"> <li>The use of BPM, as defined under Section 72 of the CoPA (Ref 7.1) specifically to mitigate against noise and vibration:</li> <li>The appropriate selection of plant, construction methods and programming: Only plant conforming with or better than relevant national or international standards, directives or recommendations on noise or vibration emissions will</li> </ul>	<ul style="list-style-type: none"> <li>Periodic monitoring by a suitably competent person throughout the construction phase to ensure that Best Practicable Means (BPM) identified are adhered to at all times. This will include the use of noise monitoring</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>from on-site construction activities.</p>	<p>be used. Construction plant will be maintained in good condition with regards to minimising noise output and works exposed to harmful noise and vibration;</p> <ul style="list-style-type: none"> <li>• Construction plant will be operated and maintained appropriately, having regard to the manufacturer’s written recommendations or using other appropriate operation and maintenance programmes which reduce noise and vibration emissions. All vehicles and plant will be switched off when not in use;</li> <li>• Design and use of site hoardings and screens, where necessary (but including at the main site compound and to the eastern boundary of the site), to provide acoustic screening at the earliest practicable opportunity. Where practicable, gates will not be located opposite buildings containing noise-sensitive receptors (NSRs). The localised use of temporary site hoardings or noise barriers has not been included in the assessment of construction noise undertaken by WSP in order to represent a worst-case scenario. BS 5228 advises that noise barriers can provide a reduction in noise levels of 5dB when the top of the plant is just visible over the noise barrier, and 10dB when the plant is completely screened from a receptor. The effectiveness of a noise barrier depends upon its length, effective height, position relative to the noise source and to the receptors, and the material from which it is constructed.</li> <li>• Install the Schemes permanent noise barrier as soon as practicable;</li> <li>• Choice of routes and programming for the transport of construction materials, spoil and personnel to reduce the risk of increased noise and vibration impacts due to the construction of new roundabouts. Further details are included within the CTMP;</li> <li>• Vehicle and mechanical plant used for the purpose of the works will be fitted with effective exhaust silencers, be maintained in good working order and operated</li> </ul>	<p>equipment on site, continued review of working methods and plant section. Baseline noise readings shall be taken prior to any works commencing, and these will be used in conjunction with Specification Appendix 1/9 to monitor noise.</p>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<p>in such a manner as to minimise noise emissions. Plant items that comply with the relevant EU/UK noise limits applicable to that equipment will be used;</p> <ul style="list-style-type: none"> <li>• The positioning of construction plant and activities to minimise noise at sensitive locations;</li> <li>• Equipment that breaks concrete by munching or similar, rather than by percussion, will be used as far as is practicable – however its currently envisaged that no work of this type is required; and</li> <li>• The use of mufflers on pneumatic tools;</li> <li>• Selection of low vibratory equipment and methodologies;</li> <li>• Any complaints that occur during the works period will be appropriately addressed and recorded in the Site Monitoring Sheet, including details of the actions taken; and</li> <li>• Where community complaints are recorded with respect to site noise, the relevant noise source will be identified and any additional feasible and reasonable measures available will be implemented to either reduce noise emissions or reduce the impact on receptors;</li> <li>• Use of electrical items of plant instead of diesel plant where practicable and the work type allows it/are available;</li> <li>• Deliveries should be programmed to arrive during daytime hours only;</li> <li>• Care should be taken when unloading vehicles to minimise noise;</li> <li>• Delivery vehicles should be routed so as to minimise disturbance to local residents;</li> </ul>	

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• Delivery vehicles should be prohibited from waiting within or in the vicinity of the site with their engines running;</li> <li>• Lorries shall enter and exit work sites in a forward direction, except where space restriction does not permit this. This will assist in the minimisation of noise from reversing alarms. In that event, movement shall be properly controlled by a responsible person(s) observing the rear of the vehicle. Entry and exit conditions shall be approved with the Highways Authorities prior to their implementation.</li> <li>• All site staff, including sub-contractors, will be made aware of the potential for noise and vibration issues to arise and the use of BPM and the CEMP through site inductions and Toolbox Talks;</li> <li>• Work with the PLO to establish relations with people living, working and studying in the vicinity of the site. Such relations will be developed through keeping people fully informed of progress and by treating complaints fairly and quickly. Warning will be given prior to particularly noisy operations / night work being carried out, and contact details will be provided for site personnel having responsibility for addressing noise complaints.</li> <li>• Consultation shall take place between the site team and WSCC and ADC to discuss work activities, and if necessary JCE shall apply for a Section 61 Consent in accordance with the Control of Pollution Act 1974 to manage construction noise and vibration during the works</li> </ul>	
<b>Water Resources and Flood Risk</b>	<ul style="list-style-type: none"> <li>• Short-term increase in flood risk due to construction activities.</li> <li>• Potential effects on the water quality of surface water and groundwater</li> </ul>	<ul style="list-style-type: none"> <li>• The use of BPM, operational management and design of the Scheme, including the provision of temporary attenuation features and runoff control.</li> <li>• Secondary mitigation measures during the construction phase will include the following:</li> </ul>	<ul style="list-style-type: none"> <li>• Groundwater level monitoring during the construction phase if groundwater is encountered.</li> </ul>



Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>resources due to construction activities or accidental leaks and spillages.</p> <ul style="list-style-type: none"> <li>• Potential increase in physical contamination (i.e. sedimentation) of surface water bodies due to ground disturbance.</li> <li>• Fluvial flooding is possible near the access road and pond 3 near Barnham Rife Ditch.</li> <li>• Sensitive water receptors that could be impacted by pollution are surface water bodies (Barnham Lane Ditch, Lidsey Rife and School Ditch) and groundwater bodies (Superficial Deposits). The pollution of both surface and groundwater bodies may be exacerbated by accidental spillages.</li> <li>• During periods of heavy rainfall, vehicle movements associated with construction activities resulting in damage to soil structure may generate increased</li> </ul>	<ul style="list-style-type: none"> <li>• Excavation elements to be constructed during the summer months where possible;</li> <li>• Groundwater levels to be monitored throughout construction by the site team using existing monitoring points;</li> <li>• Damp proof membranes will be incorporated during construction where necessary to prevent the ingress of shallow groundwater into cuttings and excavations;</li> <li>• Storage of material and construction activities should avoid areas of flood risk;</li> <li>• Temporary bunding and settlement ponds;</li> <li>• Preparation of incident response plans to set out the measures that must be taken in the event of a pollution incident;</li> <li>• On-site availability of oil spill clean-up equipment including absorbent material and inflatable booms for use in the event of an oil spill or leak;</li> <li>• Wherever possible, plant and machinery would be kept away from the drainage system and watercourses;</li> <li>• Use of drip trays under mobile plant;</li> <li>• Construction materials brought to site shall be free of any contaminated material;</li> <li>• Care shall be taken to ensure that wet cement does not come into contact with surface water or near the streams and drainage ditches. Cement should be poured in dry and consideration should be given to use fast drying cement;</li> <li>• If ground contamination is encountered during construction works, work shall stop immediately and measures would be taken to prevent disturbance and mobilisation of contaminants, until the contamination has been treated in-situ or removed for off-site treatment – the Contractor’s design consultant will be called to site in such instances to review. Planning condition 10 requires that if during the works contamination not previously identified is found, no further works (unless otherwise agreed in writing with the County Planning Authority) are to be carried out until a remediation strategy detailing how \ will be dealt with is submitted to and approved by the County Planning Authority, in conjunction with the Environment Agency</li> <li>• Working areas shall be clearly defined to ensure the disturbance of soils is minimised, where possible;</li> <li>• Haul routes and accesses shall be clearly defined to minimise risk of accidents;</li> <li>• Site vehicles will require their wheels washed prior to leaving Site;</li> <li>• Controlled and covered waste storage areas;</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of systems such as silt traps and swales designed to trap silty water including adequate maintenance and monitoring of these to ensure effectiveness, particularly after adverse weather conditions.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>sedimentation within surface run-off.</p>	<ul style="list-style-type: none"> <li>• Implementation of a Dust Management Plan (i.e. damping down) with subsequent consideration given to the management of surface water run-off;</li> <li>• Installation of systems such as silt traps and swales designed to trap silty water including adequate maintenance and monitoring of these to ensure effectiveness, particularly after adverse weather conditions;</li> <li>• Provision of environmental awareness training for Site workers;</li> <li>• The final permanent surface water drainage design shall be constructed on a phase by phase/catchment by catchment basis as part of the design solution to attenuate flow and control runoff from new impermeable surfaces;</li> <li>• The implementation of a temporary drainage strategy to prevent uncontrolled runoff; and</li> <li>• The operational drainage system will need to be protected from sediment or debris, and jetted on completion of the works to remove any accumulation of sediment or debris.</li> </ul> <ul style="list-style-type: none"> <li>• Measures to specifically minimise the short-term increase in flood risk due to construction activities include the following:                             <ul style="list-style-type: none"> <li>• Implement a construction-phase drainage strategy to intercept, capture and attenuate surface water runoff and adopt a phased approach to the construction of the operational drainage system to ensure impermeable areas are appropriately drained and attenuated prior to discharge. The construction-phase drainage strategy could include the provision of a bund along the lowest perimeters of the site to prevent uncontrolled runoff towards existing properties. Operational-phase drainage systems must be protected from ingress of sediment and debris and cleaned on completion of construction works.</li> <li>• Storage of material and construction plant should be set back from the Barnham Rife Ditch and away from areas that may be at risk of flooding or existing overland flow routes as described in the Flood Risk Assessment.</li> <li>• To minimise groundwater seepage into the areas of excavation/cutting, deep excavations should be constructed during the summer months as far as practicable and groundwater levels shall ideally be monitored during construction.</li> </ul> </li> <li>• Measures to specifically minimise the potential effects on the water quality of water resources due to accidental leaks and spillages include the following:</li> </ul>	

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• Surface water run-off from within the Site shall be managed to prevent uncontrolled migration of pollutants to waterbodies. This could include temporary bunding and settlement ponds;</li> <li>• Preparation of incident response plans, prior to construction, which should be present on-site throughout construction to inform contractors of required actions in the event of a pollution incident;</li> <li>• Spillages and leaks would be immediately contained in line with the incident response plan;</li> <li>• On-site availability of oil spill clean-up equipment including absorbent material and inflatable booms for use in the event of an oil spill or leak;</li>   <li>• Wherever possible, plant and machinery will be kept away from the drainage system and watercourses;</li>   <li>• Use of drip trays under mobile plant;</li>   <li>• Oil, fuels and other harmful substances should be stored on an impermeable surface with appropriate drainage or containment;</li>   <li>• Construction materials brought to the Site should be free of any contaminated material, so as to avoid any possible contamination of watercourses;</li>   <li>• Care shall be taken to ensure that wet cement does not come into contact with surface water or near the watercourses and drainage ditches. Cement shall be poured in dry conditions where possible and consideration shall be given to use fast drying cement;</li>   <li>• If ground contamination is encountered during construction works, work are to stop immediately and measures taken to prevent disturbance and mobilisation of contaminants, until the contamination has been treated in-situ or removed for off-site treatment.</li> </ul>	

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• Measures to specifically minimise the potential increase in physical contamination (i.e. sedimentation) of surface waterbodies due to ground disturbance include the following:                             <ul style="list-style-type: none"> <li>• Locating stockpiles and materials storage a minimum of 10m from any watercourses or drainage lines;</li> <li>• Working areas shall be clearly defined to ensure the disturbance of soils is minimised, where possible.</li> </ul> </li> <li>• The cleaning of HGV vehicle wheels that have been to site, prior to leaving site. Dust Management Plan to be prepared with subsequent consideration given to the management of surface water run-off;</li> <li>• Installation of systems such as perimeter bunds, silt traps and swales around material storage heaps designed to trap silty water including adequate maintenance and monitoring of these to ensure effectiveness, particularly after adverse weather conditions;</li> <li>• The implementation of a temporary drainage strategy to prevent uncontrolled runoff;</li> <li>• Locating stockpiles and materials storage a minimum of 10m from any watercourses or drainage lines;</li> <li>• If perched groundwater is encountered within the made ground or superficial deposits at the site, during the establishment of the foundations, dewatering may be required. The most appropriate method of dewatering would be chosen at this stage, which may include the enclosure of the excavation by sheet piling. Piezometers could be used outside of the sheet-pile to monitor groundwater levels. Damp proof membranes will be incorporated during construction to prevent the ingress of shallow groundwater;</li> </ul>	

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		<ul style="list-style-type: none"> <li>If dewatering is required, water shall be passed through an appropriate sediment control system prior to discharge.</li> </ul>	
<b>Landscape</b>	<ul style="list-style-type: none"> <li>Construction related features, including an increase in construction traffic on the roads, views of construction activities from nearby residences, a reduction in tranquillity from the noise and an increase in activity.</li> <li>The introduction of construction related features and activities, particularly around the new roundabout at the junction of A29 Fontwell Avenue.</li> <li>Visual impacts during the construction phase are will include the following:               <ul style="list-style-type: none"> <li>Construction traffic – large vehicles moving along roads and throughout the site;</li> <li>Removal of vegetation;</li> <li>Visual intrusion of construction</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Protect existing vegetation during construction so to ensure continued growth and maximise vegetation retention;</li> <li>Planting to be installed and maintained as soon as possible within the construction programme, in accordance with the Landscape and Ecological Management Plan (LEMP) prepared to discharge Planning Condition 17, so that –               <ul style="list-style-type: none"> <li>New woodland planting shall provide green visual containment in addition to creating habitat for wildlife;</li> <li>New specimen tree planting shall enhance visual appeal and integrate the Scheme into the surrounding landscape;</li> <li>New hedgerow planting shall enhance visual amenity of the Scheme, respond positively to the local character and screen the nearby residents from the proposed noise barrier;</li> <li>Areas of wildflower grassland and bulb planting shall enhance the biodiversity along with visual appeal; and</li> <li>Established areas of existing vegetation to be retained and enhanced where possible.</li> </ul> </li> <li>The following construction phase mitigation measures have been identified for the Scheme and are those which are standard best practice:               <ul style="list-style-type: none"> <li>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. Construction operations to be limited to daylight working hours where possible;</li> <li>Noise and dust to be kept to a minimum;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of planted vegetation to ensure it takes successfully.</li> <li>Regular site inspections to be carried out which will report on the effectiveness of the environmental actions / controls / mitigation measures stated.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>compounds and temporary lighting;</p> <ul style="list-style-type: none"> <li>• Presence of bare earth before seeding has established;</li> <li>• Noise from machinery, workmen etc, affecting tranquillity which impacts on the user experience of the view;</li> <li>• View of partially constructed infrastructure elements;</li> <li>• Earth-moving – stripping of topsoil, installation of temporary topsoil stores and permanent embankments to proposed road alignment; and</li> <li>• Installation of road drainage.</li> <li>• During construction, views of construction activities including HGVs would be very noticeable.</li> <li>• During construction, residents of Murrell Gardens will have very</li> </ul>	<ul style="list-style-type: none"> <li>• Construction working area to be as contained and constrained as possible to minimise land take, vegetation loss and reinstatement requirements.</li> <li>• Construction lighting shall be designed such that, where practicable, all luminaires are installed internal to the site (such as on the inside of hoarding) and are directed towards the working area.</li> <li>• Lighting shall be operational only during construction works, except where lighting is required for out-of-hours security or safety reasons.</li> <li>• Lighting shall adhere to industry best practice, including guidance from industry bodies (such as the Construction Industry Research and Information Association, CIRIA). CIRIA guidance, for example, notes that lighting on construction sites is typically required for security and safety, while at the same time being required to minimise impact on the surrounding environment in accordance with current best practice.</li> <li>• Lighting to be mindful of temporary impact on sensitive flora and fauna and limit the intensity and duration of lighting to the minimum required.</li> <li>• The Landscape Subcontractor shall hold a BASIS amenity horticultural products certificate in order to be able to provide appropriate advice on the selection and application of herbicides (if required), and shall be competent in identifying plant species, including those proposed as part of seed and planting mixes and all undesirable species;</li> <li>• Any diseases or pests present shall be reported to the Council in the first instance and a programme of removal and replacement shall be provided.</li> </ul>	



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	<p>noticeable views of construction activities from a close range.</p> <ul style="list-style-type: none"> <li>Barnham Road will be affected by construction activities as they will dominate the view and traffic management requirements will alter the experience of the road for users.</li> <li>Disturbance due to construction lighting.</li> </ul>		
<p><b>Archaeology and Heritage</b></p>	<ul style="list-style-type: none"> <li>During the construction phase, there could be impacts on prehistoric and roman remains from site preparation, road construction, excavation for attenuation ponds, services/drainage and possible planting.</li> </ul>	<ul style="list-style-type: none"> <li>Further archaeological investigation are required prior to construction, in order to clarify the nature, survival and significance of any archaeological assets that may be affected.</li> <li>Archaeological investigation will be carried out fully in accordance with the approved strategy as detailed within the Schemes approved Written Scheme of Investigations (WSI) (which has been updated and submitted so to discharge planning condition 8). A Post-Excavation Assessment Report will also be required, to be carried out by others.</li> <li>An appropriate mitigation strategy will be required for any significant archaeological assets. Mitigation normally comprises preservation by record: advancing understanding of asset significance through targeted archaeological excavation in advance of development. This might be combined with a watching brief during ground works for remains of lesser significance. In the unlikely event that nationally important remains are present, preservation in situ may be required (i.e. through redesign/ avoidance). Any archaeological work would need to be undertaken in consultation with the WSCC's archaeological advisor, in accordance with an approved archaeological Written Scheme Investigation.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring in the form of an archaeological watching brief, may be required during ground works. Currently being reviewed by WSCC Archaeology team.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>The recording of a 19th century wall on Fontwell Avenue is required prior to demolition works.</li> <li>Stop work procedures will be implemented in the event of asset discovery.</li> </ul>	
<b>Transport and Access</b>	<ul style="list-style-type: none"> <li>Construction traffic adversely impacted local traffic volumes and flows;</li> <li>During construction, Public Rights of Ways (PRoWs) and footpaths which intersect the Site and those in the surrounding area will either be temporarily closed or have restricted access to users.</li> </ul>	<ul style="list-style-type: none"> <li>A detailed Construction Traffic Management Plan (CTMP) has been prepared to manage the impacts of construction traffic. This includes anticipated construction traffic volumes, delivery/construction routes and proposed lane and/or road closures, sustainable travel options and logistics. This will minimise the effects of the construction works on road users. This also includes a Construction Worker Travel Plan to minimise the effects of the construction works on road users.</li> <li>The site manager along with the buying department shall coordinate deliveries to avoid causing congestion to the local residents/businesses and the surrounding road network. Delivery drivers will be requested to call ahead to ensure access is available and vehicle marshals will manage on site movements to ensure a smooth operation.</li> <li>A plan showing the “Construction Traffic Route” on site will be displayed in the site offices, on hoardings and at entrances to the site. The plan shall identify the construction traffic route and anticipated swept path movements for differing types of vehicle likely to visit site. Any additional restrictions imposed on the movement of vehicles (together with the CMP) on site will be displayed in the construction traffic route plan.</li> <li>Arrangements for managing traffic movements/pedestrian access on site shall comprise as a minimum the following:               <ul style="list-style-type: none"> <li>Establish a HGV booking system and discuss/agree with our suppliers so to control traffic flows - this will help manage vehicle movements to site so that these can be spaced / averaged out so to reduce peak numbers as much as possible. This may require stockpiling of materials;</li> <li>Establish controlled crossing points at interfaces with existing Barnham Road &amp; Fontwell Avenue access points;</li> <li>Establish designated parking off-loading areas;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>None required.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• Establish controlled haul road into main work area inclusive of designated crossing bays;</li> <li>• All excavators on site and HGV's entering working areas will have a banksman supervising movements so to keep aware of any pedestrian movements in proximity, and take necessary action if required;</li> <li>• A 10mph speed limit shall be implemented throughout site; and</li> <li>• Pedestrian routes for operatives around site shall be segregated from plant where possible.</li> <li>• All construction site vehicle parking (including contractor and employee parking) shall take place within the designated space within each site compound. Adequate contractor and site operative parking areas and space for delivery vehicles to park and turn shall be considered when planning the compounds and this shall be provided together with on-site loading / unloading areas.</li> <li>• It has been agreed with the WSCC Public Rights of Way Officer that, as there is no readily available safe alternative route, the temporary re-routing/diversion of the PRow will not be required during the construction activities. Heras fencing will be used along the boundary of the diverted PRow during construction to ensure users do not stray onto the construction site, and all temporary closure durations will be minimised as much as possible. Once the construction works are completed and the PRow re-opened, there will be no need to reinstate the existing as it will be permanently diverted to its new alignment as part of the permanent works.</li> </ul>	
<b>Geology and Soils</b>	<ul style="list-style-type: none"> <li>• Lateral migration of aqueous and dissolved contaminants via groundwater flow or preferential pathways could impact surface waters including Lidsey Rife.</li> </ul>	<ul style="list-style-type: none"> <li>• Ground investigations followed by an on-going DQRA have provided acceptance limits for soils in the bases and sides of the planned excavation dig. These have been formally accepted by the Environment Agency. By a combination of delivering the lines and levels of the Scheme earthworks and applying these criteria in a validation exercise will protect controlled waters. Checks will be required that a suitable thickness of uncontaminated soils /or new cap is present at the surface in specified areas shown on the earthwork drawings on completion of the Scheme. Contamination testing will be undertaken to ensure suitable mitigation is in place and</li> </ul>	<ul style="list-style-type: none"> <li>• Watching brief during earthworks;</li> <li>• A monitoring log to ensure measures to mitigate effects relating to geology and soils are in place and are effective.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<ul style="list-style-type: none"> <li>Vertical migration of aqueous and dissolved contaminants through made ground strata or via preferential pathways could impact groundwater.</li> <li>Made Ground/ engineering fill associated with Landfill; Tanks – Fleurie Nursery; and Fordingbridge Industrial Site are all considered to have potential to cause contamination.</li> <li>Ingestion, inhalation and dermal contact with contaminated soil and ground gases; inhalation of windblown dust; and soil vapour inhalation are some of the potential pathways to impact human health.</li> </ul>	<p>if present, contaminated material will be removed and disposed at authorised sites, through the implementation of a remediation strategy.</p> <ul style="list-style-type: none"> <li>To minimise the risk of adverse impacts during construction, industry best practice measures in addition to those noted already, will be employed, such as the following:               <ul style="list-style-type: none"> <li>Spill kits to contain appropriate material for relevant leaks or spills;</li> <li>Ensure good driver behaviour and maintenance of vehicles;</li> <li>Use of appropriate PPE and suitable hygiene;</li> <li>A watching brief will be maintained during earthworks activity to ensure that unexpected contaminated materials, if encountered, are managed in an appropriate manner and in accordance with statutory requirements; and</li> <li>Compliance with the Construction Design and Management Regulations 2015.</li> </ul> </li> <li>If contaminated soil/ groundwater is found or suspected, further specialist advice must be sought.</li> </ul>	
<b>Ecology and Nature Conservation (should be read alongside the Ecological Management</b>	<p>Offsite Habitats of Principal Importance:</p> <ul style="list-style-type: none"> <li>Offsite Habitats of Principal Importance (HPI) could be affected indirectly by dust, airborne pollution and degradation through temporary storage of</li> </ul>	<ul style="list-style-type: none"> <li>Fencing shall be installed around all construction works to protect the surrounding retained habitats.</li> <li>Best Practical Measures will be employed, including the following:               <ul style="list-style-type: none"> <li>Measures shall be taken to prevent dust and other emissions from construction affecting the retained habitats and land beyond the Scheme;</li> <li>Chemicals and fuels shall be stored in secure containers located away from watercourses or water bodies. Spill kits must be available;</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of planted vegetation during maintenance period to ensure it takes successfully.</li> <li>Daily checks of ground protection measures by a suitably competent appointed person.</li> </ul>

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<p><b>Plan in Appendix C)</b></p>	<p>construction materials during the construction phase. Pollution may occur at chronic levels from day-to-day construction activities, or at acute levels from a pollution event such as a fire or chemical spill. A pollution event could therefore cause loss of habitat.</p>	<ul style="list-style-type: none"> <li>• Creation of and implementation of a construction-phase drainage strategy to intercept, capture and attenuate surface water runoff;</li> <li>• Excavations shall be covered or securely fenced (with no potential access points beneath fencing) when the construction site is closed (e.g. overnight) to prevent entrapment of animals, specifically badgers;</li> <li>• Retained trees and hedgerow shall be protected in accordance with British Standard BS5837:2012 Trees in Relation to Construction, including the erection of robust protective fencing encompassing root protection areas;</li> <li>• Noise and vibration must be controlled and kept to the minimum necessary, especially with regard to working in close proximity to known active badger setts;</li> <li>• Lighting used for construction shall be kept to a minimum and switched-off when not in use;</li> <li>• Lighting shall be positioned so as not to spill onto adjacent land or retained vegetation within the Scheme; and</li> <li>• Night works shall be avoided where possible to reduce lighting of sensitive habitats and disturbance to species.</li> </ul>	
	<p>Onsite Habitats of Principal Importance (Hedgerows):</p> <ul style="list-style-type: none"> <li>• Three Onsite HPI Hedgerows are to be removed during the construction phase. Retained hedgerow could be affected by dust, airborne pollution and degradation through temporary storage of construction materials during the construction phase and pollution may occur at chronic or acute levels.</li> </ul>	<ul style="list-style-type: none"> <li>• All retained hedgerows will be protected in accordance with British Standard BS5837:2012 Trees in Relation to Construction, including the erection of robust protective fencing encompassing root protection areas. It is however recognised that BS5837 is read quite prescriptively and is often excessive in this context. The fencing specifically described in the BS is what is often expected, but the BS does allow for less substantial fencing where appropriate. It is therefore suggested that a meeting is held on site early in the construction programme with the WSCC Project Arboriculturist so that a tree &amp; hedge protection plan can be agreed and implemented.</li> <li>• The BPM's mentioned above will be employed throughout the construction phase.</li> <li>• Measures to avoid temporary storage of construction materials adjacent to retained hedgerows will be put in place throughout construction.</li> <li>• Where it is not feasible to retain all or part of hedgerows, they will be replaced with higher quality species-rich hedgerow.</li> </ul>	<ul style="list-style-type: none"> <li>• Monitoring of planted vegetation during maintenance period to ensure it takes successfully.</li> <li>• Daily checks of ground protection measures by a suitably competent appointed person.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>All newly created habitats to be managed in line with the LEMP prepared to discharge Condition 17 which will be effective in mitigating air quality impacts as a result of increased vehicle omissions on Hedgerow HPI.</li> </ul>	
	<p>Onsite Habitats of Principal Importance (Traditional Orchard):</p> <ul style="list-style-type: none"> <li>During the construction phase, there will be a loss of traditional orchard HPI. Parcels of retained orchard habitat within the Scheme and immediately outside of the Scheme could be affected indirectly by dust, airborne pollution and degradation through temporary storage of construction materials during the construction phase and pollution may occur at chronic or acute levels.</li> </ul>	<ul style="list-style-type: none"> <li>All retained trees within the orchard will be protected in accordance with British Standard BS5837:2012 Trees in Relation to Construction, including the erection of robust protective fencing encompassing root protection areas.</li> <li>The BPM's mentioned above will be employed throughout the construction phase.</li> <li>Measures to avoid temporary storage of construction materials adjacent to retained trees shall be put in place throughout construction.                             <ul style="list-style-type: none"> <li>All newly created habitats to be managed in line with the LMMP which will be effective in mitigating air quality impacts as a result of increased vehicle omissions on orchard HPI.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Monitoring of planted vegetation during maintenance period to ensure it takes successfully.</li> <li>A programme of monitoring will need to be undertaken by the project arboriculturist. This may include phone/email contact, site visits and direct monitoring of sensitive works.</li> <li>Daily checks of tree protection fences by a suitably competent appointed person.</li> <li>Daily checks of ground protection measures by a suitably competent appointed person.</li> </ul>
	<p>Bats (Roosting):</p> <ul style="list-style-type: none"> <li>Habitat removal required to facilitate construction will result in the loss of six trees assessed to have moderate or high potential to support roosting bats, including:</li> </ul>	<ul style="list-style-type: none"> <li>All retained trees will be protected in accordance with British Standard BS5837:2012 Trees in Relation to Construction, including the erection of robust protective fencing encompassing root protection areas.</li> <li>The BPM's mentioned above will be employed to minimise the effects of noise pollution, dust and air pollution and visual intrusion during construction.</li> <li>Measures to avoid temporary storage of construction materials adjacent to retained trees will be put in place throughout construction.</li> <li>Prior to tree removal there will be at least a 12-month time lapse between the most recent surveys (2019) and construction commencing, therefore an updated ground</li> </ul>	<ul style="list-style-type: none"> <li>The monitoring of potential alternative roosting opportunities by Ecologist during the works.</li> <li>Daily checks of tree protection fences by a suitably competent appointed person.</li> </ul>



Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<ul style="list-style-type: none"> <li>T34-35, T37-38 and T40 with moderate potential; and</li> <li>T39 with high potential.</li> <li>If bats are present at the time of works, there is a risk of direct loss of individuals through injury/mortality.</li> <li>Construction works will be in close proximity to Building B5 which supports a transitional roost for soprano pipistrelle and Serotine and noisy construction activities may deter bats from using the building as a roost.</li> <li>During the construction phase, habitat degradation over a wider area both in terms of disturbance to retained trees and habitat fragmentation may adversely impact roosting bats.</li> <li>It's currently envisaged that there will be limited after dark lighting during the construction phase, however there will be</li> </ul>	<p>level inspection will be completed (by the Employer) to confirm the level of suitability for bat roosts to be present. This is to ensure that mitigation is appropriate and based on information current at the time of works. The following approach will then be taken:</p> <ul style="list-style-type: none"> <li>Trees assessed as having low potential to support bat roosts will be soft-felled by suitably qualified arborists, following an at-height inspection of any potential roost features to confirm the absence of roosting bats (and evidence of roosting bats). Contractors with basic bat awareness shall be employed and guidance within British Standard BS8596:2015 Surveying for Bats in Trees and Woodland should be adhered to. Where it is not possible to thoroughly assess PRFs, sectional soft felling methods should be used to remove those features. As the trees are will happen to offer hibernation potential to bats, felling works should be undertaken in the winter (November – March, depending on weather conditions) where possible, when bats can reasonably be assumed to be absent.</li> <li>Trees assessed as having moderate or high potential to support bat roosts will be subject to a climbing inspection to enable a thorough assessment of potential and to search for evidence indicating the presence of roosting bats.</li> <li>In the event that the presence of a bat roost is highlighted at this stage, the requirement for works affecting the roost would be reconsidered to identify whether adverse effects can be avoided. Where possible, in this scenario, proposals would be updated to enable retention and protection of the bat roost. In the event that retention is not possible, a licence would be sought by the Employer from Natural England to permit works to proceed, the licence application would be subject to a detailed method statement.</li> <li>A precautionary method of works (PMoW) document has been prepared by WSP and agreed with the WSCC County Ecologist – this is to be followed in full for all works in proximity to Building B5. This is contained within Appendix L. This includes measures (but not limited to):             <ul style="list-style-type: none"> <li>Timing of works to times outside sensitive periods of bats;</li> <li>Avoidance of construction lighting;</li> <li>Toolbox talks to onsite contractors;</li> </ul> </li> </ul>	

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>noise and vibration that may affect roosting bat opportunities in retained trees and buildings with potential to support roosting bats.</p>	<ul style="list-style-type: none"> <li>• Details for use of machinery close to the bat roost;</li> <li>• Unexpected Discovery Procedure; and</li> <li>• Ongoing Monitoring.</li> <li>• In the unlikely event that any bats are encountered or Potential Roosting Features (PRF's) of moderate/ high suitability for supporting roosting bats are identified during the construction phase, felling works shall cease and further professional ecological advice shall be sought.</li> <li>• New roosting opportunities in the form of bat boxes will be installed on retained mature trees in suitable locations, either within the Site itself, or within nearby land under the ownership of WSCC, prior to any trees being felled. The number of bat boxes installed will at least replicate the number of PRFs lost from the six moderate/high suitability trees (12 PRFs in total), with another five additional PRFs provided as an enhancement measure. These boxes will be sited in appropriate locations, at least 4m high and close to foraging and commuting habitat (e.g. hedgerow) under the guidance of an ecologist. The locations are detailed in the Ecological Mitigation Plan prepared to discharge Planning Condition 5.</li> <li>• Lighting during the construction phase will be kept to a minimum to avoid light spillage on retained habitat that bats will use for foraging and commuting purposes.</li> <li>• Where lights are used, effective luminaires or other directional light accessories (shields, hoods or cowls) will be employed to ensure that light spillage, particularly onto adjacent retained habitats, particularly retained trees with bat roosting potential.</li> <li>• On at least one occasion in the first five years post-completion, an inspection of the bat boxes will be undertaken by a Natural England (NE) licensed ecologist to record evidence of use by bats and advise on any necessary repairs to be carried out. If a box has not been used for several years in succession, the installation of new alternative boxes (non-integral) shall be considered following the advice of a suitably qualified ecologist.</li> </ul>	
	<p>Bats (Foraging and Commuting):</p> <ul style="list-style-type: none"> <li>• The construction phase will result in the severance of several</li> </ul>	<ul style="list-style-type: none"> <li>• Lighting during the construction phase will be kept to a minimum to avoid light spillage on retained habitat that bats will use for foraging and commuting purposes.</li> <li>• Where lights are used, effective luminaires or other directional light accessories (shields, hoods or cowls) will be employed to ensure that light spillage, particularly</li> </ul>	<ul style="list-style-type: none"> <li>• Daily checks of tree protection fences by a suitably competent appointed person.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>commuting routes, including the severance of hedgerows and tree lines. This will result habitat degradation through the loss of areas of foraging and commuting habitat for bats. A reduction in the available foraging resource could ultimately contribute to reduced populations of bats in the local area and negatively affect the conservation status of bats.</p> <ul style="list-style-type: none"> <li>Temporary lighting associated with the construction phase which spills onto retained ecological features (e.g. retained hedgerows) or noisy construction activities (e.g. piling, drilling) during any night-time works may also deter bats from using established commuting routes or foraging resources within the Scheme.</li> </ul>	<p>onto adjacent retained habitats and retained trees with bat roosting potential is directed away from retained habitat that bats will use for foraging and commuting purposes.</p> <ul style="list-style-type: none"> <li>Measures will be taken to conserve and protect retained trees and hedgerow habitat which provides a foraging/commuting resource for bats. This will include the installation of protective fencing in line with BS5837:2012.</li> <li>In line with the landscape strategy, retained, enhanced and newly created habitat will be maintained in line with the LEMP to ensure biodiversity continues to benefit during the lifetime of the Scheme.</li> </ul>	

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>Badgers:</p> <ul style="list-style-type: none"> <li>The Scheme will result in the loss of one main sett, one subsidiary sett and a number of outlier setts.</li> <li>The site preparation, earthworks and construction phase of the Scheme has the potential to bring about negative effects on badgers through sett loss, habitat loss / fragmentation and potential injury / harm to individuals both within their setts and commuting and foraging across the Site.</li> </ul>	<ul style="list-style-type: none"> <li>As the use of the Site by badgers changes over time, with some setts becoming inactive and new setts being created, a walkover survey will be undertaken by the Employer prior to commencement of works, and the licence application being submitted.</li> <li>Following confirmation that badgers are using the artificial sett constructed, it will be necessary to close the setts under a licence from Natural England. A suitable mitigation strategy will be put in place by the Employer to obtain the licence and is will include the installation of one-way badger gates, kept in place for a minimum of 21 days, monitoring of the sett for signs of badgers entering or leaving the sett and destruction of the sett once badgers are excluded to reduce the risk of badgers re-occupying the sett. The area will also be secured against re-entry by badgers by using heavy-gauge chain link fencing.</li> <li>Badgers use the wider area for foraging and commuting purposes and therefore measures shall be put in place during the construction phase to minimise effects upon badger movement and foraging activity. These measures include the following: <ul style="list-style-type: none"> <li>Fencing dangerous areas of the construction site (e.g. deep excavations) or providing a means of egress from shallow excavations;</li> <li>Storage of plant and materials on areas of potential foraging habitat (e.g. retained grassland) will be avoided;</li> <li>Noise reduction measures during construction (please refer to the Noise and Vibration section of this table for more information);</li> <li>There will be no night works unless specifically needed, to avoid disturbance by artificial lighting; and</li> <li>Where the use of lighting is unavoidable, hoods, cowls or shields will be used to avoid light spill onto setts or badger paths.</li> </ul> </li> <li>For setts that are located outside the Scheme extent, to ensure they are not affected by the works, a 30m buffer around each sett (including the artificial badger sett) in which no construction activities can take place will be clearly marked.</li> <li>If any potential badger setts are identified these shall be checked by an ecologist prior to any clearance works to confirm their status.</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring/surveys will be undertaken to confirm badgers have relocated to the artificial sett prior to construction.</li> <li>Checks for new burrows for badgers or other burrowing animals within or adjacent to the Scheme extent shall be undertaken by the Employer.</li> <li>Daily checks of ground protection measures by a suitably competent appointed person.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<ul style="list-style-type: none"> <li>• In line with the landscape strategy, retained, enhanced and newly created habitat will be maintained in line with the LEMP to ensure biodiversity continues to benefit during the lifetime of the Scheme.</li> <li>• Permanent badger fencing will be installed either side of the new road, with an underpass located to the west of the Scheme, to allow badgers to forage on either side of the road and therefore reducing the risk of vehicle collision.</li> <li>• A precautionary method of works (PMoW) document has been prepared by WSP and agreed with the WSCC County Ecologist – this is to be followed in full for all works associated with the Scheme and contains details of timing of works and measures required to reduce badger disturbance effects. This is contained within Appendix M. This includes measures (but not limited to):               <ul style="list-style-type: none"> <li>• Toolbox talks to all site workers;</li> <li>• Vegetation clearance and habitat manipulations;</li> <li>• Timings of Work; and</li> <li>• Unexpected Discovery Procedures.</li> </ul> </li> </ul>	
	<p>Wintering Birds:</p> <ul style="list-style-type: none"> <li>• The construction phase of the Scheme will result in the loss of suitable wintering bird habitat suitable for supporting a wintering bird community of up to local level value, and therefore result in a reduction in the habitat available.</li> <li>• Temporary lighting associated with the construction phase which spills onto retained ecological</li> </ul>	<ul style="list-style-type: none"> <li>• The BPM's mentioned above will be employed to minimise the effects of noise pollution, dust and air pollution and visual intrusion during construction.</li> <li>• The current landscaping proposals include for a range of different habitats that will provide a foraging resource for wintering birds. This includes the creation of wet swales, woodland, orchard and scrub habitat.</li> <li>• In line with the landscape strategy, retained, enhanced and newly created habitat will be maintained in line with the LEMP to ensure biodiversity continues to benefit during the lifetime of the Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily checks of tree protection fences by a suitably competent appointed person.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>features (e.g. retained hedgerows) or noisy construction activities may also have a negative effect on wintering birds.</p>		
	<p>Breeding Birds:</p> <ul style="list-style-type: none"> <li>The construction phase of the Scheme will result in the loss of suitable habitat for breeding birds, including hedgerow, broadleaved and plantation woodland and scrub. This will result in habitat loss and degradation. A reduction in the available suitable nesting habitat could ultimately contribute to reduced populations of breeding birds in the local area and negatively affect the conservation status of an assemblage of species considered to be of up to District level value.</li> <li>If construction activity occurs during the primary bird nesting season (March to August inclusive) it is highly likely that active</li> </ul>	<ul style="list-style-type: none"> <li>A precautionary method of works (PMoW) document has been prepared by WSP and agreed with the WSCC County Ecologist – this is to be followed in full for all works associated with the Scheme and contains details of timing of works and measures required to reduce disturbance effects. This is contained within Appendix M. This includes measures (but not limited to): <ul style="list-style-type: none"> <li>Toolbox talks to all site workers;</li> <li>Building Inspection for Barn Owl;</li> <li>Vegetation clearance and habitat manipulations;</li> <li>Timings of Work; and</li> <li>Unexpected Discovery Procedures.</li> </ul> </li> <li>Suitable bird nesting habitat clearance shall be undertaken outside of the bird nesting season (indicatively March to September) where possible. Where clearance of habitat is not possible outside of the breeding bird season, all areas to be affected will be checked for evidence of nesting birds by a suitably qualified ecologist provided by the Employer in accordance with a precautionary working method statement. The check will be undertaken a maximum of 24 hours prior to the vegetation removal taking place.</li> <li>If any active bird nests are discovered these will be cordoned off with a buffer of at least 5m (this may increase depending on the species, proposed works and location) where no potentially disturbing works will take place. The buffer will remain in place until the young have fledged and the nest vacated. Upon fledging, a second nesting bird check would then be undertaken to ensure the vegetation does not contain any further active nests prior to felling or removal works taking place.</li> </ul>	<ul style="list-style-type: none"> <li>Daily checks of tree protection fences by a suitably competent appointed person.</li> </ul>



Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>birds' nests would be damaged or destroyed and probable young would be injured or killed during the removal of vegetation. Noisy construction works has the potential to cause a disturbance effect on breeding birds, which could result in nest abandonment.</p> <ul style="list-style-type: none"> <li>There will also be a loss of habitat suitable for foraging barn owl during the construction phase.</li> </ul>	<ul style="list-style-type: none"> <li>Measures will be taken to conserve and protect retained trees, shrub and hedgerow habitat which provide a nesting resource for birds. This will include the installation of protective fencing in line with BS5837:2012.</li> <li>The BPM's mentioned above will be employed to minimise the effects of noise pollution, dust and air pollution and visual intrusion during construction.</li> <li>To mitigate for the loss of nesting opportunities across the Scheme, at least six bird boxes will be installed in suitable locations within retained habitat.</li> <li>In line with the landscape strategy, retained, enhanced and newly created habitat will be maintained in line with the LEMP to ensure biodiversity continues to benefit during the lifetime of the Scheme.</li> </ul>	
	<p>Reptiles:</p> <ul style="list-style-type: none"> <li>The construction phase will result in the removal of suitable habitat and therefore it is possible that there will be direct loss of animals from the population as a result of mortality and/or injury during construction works to facilitate construction.</li> <li>Habitat removal required during the construction phase will reduce the area of habitat available to support the reptile population present and</li> </ul>	<ul style="list-style-type: none"> <li>The removal of any rubble, brash or log piles as part of the Scheme shall be carried out in accordance with the PMoW contained within Appendix M. This is to ensure compliance with legislation and planning policy regarding small mammals (including hedgehog and Polecat), common reptile species and amphibian species listed as NERC priority species.</li> <li>All areas of suitable habitat will be treated as potentially supporting reptiles. Where/when possible, in these areas clearance of vegetation will be undertaken outside of the sensitive hibernation season (indicatively November-February inclusive, but weather dependent).</li> <li>Where tall herbaceous vegetation is cleared during the active season for reptiles, then it will be undertaken in two stages over at least two consecutive days and include an initial cut down to 150mm, with the second cut reducing vegetation as close as possible down to ground level in order to progressively render habitat unsuitable for reptiles.</li> <li>Any refugia will be dismantled by hand with all works undertaken under the supervision of a suitably qualified ecologist (provided by the Employer) to minimise</li> </ul>	<ul style="list-style-type: none"> <li>Daily checks of ground protection measures by a suitably competent appointed person.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>fragment retained areas of suitable habitat; inhibiting population movement.</p>	<p>the risk of killing or injury to reptiles. Works will be temporarily halted if individual animals are encountered to allow the animal to disperse from the work site.</p> <ul style="list-style-type: none"> <li>• Logs from felled trees are to be retained for hibernacula within the landscaped areas within the wildflower meadow.</li> <li>• In line with the landscape strategy, retained, enhanced and newly created habitat will be maintained in line with the LEMP to ensure biodiversity continues to benefit during the lifetime of the Scheme</li> </ul>	
	<p>Invertebrates:</p> <ul style="list-style-type: none"> <li>• The construction phase could result in a direct loss of invertebrates, including stag beetle as a result of mortality and/or injury during enabling works to facilitate construction.</li> <li>• Habitat removal required during the construction phase will reduce the area of habitat available to support invertebrate species, including stag beetle.</li> </ul>	<ul style="list-style-type: none"> <li>• The removal of any rubble, brash or log piles as part of the Scheme shall be carried out in accordance with the PMoW contained within Appendix M. This is to ensure compliance with legislation and planning policy regarding small mammals (including hedgehog and Polecat), common reptile species and amphibian species listed as NERC priority species.</li> <li>• Mitigation will entail the careful clearance of suitable habitat. Where any deadwood habitat is removed, this will be retained and incorporated within the areas of proposed landscaping.</li> <li>• Careful habitat removal will also include a check of the soil around the deadwood / hedgerows to check for stag beetle larvae.</li> <li>• In line with the landscape strategy, retained, enhanced and newly created habitat will be maintained in line with the LEMP to ensure biodiversity continues to benefit during the lifetime of the Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>• Daily checks of ground protection measures by a suitably competent appointed person.</li> </ul>
	<p>Other Species of Principal Importance (SPI):</p> <ul style="list-style-type: none"> <li>• The construction phase could result in a direct loss of SPI, as a result of mortality and/or injury during enabling works to facilitate construction.</li> </ul>	<ul style="list-style-type: none"> <li>• The removal of any rubble, brash or log piles as part of the Scheme shall be carried out in accordance with the PMoW contained within Appendix M. This is to ensure compliance with legislation and planning policy regarding small mammals (including hedgehog and Polecat), common reptile species and amphibian species listed as NERC priority species.</li> <li>• Mitigation will entail the careful clearance of suitable habitat. This will include the sensitive clearance of habitat, which will be carried out in a phase approach (as</li> </ul>	<ul style="list-style-type: none"> <li>• Checks for new burrows for badgers or other burrowing animals within or adjacent to the Scheme extent by a suitably competent appointed person.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<ul style="list-style-type: none"> <li>Habitat removal required during the construction phase will reduce the area of habitat available to support invertebrate species.</li> </ul>	<p>above for reptiles) and avoid the hibernation period. Where this is not possible, careful removal of log / brush piles that may support hedgehogs will be undertaken.</p> <ul style="list-style-type: none"> <li>Pre-work checks for roosting features and updated ground level inspection in trees for barn owls shall be conducted by the Employer.</li> <li>In line with the landscape strategy, retained, enhanced and newly created habitat will be maintained in line with the LEMP to ensure biodiversity continues to benefit during the lifetime of the Scheme.</li> </ul>	<ul style="list-style-type: none"> <li>Daily checks of tree protection fences by a suitably competent appointed person.</li> <li>Daily checks of ground protection measures by a suitably competent appointed person.</li> </ul>
<b>Arboriculture</b>	<ul style="list-style-type: none"> <li>Potential for soil compaction and root damage resulting in loss of vitality and decline in health.</li> <li>During the construction phase, 22 individual trees and the whole or partial removal of tree groups and four hedges will take place. Arboricultural features selected for removal are identified on the Tree Protection Plan (TPP).</li> <li>In addition to the individual trees lost, the total removals equate to approximately 192 linear metres of tree groups, 165 linear metres of hedge and 0.7 hectares of tree cover (groups).</li> <li>Moderate-quality tree group G85 is covered by</li> </ul>	<ul style="list-style-type: none"> <li>Refer to the Tree Protection Plan (within Appendix D) and Site Clearance Drawings which shows the location and extent of the following tree protection information:                             <ul style="list-style-type: none"> <li>Tree retention and removals (Root Protection Areas (RPA) shown for all retained trees); and</li> <li>Tree Protection Fencing.</li> </ul> </li> <li>Tree protection fencing to be agreed with the Project Arboriculturist and erected prior to works starting. Fencing to remain in situ until all construction activities are complete;</li> <li>There is potential for construction access to occur within the Root Protection Areas (RPAs) of retained trees. Tree protection fencing will to be installed as specified in the Arboricultural Method Statement (AMS) and Tree Protection Plan (TPP) to prevent access to the RPAs (see Appendix D).</li> <li>A Pre-commencement meeting shall be held between the site Project Manager, local authority tree officer and the project arboriculturist. The purpose of this meeting will be to ensure that all aspects of the tree protection measures are clear and understood and that any future sequencing and supervisory arrangements are agreed (to include task/location specific Arboricultural Method Statement Review);</li> <li>The Hornbeam hedge shall be protected during construction;</li> <li>A semi-natural buffer of 15 x stem diameter have been applied in respect of potential veteran trees T2, T20, T23 and T42. These semi-natural buffers can be wholly retained during construction and can be robustly protected through the appropriate use of tree protection fencing.</li> </ul>	<ul style="list-style-type: none"> <li>Daily checks of the tree protection fencing to check it is still in place, functioning. Any damage to be rectified immediately.</li> <li>Frequency of monitoring including site visits and direct monitoring of sensitive works will be determined by the intensity and proximity of works to trees and will be flexible enough to accommodate changes in the scheduling of tasks as they occur on site.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>TPO/BN/1/20. This means that a number of protected trees will need to be removed in order to facilitate construction. The trees to be removed are those located at the northernmost end of the group and represent only a small percentage of all protected trees.</p> <ul style="list-style-type: none"> <li>• Features G98 (TPO tree T9), G98 (TPO tree T22), T25, T39 and all other retained trees whose RPA extends across the Planning Application Site Boundary may be impacted the following:               <ul style="list-style-type: none"> <li>• Soil compaction and root damage;</li> <li>• Loss of vitality and decline in health; and</li> <li>• Reduction in quality of tree / potential death of tree.</li> </ul> </li> <li>• Subject to the installation of protective fencing, encroachment</li> </ul>		

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
	<p>into the Root Protection Areas (RPA) of trees T9, T22, T25 and T39 will occur.</p>		
<p><b>Biosecurity</b></p>	<ul style="list-style-type: none"> <li>It's not currently considered that the site has any Invasive Non-native Species (INNS). However it's important to consider potential pathways of introductions onto site from elsewhere.</li> <li>Ash Die Back being found on site (surveys anticipated in May 2021). Ash has been picked up within tree groups along the proposed alignment.</li> </ul>	<p>Standard measures to minimise risk of import/spreading of invasive species/fungi/microbes etc. as follows -</p> <p>Good site hygiene shall be maintained dealing with any non-native species by implementing the following -</p> <ul style="list-style-type: none"> <li>Where contaminated soil, materials or water are located, signage should be erected to indicate them;</li> <li>Material / water left after vehicles have been washed shall be contained, collected and disposed of appropriately;</li> <li>Temporary barriers are to be used to create a working corridor for plant and personnel, which will minimise:                             <ul style="list-style-type: none"> <li>damage of habitats (including pollution);</li> <li>prevent transfer of INNS via biosecurity site management; and</li> <li>direct mortality and disturbance to animals located within and adjacent to the Scheme.</li> </ul> </li> </ul> <p>If any INNS are identified during the works, the ECoW shall assist the site team in preparing an Invasive Species/Biosecurity Management Plan and supervise the treatment and/or removal of any INNS.</p> <p>There is no cure for ash dieback, but good biosecurity practice should be followed so to help reduce the risk of introducing and spreading tree pests and diseases. These measures include –</p> <ul style="list-style-type: none"> <li>The cleaning and disinfection of clothing, PPE, tools, equipment and vehicles working on or around affected trees;</li> <li>Arboricultural operations such as pruning, felling and planting should be planned, managed and supervised to minimise the movement of arisings and</li> </ul>	<ul style="list-style-type: none"> <li>Daily checks of tree protection fencing and corridor fencing to check it is still in place, functioning. Any damage to be rectified immediately.</li> <li>Frequency of monitoring including site visits and direct monitoring of sensitive works will be determined by the intensity and proximity of works to trees and will be flexible enough to accommodate changes in the scheduling of tasks as they occur on site.</li> </ul>

Environmental Topic	Potential Impacts	Environmental Action / Commitment / Mitigation	Construction Monitoring
		<p>soil. All diseased arisings must be appropriately disposed offsite. Other arisings shall be retained on site where possible for the creation of new hibernacula and be subject to natural decay processes so to ultimately be recycled back into the soil.</p> <p>Not all infected ash trees will need to be removed and pruning shouldn't be ruled out as a management option, particularly where trees show a tolerance to the disease. Further discussions shall be necessary with the Project Arboriculturist.</p>	