



HM Revenue
& Customs

Construction Management Plan

North Weald Inland Border Facility

9 December 2020

Confidential

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1 The Project

1.1 Introduction

Mott MacDonald has been appointed by Her Majesty's Revenue and Customs (HMRC) to produce a Construction Management Plan (CMP) for the proposed use of North Weald Airfield (hereafter referred to as 'the site') to a temporary Inland Border Facility (hereafter referred to as 'the scheme').

This CMP sets out the minimum Environmental Management Requirements, which will enable the Client to comply with current legislation and their respective environmental policies. This CMP is to be used by the Principal Contractor for the duration of their contract.

The Principal Contractor will comply and continually review all relevant legislation, codes of practice, and associated information documentation to ensure compliance.

The CMP will ensure:

- Compliance with all relevant Environmental legislation
- Identification and management of Environmental issues and risks appropriate to their environmental significance and impact
- Design and implementation of appropriate mitigation measures and controls
- Ongoing monitoring of the effectiveness of mitigation measures and controls through the implementation of an Environmental Management System
- Auditing environmental performance

The Principal Contractor will take responsibility for this document and its further development as necessary throughout the project life cycle. This document will be read in conjunction with the Construction Phase Plan.

HMRC will ensure that all requirements set out in this CMP are complied with by the Principal Contractor.

1.2 Regulatory Framework and Planning Conditions

The United Kingdom (UK) has left the European Union (EU) and a transition period is now in place until 31 December 2020. The transition period is a timeframe in which the UK and EU negotiate additional Brexit arrangements until the end of 2020. The current rules on trade, travel, and businesses for the EU and UK continue to apply during the transition period until new rules are brought into effect as of 1 January 2021.

Given the national importance of the timely delivery of border infrastructure, a Special Development Order (SDO) has been made under the provisions of S.59 of the Town and Country Planning Act 1990. The SDO specifically is the Town and Country Planning (Border Facilities and Infrastructure) (EU Exit) (England) Special Development Order 2020.

The SDO grants temporary planning permission for development consisting of the use of land in specified parts of England for border processing.

Article 4 of the SDO requires 'Relevant Approval' from the Secretary of State (hereafter 'the SoS') for the use of land and development set out in Article 3 of the SDO. Relevant Approval for

the development North Weald Airfield and its use as an Inland Border Facility was granted by the SoS on 24 November 2020.

This CMP is associated with the Relevant Approval at North Weald Airfield and is submitted to the SoS for determination as required by Schedule 2, Part 2 of the SDO.

1.2.1 Schedule 2, Part 2 – Compliance Summary

Schedule 2, Part 2 of the SDO states the following:

1. *“No works of construction may commence until a construction management plan for the development has been submitted to and approved by the Secretary of State. The plan must comprise details of policies and procedures to be complied with in connection with the construction of the development in relation to:*
 - a) *engagement with relevant owners and occupiers, including complaints handling.*
 - b) *application of best practicable means to minimise noise, vibration and emissions to air.*
 - c) *application of best practicable means to minimise the adverse effects of lighting on the amenity of relevant owners and occupiers, ecological receptors and road users.*
 - d) *sourcing, placing, managing and storing of construction materials, including, where appropriate, the stripping, storage and re-spreading of soil.*
 - e) *management of waste in accordance with the waste hierarchy.*
 - f) *pollution prevention and control*
 - g) *preventing damage to trees to be retained on the site, or trees immediately adjacent to any works on the site.*
 - h) *management of construction traffic, including measures to prevent the deposit of mud and construction materials on the highway.*
 - i) *the management of invasive species. and*
 - j) *where appropriate, the appointment and retention of a suitably qualified archaeologist, arboriculturist, ecologist or ordnance specialist to oversee works ‘*

and references to “the CMP” in the following paragraphs of this part are to that plan approved by the Secretary of State from time to time.

2. *A copy of the CMP must be kept on the site at all times.*
3. *The site operator must publish a non-technical summary of the CMP.*
4. *Construction works must be undertaken in compliance with the CMP.*
5. *The CMP and the published non-technical summary of the CMP must be kept under review and updated as necessary throughout all construction works. Material changes to the CMP are not effective unless approved by the Secretary of State.*
6. *Prior notification of the intended commencement of development must be given to the Secretary of State and the relevant local planning authority, and such notification must include—*
 - a. *the address and location of the development (including a site plan in the form prescribed by article 4(2)(b));*
 - b. *the name and address of the owner of the site;*
 - c. *a description of the development; and*

- d. *the date on which it is intended that any material operation (as defined in section 56 of the Town and Country Planning Act 1990(24)) will first be carried out.*

Table 1.1 explains where the required information is provided in this CMP.

Table 1.1 Schedule 2 Construction Compliance Summary

Policies and Procedures to be complied with		Location within report (paragraph)
1(a)	Engagement with relevant owners and occupiers, including complaints handling	Section 3 (All paragraphs)
1(b)	Application of best practicable means to minimise noise, vibration and emissions to air	Section 4.3 (air) and section 4.11 (noise and vibration)
1(c)	Application of best practicable means to minimise the adverse effects of lighting on the amenity of relevant owners and occupiers, ecological receptors and road users.	Section 4.10 (lighting), section 4.7 (ecology)
1(d)	Sourcing, placing, managing and storing of construction materials, including, where appropriate, the stripping, storage and re-spreading of soil	Section 4.6
1(e)	Management of waste in accordance with the waste hierarchy.	Section 4.14
1(f)	Pollution prevention and control.	Section 4.12
1(g)	Preventing damage to trees to be retained on the site, or trees immediately adjacent to any works on the site.	Section 4.9
1(h)	Management of construction traffic, including measures to prevent the deposit of mud and construction materials on the highway.	Section 4.13
1(i)	The management of invasive species.	Section 4.7
1(j)	Where appropriate, the appointment of retention of a suitably qualified archaeologist, arboriculturist, ecologist or ordnance specialist to oversee works.	Section 4.7 and section 5.2
2	A copy of the CMP must be kept on the site at all times.	Section 1.6
3	The site operator must publish a non-technical summary of the CMP	Section 1.6 and Appendix A
4	Construction works must be undertaken in compliance with the CMP.	Section 1.6
5	The CMP and the published non-technical summary of the CMP must be kept under review and updated as necessary throughout all construction works. Material changes to the CMP are not effective unless approved by the Secretary of State.	Section 1.6
6	Prior notification of the intended commencement of development must be given to the Secretary of State and the relevant local planning authority, and such notification must include— a. the address and location of the development (including a site plan in the form prescribed by article 4(2)(b)); b. the name and address of the owner of the site;	Section 1.2.2

Policies and Procedures to be complied with

Location within report (paragraph)

- c. a description of the development; and
- the date on which it is intended that any material operation (as defined in section 56 of the Town and Country Planning Act 1990(24)) will first be carried out.

In addition, Schedule 2 Parts 1(b) and 1(c) of the SDO set out conditions that are to be complied with during construction, operation and reinstatement of the development. Sections of the CMP which demonstrate compliance with these conditions is set out in Table 1.2

Table 1.2 Part 1B Compliance Summary

Policies and Procedures to be complied with	Location within report (paragraph)
Part 1(b)	
1. Any artificial lighting must be arranged so the main beam angle of each installation is directed downward and away from the closest boundary so as to minimise light spill.	Section 4.10
2. Any fire hydrants and emergency water supplies must be kept in good repair and any defects must be repaired as soon as practicable.	Section 4.8
3. Any surface water and foul water system must be kept in good repair.	Section 4.12 and section 4.15
4. Temporary structures collecting sewage that are not attached to mains sewers must be emptied regularly.	Section 4.12 and section 4.15
5. Development must not adversely affect any ancient or veteran trees.	Section 4.9
6. There must be no net increase in the rate or volume of surface water discharge from site.	Section 4.12 and section 4.15
7. Surface water discharged from the site must not adversely affect the quality of receiving water bodies.	Section 4.12 and section 4.15
8. Subject to condition B.9, the height of any building (other than an existing building) must not exceed 15 metres.	Section 4.9
9. The height of any gate, fence, wall or other means of enclosure erected or constructed, other than noise attenuation measures, must not exceed 4.5 metres.	Section 4.9
10. No building other than plant, machinery, gates, fences, walls or other means of enclosure, or noise attenuation measures, may be erected or extended within 25 metres of the boundary of the curtilage of any residential dwelling.	Section 4.9
11. Where there is a risk of groundwater contamination, hard surfacing must not be made of porous materials.	Section 4.15
12. Where a condition in Parts 2 to 4 requires the site operator to publish any document, the site operator must take reasonable steps to make that document available to persons likely to have an interest in the matters to which the document relates.	Please refer to site Operational Management Plan (OMP)
Part 1(c)	
1. The stationing of vehicles is only permitted on hard surfacing.	Section 4.12

Policies and Procedures to be complied with	Location within report (paragraph)
2. When stationed, a goods vehicle must not have its engine idling without the express authority of the site operator.	Section 4.3

Table 1.3 sets out the site-specific planning conditions which are provided within the Relevant Approval Decision Notice as imposed by the SoS.

Table 1.3 Site Specific Conditions

Condition No.	Scope	Proposed Scope of Condition
1	Compliance with Schedule 2 (Conditions)	The conditions specified in Schedule 2 to the Town and Country Planning (Border Facilities and Infrastructure) (EU Exit) (England) Special Development Order 2020, save that for the purposes of this approval only.
2	Time Limit	The use of the site for the purposes in articles 3(1)(a) and (b) the Order authorised by this approval shall cease on 31 December 2022.
3	Reinstatement Plan	On or before 30 June 2022, a Reinstatement Plan, including a timetable for the completion of reinstatement works, shall be submitted to the Secretary of State in accordance with the requirements of Part 4 of Schedule to the Order and a border department may carry out reinstatement works specified in a Reinstatement Plan approved by the Secretary of State until 31 December 2023 unless otherwise agreed.
4	Operational Area	No use of the site for the purposes in articles 3(1)(a) and (b) of the Order authorised by this approval shall take place within the area labelled 'Land not forming part of Submission proposals or Assessment under Article 4' on Drawing No. 418703-MMD-08-NW-DR-C-0103 Rev. P04.
5	Operational Area	Prior to the first use of the site for the purposes in articles 3(1)(a) and (b) of the Order authorised by this approval, details of the design of the inspection facility to be constructed within the area labelled 'HGV Inspection Building envelope' as shown on Drawing No. 418703-MMD-08-NW-DR-C-103 Rev. P04 shall be submitted to and approved in writing by the Secretary of State. Works shall not be carried out other than in accordance with these approved details.
6	Construction Management Plan REAC Requirements	The measures detailed in rows G1, AQ1, L1, L2, GS1, B1, B2, M1, NV1, NV2, NV3, PH1, RDWE1 and C1 of the Register of Environmental Actions and Commitments (Table B.1 of Annex B, Analysis of Likely Environmental Effects of the Development Report) (the REAC) must be included as part of the Construction Management Plan to be submitted for approval.
7	Operational Management Plan REAC Requirements	The measures detailed in rows TT1, L3, B2, M2, NV3, PH2, RDWE2 and C2 of the REAC must be included as part of the Operational Management Plan to be submitted for approval.
8	Reinstatement Plan REAC Requirements	The measures detailed in rows G1, AQ1, L1, L2, L4, GS1, B1, B2, B3, M1, NV1, NV2, PH1, RDWE1, C1 and C3 of the REAC must be included as part of the Reinstatement Plan to be submitted for approval. In addition, any vegetation that is required to be removed to facilitate the Inland Border Facility shall be replanted during the decommissioning and reinstatement phase of the development. Replanting shall be on a like-for-like basis supported by an appropriate planting specification.

In response to Condition 6, Table 1.4 overleaf sets out the actions required from the Record of Environmental Actions and Commitments (REAC) that are applicable to this CMP and were contained within in the Analysis of Likely Environmental Effects of the Development Report (Document Reference: 418703-MMD-XX-WB-RP-YE-0001) approved as part of the Article 4 Relevant Approval.

Table 1.4 Condition 6 CMP Compliance with the Record of Environmental Actions and Commitments (REAC)

REAC* Reference	Action	Location within CMP
G1	<p>The following measures would be required during if additional lighting is required on the site:</p> <ul style="list-style-type: none"> The main beam angle of any artificial lighting must be directed downward so as to minimise light spill. <p>Lighting would be at the minimum luminosity necessary and use low energy consumption fittings. Where appropriate, lighting would be activated by motion sensors to prevent unnecessary usage. It would comply with the Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01¹ and the provisions of BS 5489, Code of practice for the design of road lighting², where applicable.</p>	Section 4.10
AQ1	<p>Works would be carried out in accordance with Best Practicable Means, as described in Section 79 (9) of the Environmental Protection Act 1990, to reduce the creation of dust on site. This would include:</p> <ul style="list-style-type: none"> Minimise height of stockpiles and profile to minimise wind-blown dust emissions and risk of pile collapse. Locate stockpiles out of the wind (or cover, seed or fence) to minimise the potential for dust generation. Ensure that all vehicles with open loads of potential dusty materials are securely sheeted or enclosed. Enforce a maximum speed limit of 15mph on surfaced roads and a 10mph speed limit on unsurfaced haul roads and work areas, to prevent the generation of dust by fast moving vehicles. Damp down surfaces in dry conditions. <p>All vehicle engines and plant motors shall be switched off when not in use.</p>	Section 4.3
L1	<p>The following measures would be required:</p> <ul style="list-style-type: none"> Protective barriers should be installed in accordance with BS5837:2012 around all of the trees in close proximity to the works, at the distances dictated by the RPA measurements. An Arboriculturalist should attend site to confirm the final positioning of the protective fencing. Vehicular movement should remain within hard standing at all times. Compound areas and set down areas were not confirmed at the time of the site visit; however, it is recommended that they should be positioned on an area of hardstanding within the site. If hardstanding is not available, they should be located outside of the RPAs of any trees on site. 	Section 4.9

¹ Institute of Lighting Professionals (2011) Guidance notes for the reduction of obtrusive lights [online] available at: <https://www.theilp.org.uk/documents/obtrusive-light/> (last accessed December 2018).

² British Standards Institution (2013) BS 5489, Code of practice for the design of road lighting. Lighting of roads and public amenity areas [online] available at: <https://shop.bsigroup.com/ProductDetail/?pid=000000000030217237> (last accessed December 2018).

REAC* Reference	Action	Location within CMP
	<ul style="list-style-type: none"> Any roots <25mm diameter which are exposed by the excavations are to be pruned properly in accordance with good practice using secateurs or a sharp saw; No roots >25mm are to be pruned or severed without prior agreement from the scheme Arboriculturalist. Exposed roots >25mm should be retained and covered with moist hessian until they are reburied. If roots >25mm are uncovered, the scheme Arboriculturalist should advise on whether the trees stability and integrity have been compromised and decide on appropriate action required. Any works relating to installation of services must be undertaken in accordance with the National Joint Utilities Group Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. 	
L2	<p>The following measures to be undertaken to reduce visual intrusion and impacts upon the landscape:</p> <ul style="list-style-type: none"> Keep a well-managed and tidy site. <p>Use of directional, hooded and low-level lighting, as well as restrictions on night-time lighting during construction</p>	Section 4.9
GS1	<ul style="list-style-type: none"> Should any hazardous materials be encountered during construction, all materials would be dealt with. Hazards arising from hazardous cargoes during operation would be mitigated by segregating vehicles with hazardous loads as far as possible from all other vehicles. Any fuels, oils or hazardous materials used during the works would be appropriately stored and kept in bunded areas to prevent pollution of surface and ground waters. Spill kits shall be provided on site for the duration of the works and construction staff trained in their correct application. The Contractor would keep a record of all spillage incidents and inform the nominated undertaker of any spills which cause land contamination or pollution off site. <p>A competent spill response company would be on standby which would be contacted at short notice in the event of a pollution incident for an immediate response to contain and clean up the incident. Contact details for the relevant spill response company would be displayed in all welfare facilities and notice boards.</p>	Section 4.12, 4.14
B1	<ul style="list-style-type: none"> All vegetation removal should be supervised by a suitably qualified ecologist and be undertaken outside of the main breeding bird season (and therefore, should be undertaken between September to February). Prior to works, a check should be carried out along the bund on the east side to check badgers are still absent. <p>In the event that any excavations are required, ensure that these are covered over night or that ramps are installed so that mammals do not become trapped.</p>	Section 4.7
B2	<p>The following measures would be required:</p> <ul style="list-style-type: none"> To use low or high-pressure sodium lamps, instead of mercury or metal halide lamps, with the use of glass glazing preferred where possible. The use of Light Emitting Diodes should also be used in preference to mercury or metal halide lamps. To fit lighting at as low a height as is practicable. 	Section 4.7

REAC* Reference	Action	Location within CMP
	<ul style="list-style-type: none"> In the case where lighting is required for security reasons, the use of lights with motion detectors or the use of Intelligent Video Analytics, which uses infra-red to detect movement, should also be considered. This would work to ensure areas are only lit when necessary. To minimise the upward spill of lights with the use of directional luminaires, shields, louvres and baffles. This would direct light to where it is required and prevent unnecessary light spill into the surrounding environment. <p>A dark corridor is maintained along the vegetated bund which runs along the eastern boundary of the site. This would help maintain the existing bat foraging and commuting habitat.</p>	
M1	Where possible, ensure that the waste hierarchy is followed when dealing with waste on site: prevention, reuse and preparation for re-use, recycle, recovery, and disposal.	Section 4.14
NV1	All noisy operations would be completed between 08:00 and 18:00 on weekdays, and 0800 to 1300 hours on Saturdays, switching off noise-emitting equipment when not in use and the use of temporary noise barriers where appropriate. Where out of hours working is required, prior agreement would be sought with Epping Forest District Council.	Section 4.11
NV2	<p>Implement the following noise mitigation measures:</p> <ul style="list-style-type: none"> Ensure equipment is maintained, in good working order, and is used in accordance with the manufacturer's instructions. Fit equipment with silencers or mufflers. Manage deliveries to prevent queuing of site traffic. Do not leave plant running unnecessarily. Careful orientation of plant with directional features. Materials to be lowered instead of dropped from height. Use of adjustable or directional audible vehicle-reversing alarms or use of alternative warning systems (for example, white noise alarms). Train and advise members of the construction team during toolbox talk briefings on quiet working methods. <p>Erect temporary barriers to fully obscure the construction works from nearby receptors.</p>	Section 4.11
NV3	Limit vehicle idling on site as much as possible during operation.	N/A during construction. Please refer to Operation Management Plan
PH1	<p>The following measures would reduce effects on the local community:</p> <p>Ensure local community informed of the proposals.</p>	Section 3
RDWE1	<p>Activities must be managed in accordance with Construction Industry Research and Information Association (CIRIA) Guidelines. Guidance on best practice in relation to pollution prevention and water management is set out in the following documents:</p> <ul style="list-style-type: none"> CIRIA's Environmental good practice on site. Environment Agency's Protect groundwater and prevent groundwater pollution. 	Section 4.15

REAC* Reference	Action	Location within CMP
	<p>Measures to be implemented to limit the impact of activities on the water environment include:</p> <ul style="list-style-type: none"> • All construction workers to be briefed on the use of spill kits as part of the site induction. • Any stockpiled materials to be stored within enclosed areas to enable the run-off to be stored and treated where required. • All plant and machinery to be maintained in a good condition and any maintenance required would be undertaken within safe areas. • Pollution prevention and spill response procedures to be developed by the contractor and a spill kit and clean up equipment maintained on site. <p>Dust suppression measures as described in AQ1 of this Record of Environmental Actions and Commitments.</p>	
C1	<p>The carbon reduction principles as detailed within Section 3 of the Carbon Assessment and Reduction Report, would be considered including the following:</p> <ul style="list-style-type: none"> • Transportation of materials to site would prioritise low-carbon modes where possible • Where possible, low-carbon construction materials and products would be preferred • Where possible low-carbon construction plant and equipment would be used • Provision should be made to enable waste to be effectively segregated during construction, enabling materials to be effectively managed using the waste hierarchy, prioritising re-used and recycled over disposal. <p>Circular economy principles, such as Modern Methods of Construction, should be implemented, where possible.</p>	Section 4.5

*Record of Environmental Actions and Commitments included in the Analysis of Likely Environmental Effects of the Development Report (418703-MMD-XX-WB-RP-YE-0001)

1.2.2 Prior Notification of Commencement of Work

Part 2 of the SDO also states '*Prior notification of the intended commencement of development must be given to the Secretary of State and the relevant local planning authority, and as such notification must include-*

- (a) *The address and location of the development (including a site plan in the form prescribed by article 4(2)(b)).*
- (b) *The name and address of the owner of the site.*
- (c) *A description of the development. and*
- (d) *The date on which it is intended that any material operation (as defined in section 56 of the Town and Country Planning Act 1990 (a)) will first be carried out*

As the Site Operator, HMRC will provide the SoS with a Prior Notification Letter containing the details mentioned in (a) – (c) above prior to any works commencing on site.

1.3 Project Description

The scope of the CMP related to all the works carried out on the project. This includes:

- Project Management and Construction
- Environmental Management
- Design, construction and commissioning
- Quality Management

1.3.1 Site Location

The Site consists of a large gravelled area and a former runway running north to south, as well as a grassed area to the west of Rayley Lane, on the eastern boundary of North Weald Airfield. The site measures approximately 6.157 hectares. Prior to the existing SDO permission being granted in 2019, the gravelled area, was previously used as a parking area for coach companies. In addition, the former runway was previously used for emergency service response training by the metropolitan police, ambulance and fire services, highways and motorway, and police pursuit training on a relatively infrequent basis. The Site also contains a Memorial Garden area located directly to the west of Merlin Way.

The Site has three access points located directly off the local highway network: an access at the northern end of the Site off Rayley Lane (Gate E); an access to the centre of the Site (Gate D), off Merlin Way, just south of the roundabout junction with Merlin Way, Rayley Lane and Vicarage Lane West; and, an access at the southern end of the Site off Merlin Way (Gate C). These access points are shown on Drawing No. 418703-MMD-08-NW-DR-C-0103-P04 and Drawing No. 418703-MMD-08-NW-DR-C-0001-P03. Rayley Lane connects to the A414 Canes Lane, which connects directly to the M11 Motorway at junction 7.

In terms of the wider airfield, the main runway is a working airfield which runs in a north to south direction to the west of the Site. There is a smaller runway that runs west to east located to the south of the Site. These uses are separated from the Site, by existing security fencing. The airfield provides a wide range of light aviation operations including passenger flying experiences. Between 60 to 70% of this activity occurs at the weekend (according to the Airfield Operations Manager).

The airfield houses many private aircraft. In addition, the airfield is used as a base by both the Air Ambulance Service (Essex & Herts Air Ambulance Trust – EHAAT) and the National Police Air Service (NPAS). North Weald is a general aviation airfield with just over 20,000 movements per annum, connecting people from London and Essex, with destinations across England and abroad by air travel. On occasions North Weald has 300 to 500 aircraft movements a day.

A weekly open-air market also uses the airfield on Saturdays and bank holiday Mondays, but this is restricted to the hardstanding close to the southern end of the runway (according to the North Weald Bassett Masterplanning Study³) which is approximately 0.9km from the Site.

North Weald Airfield operates from 8.30 to 19.00 in summer, and 8.30 to Sunset + 30 minutes in winter, but helicopters from the Air Ambulance (Essex & Herts Air Ambulance) and Police (NPAS) can operate 24/7 all year round. The wider site is used for several non-aviation activities, including sporting and leisure activities, freight distribution, transport, logistics, driver training and a car driving experience. Air flight experiences are undertaken frequently on the airfield, and over the last three years this has increased by 40% (confirmed by the Airfield Operations Manager).

Motor sports and other events held on the airfield normally use the disused eastern side of the airfield. The short grass strip along the northern end of the main runway is also occasionally in operation.

Essex & Herts Air Ambulance Trust (EHAAT) launched its Hertfordshire service at North Weald Airfield in 2008, based at Hangar 7. Two rapid response vehicles are also based here. Ambulances are also serviced and fitted out on parts of the Site. A new air base building is currently under construction at North Weald Airfield, over 800m to the south-west of the Site, and is due to be operational by Summer 2021. As well as facilities for aircraft, vehicles and crew, the building will include space for training, mentoring, patient liaison and cross-training with other emergency services, which will serve both EHAAT and the local pre-hospital care community. It will also provide a visitor centre which will allow EHAAT to welcome and engage with their supporters; as well as space for EHAAT's Hertfordshire Fundraising Team to work more closely with their clinical colleagues.

Since 2019 the National Police Air Service (NPAS) has operated three helicopters and one fixed wing aircraft from North Weald Airfield with a 25-year lease. The facility serves as the main base for police helicopters in the London area and neighbouring counties. NPAS provides borderless air support to the police forces and other agencies (such as the Fire Service and British Transport Police, as well as liaising with the Maritime and Coastguard Agency's Search and Rescue service) across England and Wales 24/7/365 from a national network of bases.

The Airfield Operations Office and Tower is located within the airfield to the south-east of the Site. The main access to the airfield is via the Airfield Operations Gatehouse entrance at the southern end of the airfield.

The airfield is considered to hold significant local and national heritage value because of its military history. As a result, Epping Forest District Council is committed to maintaining the aviation uses of the wider airfield site while exploring the potential for other development. The Council commissioned a review of the aviation operations in 2010 and 2013 (North Weald Airfield Study, Deloitte), where three options for its future were outlined. It concluded that business aviation would not be feasible but unlicensed general aviation could continue with additional mixed-use development being provided on the wider airfield site.

³ <https://www.efdclocalplan.org/wp-content/uploads/2018/03/EB1003B-North-Weald-Bassett-Masterplanning-Study-2015-Part-B.pdf>

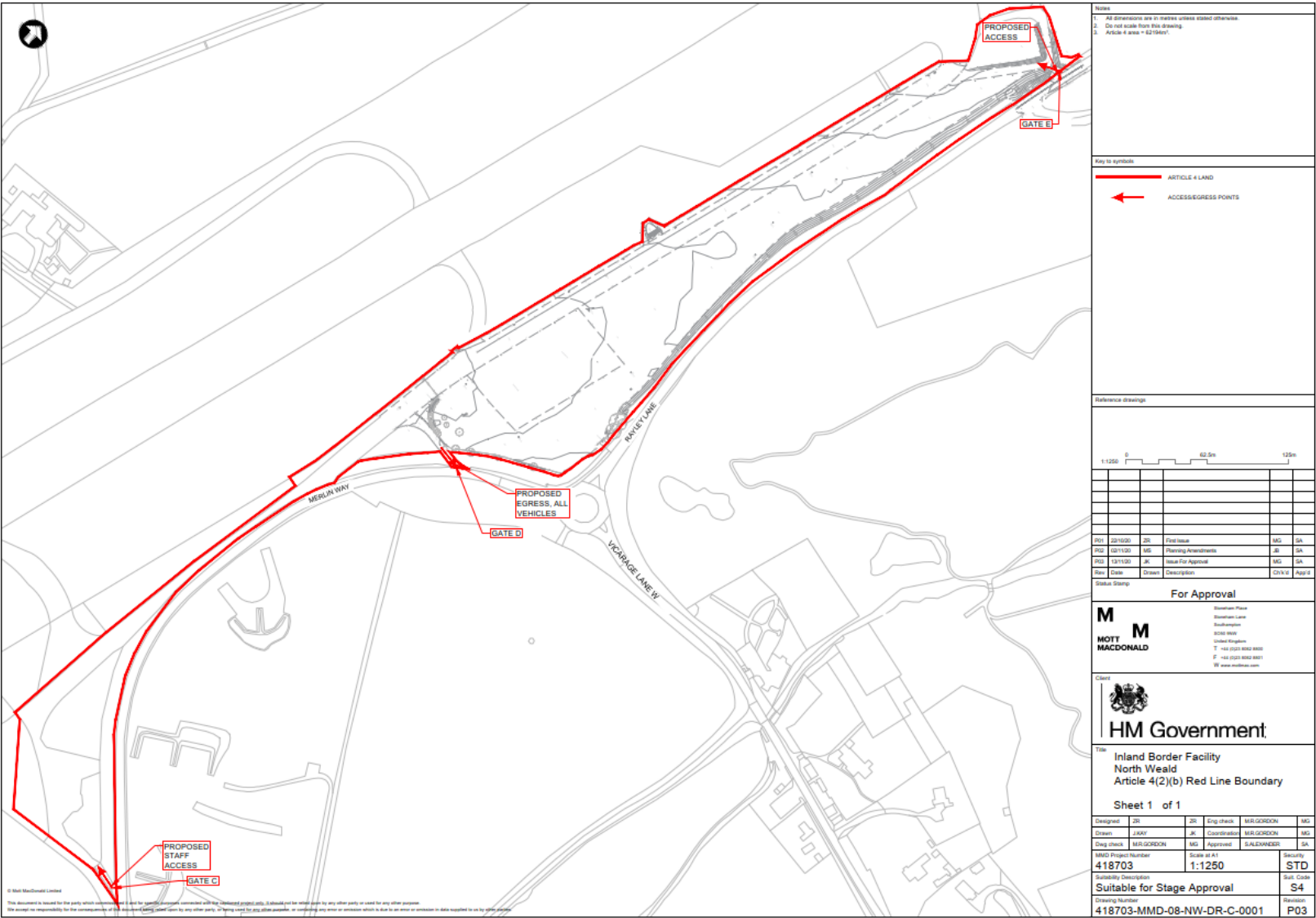
The local area includes a mixture of residential, commercial and agricultural use. North Weald Bassett and Harlow are the main settlements located nearby, approximately 1.5km north-west and 6km south-east of the site respectively. The closest individual residential property is approximately 170m north-east of the site. The site has access to the A414, which in turn connects to the M11. The key transport links of the M11 and its proximity to London means it is a strong strategic location for growth. Adjacent to the airfield to the north is the North Weald Golf Range. Weald Hall Residential Home for assisted living is located adjacent to the airfield to the east. Aviation buildings and associated infrastructure form part of the wider airfield. A business centre is located approximately 400m south-east of the site, home to various businesses such as On Wood Products, Simply Washrooms, The Squadron, Weald Hall Farm and Commercial Centre, Mojo Investments Limited, Supplyline Ltd, Advance Evolution, Wouldiam Fountain Upholstery & Curtains, Larry the London Bus and Friends, and A & C Coachworks Ltd. The nearby business site is relatively self-contained, with separate access points provided by Weald Hall Lane and Rayley Lane.

There are various environmental constraints and receptors located within the vicinity of the site, such as the London Area Greenbelt which the site is within and two listed buildings (Little Weald Hall Farmhouse Grade II and Church Cottage Grade II), as is shown in the Environmental Constraints Plan (Appendix C). This is an ancient landscape of wooded arable countryside with distinct post-medieval enclosures. The overall character is of a gently undulating, chalky boulder clay plateau, the undulations being caused by the numerous small-scale river valleys that dissect the plateau with a largely flat and well enclosed topography. Views of the local landscape are dominated by the managed patchwork of fields.

1.3.2 Proposed Development

The scheme would operate within the boundary shown on the North Weald Inland Border Facility (IBF) Article 4(2)(b) Red Line Boundary (Figure 1.1), the North Weald Inland Border Facility Article 4(2)(c) Site Plan (418703-MMD-08-NW-DR-C-0103-P01), and the Indicative General Arrangement Plan (418703-MMD-08-NW-DR-C-0002). The scheme would be operational for a temporary period from 1 January 2021 to 31 December 2022. As such, the maximum operational period of the scheme is two years. The site would require a 24-hour seven day a week operation.

Figure 1.1 North Weald Inland Border Facility Red Line Boundary



Main Works

The scheme involves the temporary change of land use and associated works, to enable operation of the site as an IBF comprising HGV parking provision and customs clearance and border control facilities.

A maximum capacity of 53 HGV spaces for HMRC, plus an additional three bays for delivery and refuse vehicles, and two quarantine bays (rejected vehicles from the vehicle inspection building) are proposed as indicated on the Indicative General Arrangement (418703-MMD-08-NW-DR-C-0002). This would involve existing areas of hardstanding being used for lorry parking and circulation.

Approximately 66 parking spaces will be provided within the Site for staff, in two locations: one towards the centre of the Site, (to the north-east of the proposed new Vehicle Inspection Facility, to be accessed via Gate E and adjacent to offices and welfare facilities), which will include parking facilities for people with disabilities; and, one at the southern end of the Site providing the majority of the parking facilities for staff, accessed via Gate C.

In order to accommodate this facility, elements that would need to be constructed on-site include the following:

- Retention and re-use of: existing gate booths, existing HMRC modular office building, existing modular marshals' office building, existing automatic number plate recognition camera facilities (one of which is to be relocated)
- Erection of two new raised gate booths – one at Gate E, and one close to Gate D; one new gate booth adjacent to the entrance at Gate C, two new welfare facilities buildings, a new fire water system, a new vehicle inspection facility comprising a modular examination office and a larger steel framed and metal clad temporary building, a new modular control centre and marshal cabins
- Retention of existing 2m high Heras fencing, relocation of some of the existing 2m Heras fencing to accommodate the proposed site layout, and provision of additional 2m high Heras fencing where required
- Removal of previously installed temporary lighting system, and installation of lighting system designed specifically for the site, to include the installation of 6m and 8m tall lighting columns (see submitted Lighting Layout Drawings 418703-MMD-08-NW-DR-E-0001 Rev P02 (Lighting Layout Sheet 1) and 418703-MMD-08-NW-DR-E-0002 Rev P02 (Lighting Layout Sheet 2) and measures as outlined in the Obtrusive Lighting Assessment Report to ensure appropriate directional lighting to safeguard airfield operations and highway safety
- Provision of an appropriate closed-circuit television (CCTV) system
- Retention of existing stone on part of the hard-surfaced area at the centre of the site installed pursuant to the 2019 SDO, and the application of additional surfacing to the stone area within the centre of the site to reinforce this area
- Removal of grassed area to provide an extension to the existing stone area in the centre of the site, and provision of a sealed area of hardstanding to accommodate the new Vehicle Inspection Facility. The existing trees adjoining this area would be retained, and appropriate measures included within the CMP to ensure the Root Protection Areas (RPAs) are not damaged during construction works.
- The retention of the existing Airfield CCTV camera, and the provision of a new additional temporary CCTV camera for the Airfield in a new location to be agreed with the Airfield Owner, although likely to be located in line with the planned lighting poles, on the western

side of the Site, within the Red Line Boundary. This will allow the temporary CCTV camera for the Airfield to be operational whilst the Inland Border Facility is operational, but allow the re-use of the existing CCTV camera when the Inland Border Facility is decommissioned and the Site reinstated after the end of the operational period at 31 December 2022. The additional new CCTV camera for the Airfield is proposed to ensure that there is no interference of the proposed lighting scheme with the operational effectiveness of the Airfield's CCTV camera to maintain lines of sight during the usual operational hours of North Weald Airfield

- In-situ repairs to any drainage required
- Retention and use of a penstock, due to be installed pursuant to the 2019 SDO consent during November 2020, within the drainage system at the northern end of the site
- Retention and use of the existing Gate E access point, (as previously amended pursuant to the 2019 SDO consent) at the northern end of the site, as the main site access for HGV and staff vehicles off Rayley Lane
- The use of existing Gate D access point, towards the centre of the site, as the site egress for HGV and staff vehicles on to Merlin Way;
- The use of the existing Gate C access point, at the southern end of the site, as an access only for staff using the southern parking area.
- The painting of white lines to create parking areas and identify safe walking routes within the site

The construction works would likely take a maximum period of approximately nine weeks to complete and would mainly occur during daytime hours, which will be between 07:30 and 19:00 Monday to Friday, 08:00 to 17:00 on Saturdays and occasional works undertaken on Sundays between 09:00 to 14:00. It is expected there will be a need for night-time working. For requirements for night-time works please see section 1.4 and section 4.11. Testing and commissioning of the IBF will take approximately three to four weeks and this will run in parallel with construction activities.

During the construction phase, it is anticipated that approximately 45 people will be employed to undertake the necessary works. This is likely to include around 3 members of general staff (2 recruited locally); 10 roles for labour (civils) – all recruited locally; 10 roles for labour (buildings); and 22 roles for labour (M&E (mechanical and electrical roles)).

The operation of the scheme would include the presence and use of temporary structures for office accommodation and inspection facilities, welfare facilities for drivers, staff car parking (approximately 51 spaces) including parking for people with disabilities, HGV parking (approximately 53 spaces), traffic management measures and an improved egress arrangements. These elements are all shown on the Indicative General Arrangement (418703-MMD-08-NW-DR-C-0002).

The access and egress arrangements would be as follows:

- The main entrance to the Site for HGV and staff vehicles would be via Gate E (an existing access that was previously altered pursuant to the 2019 SDO and is to be retained in its current form and layout) at the northern end of the site.
- All vehicles would exit from the Site via Gate D (an existing access) towards the middle of the Site, a short distance (approximately 50m) from the roundabout at the junction of Vicarage Lane West, Rayley Lane and Merlin Way.
- A second entrance to the Site is via Gate C (an existing access) to be used only by staff accessing the staff parking facilities proposed at the southern end of the Site.

- It is expected that emergency services under blue light conditions will travel to the site using Business as Usual routes on the Strategic Road Network and Local Road Network following their standard operational procedures. On arrival at the site, they will be directed to the site Emergency Rendezvous Point (ERVP), which will be signed within the site. The emergency services will be met at the ERVP by a representative of the site operator, briefed on the incident, and directed to the relevant location.
- Signs would be provided along Rayley Lane and Merlin Way to direct drivers to the site

Approximately 66 HMRC staff per shift would be required on-site for the processing of the vehicles, marshalling, and for security purposes. There would be a total of three shifts per day. A total of approximately 276 HMRC staff would be required to provide appropriate cover across all shift teams, and would include the following roles:

- Traffic Management.
- Security.
- Office Staff (customer service/administration).
- Inspection staff (manual handling).
- Site Operator management.

The Operational Management Plan (OMP) will include a section setting out a local employment strategy, providing more information at that stage.

Security and welfare facilities would be provided for all staff on-site including the provision of modular office buildings (which would include kitchen facilities) for staff to work in and drivers to wait in, cabins for site marshals, a heated amenity tent to provide an additional covered 'break-out' space for staff, portable toilets for staff and marshals, and a staff parking area. The welfare and security facilities are indicated on the Indicative General Arrangement (418703-MMD-08-NW-DR-C-0002).

The modular office and welfare buildings would be maximum of 4.5m high and located on the existing areas of hardstanding. A new Vehicle Inspection building forming part of the Vehicle Inspection Facility adjacent to Gate D, will comprise a temporary building with a maximum ridge height of 10.5m, and a maximum footprint of 25m x 25m. The building will have goose grey walls and a non-reflective, translucent roof. This building will be located on a new area of sealed hardstanding, covering some of the existing area of hardstanding as well as a new area created by removing some of the existing grassed area immediately to the south-west of the existing gravelled area. The anticipated location of all buildings and facilities are shown on the Indicative General Arrangement (418703-MMD-08-NW-DR-C-0002).

A detailed bespoke lighting scheme has been prepared (see Obtrusive Lighting Assessment Report), with lighting columns of a maximum height of 8m to be installed at the Site to facilitate the safe operation of the Scheme. The lighting scheme will include the use of LED light source technology which will also permit more precise optical control to efficiently illuminate the task areas and minimise stray light. The lighting scheme has been specifically designed to ensure the safeguarding of airfield operations at North Weald Airfield.

New 2m high Heras fencing is proposed parallel to the existing fencing, as shown in sky blue on Indicative General Arrangement (418703-MMD-08-NW-DR-C-0002). This fencing would predominantly be used to enclose the Her Majesty's Revenue and Customs (HMRC) offices. Existing fencing would be retained on the western site boundary, although a northern section of this would be adjusted to give access to spill kits, fire extinguishers and the emergency shut penstock (a stop valve that can be used if a pollution incident occurs to ensure the polluted water does not enter the watercourse).

There would be no idling of engines permitted on-site, except for the daily checking of engines. In addition, no refuelling would be permitted on the site. Facilities would be connected to the existing power supply; therefore, no generators would be required to power the facilities provided on the Site.

The Scheme would also link into existing site drainage facilities.

1.3.3 Programme

Construction

The scheme would be constructed over a period of approximately nine weeks, including modifications to the current parking layout involving the changes to kerb lines, removal of a small amount of vegetation throughout the car park, upgrade to utilities such as lighting and power supplies and the erection of modular buildings.

The site will be operation from 1 January 2021 to 31 December 2022.

1.4 General Site Management

It is generally intended that the majority of construction works would occur during daytime hours, which will be to be between 07:30 and 19:00 Monday to Friday, 08:00 to 17:00 on Saturdays and occasional works undertaken on Sundays between 09:00 to 14:00 if required. It is expected there will be a need for night-time working which would involve quieter construction related activities (e.g. electrical connections to lighting, CCTV cabling and connections, building fit out).

As 24-hour working will be utilised on this site any works will be subject to a Section 61 agreement with the Local Authority.

All noisy activities (such as excavation) will be completed between 08:00-18:00 weekdays and 09:00-14:00 on Saturdays.

1.5 Site Facilities

Figure 1.2 shows the site layout during construction, including access routes, site welfare facilities, site parking and compound areas.

1.6 Plan Review

Should any material changes to the design or baseline conditions on-site, the CMP will be reviewed and updated accordingly and re-submitted to the SoS for determination.

As part of the implementation of the CMP, there will be regular reviews of construction performance in accordance with the CMP requirements and following any emergency / incidents. All significant incidents will require a debrief for all staff involved to understand the lessons learnt. If needed, the Principal Contractor will amend this plan to reflect the outcomes of incident response accordingly.

Once approved by the SoS, a copy of the CMP will be kept on site at all times.

Following approval of the CMP by the SoS, the site operator will publish the non-technical summary of the CMP as outlined Appendix A.

All construction works will be undertaken in compliance with the CMP. HMRC are responsible for ensuring that the Principal Contractor complies with all actions within this CMP.

2 Environmental Management System

2.1 Introduction

This section describes the procedures and processes that form the Environmental Management System (EMS) which will monitor the environmental performance of the construction phase of the scheme.

2.2 Environmental Culture and Policies

All project personnel will adopt and comply with the Environmental Policy (Appendix D), Sustainability Policy and client policies. All sub-contractors will be required to work within the requirements of this Construction Management Plan (CMP) and the relevant policies. Copies of the policies are displayed on office notice boards and will be briefed to all staff as part of their induction.

2.3 Legislation, Regulation and Other Requirements

All works shall be carried out in accordance with the relevant environmental legislation, other regulatory requirements and best practice. A register of current legislative, regulatory and other policy requirements for BGCL projects is provided in the Integrated Business Management System. The Legislation Register is updated on an annual basis or as necessary when new legislation is enacted.

The Principal Contractor will develop Plans and Procedures, an Aspects and Impacts Registers, Risk Assessments and Method Statements (RAMS) to manage environmental hazards, risk and commitments. These documents will be updated as necessary and submitted for review throughout the lifetime of the Project.

The Principal Contractor's Sustainability and Environmental Policy is attached in Appendix D.

2.4 Roles and Responsibilities

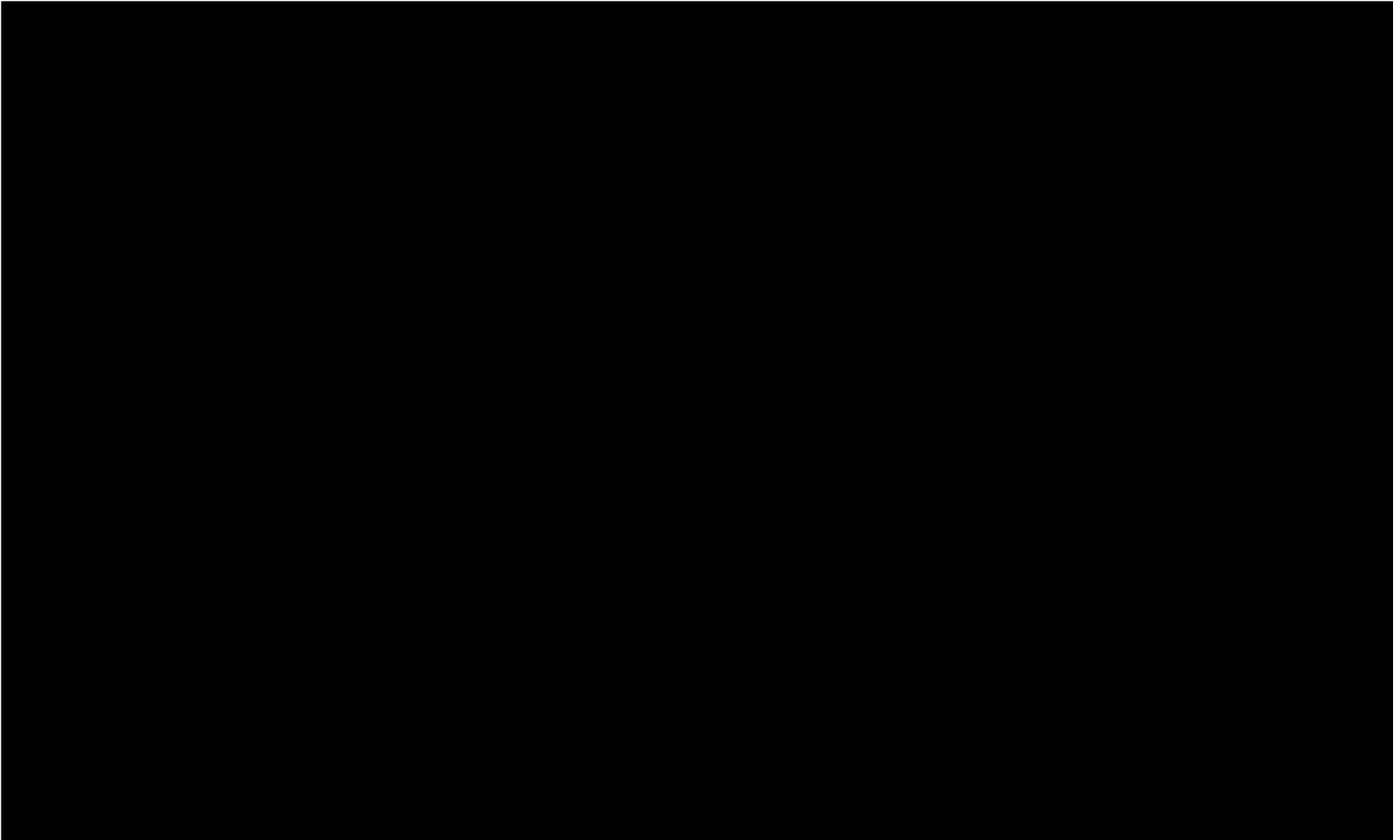
The success of the CMP is dependent upon the extent to which it can be upheld and enforced. The Principal Contractor will define and document the responsibility, authority and inter-relationships of key personnel who manage, perform, and verify work affecting the environment.

All project personnel have full environmental responsibility. Project personnel will be actively encouraged to demonstrate environmental responsibility in respect to the activities undertaken.

The management team that will be on-site for the duration of the works are, one site agent, one general foreman, one gateman, one overnight security guard. The project manager and works manager will visit the site at least once a week. An Environmental Manager will also be assigned to the site. Please see Figure 2.1 for site management organogram.

The Principal Contractor will nominate an Environmental Manager as the individual having responsibility for environmental matters. The Environmental Manager is responsible to ensure all environmental and sustainability management requirements set out in this document. Sub-contractors engaged on the project will also be required to adhere to all the environmental and sustainability management requirements of the project.

The Environmental Manager will co-ordinate and implement the EMS and will liaise closely with the whole team in respect of all environmental aspects associated with the works.



To ensure that the site is managed correctly, weekly meetings and inspections will be carried out. These are detailed in the Construction Phase Plan.

2.5 Consents and Licences

The environmental assessment has not identified the requirement for any Licences or Permits to protect the environment. However, if the Principal Contractor identifies any requirements then the Principal Contractor will gather all relevant information to make all applications to obtain Consents, Licences and Permits in the necessary timescales in line with Project Programme and key dates. Copies of all applications and consents will be issued to the client and maintained on a register.

2.6 Emergency and Incident Response

All environment incidents, accidents and near misses in accordance with statutory requirements. Please see Appendix E for Site Emergency Preparedness and Response Plan. All incidents, accidents and near misses will be investigated and communicated to the client. The Principal Contractor will maintain an Environmental Incident Register, to record all environmental incidents, irrespective of size and nature. The contents of this register will be discussed under the standing agenda item 'Environmental Issues' at monthly project meetings.

2.7 Training and Awareness

The Principal Contractor will ensure all employees on-site are appropriately qualified and suitably experienced to undertake the scope of works.

The Principal Contractor will be responsible for identifying training needs of their employees.

All site personnel will undergo a site induction (including visitors). As part of the induction, environmental responsibilities will be covered. A record will be kept and maintained of all attendees.

In addition to a site induction, training will include daily site briefings and toolbox talks to ensure that all employees on-site are aware of the risks on a daily basis on health, safety, security, community relations and environmental topics.

Certain roles will require additional specific training for activities such as refuelling. The Principal contractor will assign roles such as 'Designated refuellers' and 'waste representatives'. Only these personnel are to engage with bulk refuelling operations and the completion of waste management documentation.

2.8 Construction Method Statements

Method statements will be produced stating how construction activities will be carried out to meet the requirements of the CMP. Method statements will be reviewed by the Environmental Manager prior to works commencing and included in the appendix of this CMP where relevant.

3 Public and Stakeholder Communication

3.1 Introduction

This section addresses neighbour and community liaison during the works. The Principal Contractor is responsible for ensuring compliance with the procedure. In addition, all staff are responsible for adhering to its requirements.

3.2 Liaison and Communication Protocols

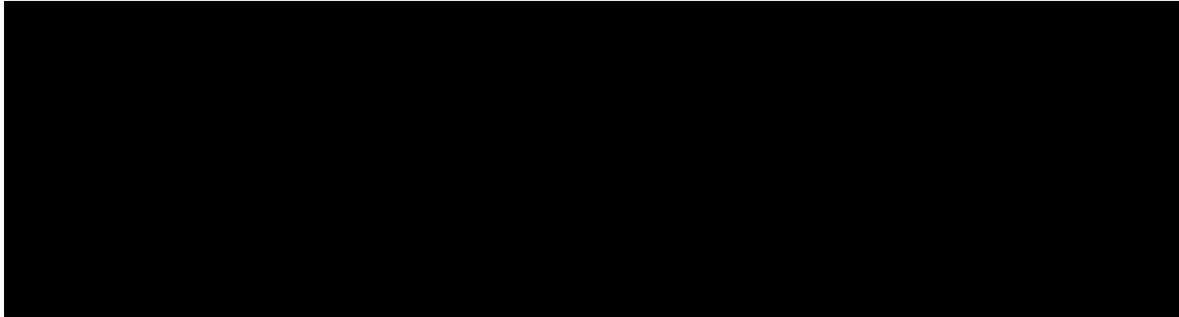
All identified neighbours and community stakeholders surrounding the site were engaged with during the planning process regarding the inland border facility. Information was shared with landowners / occupiers located within the consultation radius via letter, with further details and contact information available via the https://inlandborderfacilities.uk/?page_id=53 website.

Figure 3.1 Blue Line Engagement Boundary



The importance of community engagement throughout the construction process is recognised and will continue throughout construction by HMRC. All properties within the blue line engagement boundary (Figure 3.1) will receive a letter informing of the approval of Article 4 and the commencement of construction. The website will be updated as required to inform

stakeholders and the public of updates regarding the site. Epping Forest District Council, as the local authority, will be provided with timely updates on construction where necessary throughout the construction period.



3.4 Complaint Handling Procedure

The Principal Contractor will provide contact details for the site manager at the entrance of the site. All complaints made during construction will go through and be dealt with by the site manager. Should any member of the public require to speak to someone in person, the site manager will be the first point of contact. All members of site will direct complaints to the site manager.

Should any complaints be received that cannot be closed out immediately by the site manager, these will be transferred to the nominated member of HMRC's Stakeholder Engagement Team (SET). The SET will be responsible for managing complaints with a target of resolving issues within 48-hours of a complaint being received. Complaints received by identified stakeholders will also be managed by a member of the SET.

HMRC will also maintain a dialogue with the local authority and ensure the Principal Contractor understands what is expected of them in relation to noise. During the construction phase, HMRC will provide updates to the local authority where required.

3.5 Documentation

All relevant documentation regarding the Construction Management Plan (CMP) will be maintained by the Principal Contractor and can be shared if requested.

4 Environmental Management Requirements

4.1 Introduction

The following section details all the environmental management requirements that will be implemented throughout the construction phase of the scheme,

4.2 Environmental Constraints

Please refer to Appendix C for North Weald Environmental Constraints Map showing environmental constraints associated with the site.

4.3 Air Quality and Emissions

The closest Air Quality Management Area (AQMA) is AQMA (Epping Forest District Council) no2, located approximately 5.5 kilometres south-west of the scheme, declared for exceedances of the nitrogen dioxide (NO₂) hourly and annual mean objective.

There are multiple human health receptors and one ecological designation with statutory status (Epping Forest Site of Special Scientific Interest (SSSI)), within 200m of these road corridors.

Please refer to the Air Quality Impact Assessment (418703-MMD-XX-NW-RP-AQ-0001) for the scheme for further detail.

The principal sources of emissions during construction are:

- Construction traffic, however, movements are anticipated to be less than 200 HGVs per day and last approximately nine weeks
- Dust creation from construction activities and construction plant and machinery

Procedure

The following measure will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- COSHH (control of substances hazardous to health) assessments will be produced for potential impacts to human health (workforce and neighbours) specific to the environment being worked in

Use of Machinery

- The use of mains electrical power, hybrid generator systems and battery powered equipment where reasonably practical
- All plant on-site will be in good operating condition. Exhaust emission from all plant will be reduced as much as possible through effective and regular maintenance
- All construction vehicles will conform to the current EU emissions standards (NRMM Stage V compliance for all plant with an engine capacity of between 37-560kW and all generators above 560kW)
- All plant to be switched off when not in use
- No idling of vehicles
- Low sulphur diesel fuel will be used in all plant (non-road mobile machinery)

- The Principal Contractor will maintain a register of all plant on-site to record inspection and set up a system of regular inspection of all plant
- Vehicle and construction plant exhausts will be directed away from the ground and position them at a height to facilitate appropriate dispersal of exhaust emissions

Dust Mitigation

Works would be carried out in accordance with Best Practicable Means, as described in Section 79 (9) of the Environmental Protection Act 1990, to reduce the creation of dust on-site during the construction phase. This would include:

- Minimise height of stockpiles and profile to minimise wind-blown dust emissions and risk of pile collapse
- Enforce a maximum speed limit of 15mph on surfaced roads and a 10mph speed limit on unsurfaced haul roads and work areas, to prevent the generation of dust by fast moving vehicles
- The placement of stone / soils / concrete / other materials by plant or equipment will be controlled and as infrequently as reasonably practicable to prevent undue creation of dust (i.e. reduce potential for double-handling)
- Dust suppression systems to be in place where there is a foreseeable risk to air quality such as dampening down surfaces in dry conditions
- Aggregate and waste delivery vehicles will be covered
- Stockpiles and mounds will be maintained to avoid material slippage and dust generation
- Locate stockpiles out of the wind (or cover, seed or fence) to minimise the potential for dust generation
- Vehicles transporting materials within or outside the construction-site will not be overloaded
- Site accesses and local roads will be checked daily for mud and arrangements for it to be cleaned will be made immediately should it be required
- No open fires to be permitted on-site. Measures to minimise fire risk must be implemented
- Vehicle and construction plant exhausts will be directed away from the ground and position them at a height to facilitate appropriate dispersal of exhaust emissions
- Movement of construction traffic around site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the project
- All cutting and grinding operations will use equipment and techniques which reduce emissions and incorporate appropriate dust suppression measures
- Maintain a clean and tidy site to avoid accumulation of dust

4.4 Archaeology and Built Heritage

There are three listed buildings within 300m of the site boundary and a further listed building associated with North Weald Airfield. The closest listed building is the Grade II listed Little Weald Hall Farmhouse (NHLE: 1337223) located approximately 170m north of the site. The scheme area is screened from these assets by vegetation and fencing within their associated land, and at the eastern boundary of North Weald Airfield.

The principal sources of potential effects during construction are:

- Movement of plant
- Appearance of worksites
- Construction noise

- Introduction of new infrastructure such as modular buildings and lighting

Procedure

The following measures to reduce visual intrusion and impacts upon the archaeology and heritage of the area will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- The heritage risk will be explained to all employees and sub-contractors within the site induction and through Toolbox Talks
- Should heritage assets of potential importance be unexpectedly revealed during construction, the procedure for the unexpected discovery of archaeological remains of national importance will be implemented. These include:
 - All works within the area to be suspended
 - Notify the county Archaeologist to determine further action via the Project Manager on-site. The Environmental Manager will also be notified
 - Make suitable provisions to allow a survey to be undertaken in accordance with Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS)

4.5 Carbon

The UK construction industry is the largest consumer of natural resources with an average of over 400 million tonnes of material consumed every year. This accounts for approximately 10% of the UK's annual carbon emissions⁴. Therefore, there is significant scope to impact upon carbon emissions by employing carbon reduction principles. The emissions associated with the products and materials used in construction and the transport of materials to site are estimated to be 2,168tCO₂e.

The principal sources of carbon during construction are:

- The embodied carbon of the products and materials
- Emissions from the plant used during construction
- The transport of materials to site

Procedure

The following carbon reduction principles as detailed within Section 3 of the Carbon Assessment and Reduction Report will be considered by the Principal Contractor and all sub-contractors for the duration of construction of the scheme:

- Transportation of materials to site would prioritise low-carbon modes where possible
- Where possible, low-carbon construction materials and products will be preferred
- Where possible low-carbon construction plant and equipment would be used
- Provision will be made to enable waste to be effectively segregated during construction, enabling materials to be effectively managed using the waste hierarchy, prioritising re-used and recycled over disposal

⁴ Institute of Civil Engineers (ICE) (2014): Energy Briefing Sheet: Embodied Energy and Carbon [online] available at: https://www.ice.org.uk/ICEDevelopmentWebPortal/media/Documents/Disciplines%20and%20Resources/Briefing%20Sheet/Embodied_Energy_and_Carbon.pdf

- Circular economy principles, such as Modern Methods of Construction, will be implemented, where possible

4.6 Construction Materials, Sourcing, Management and Storage

Material resources would be required for the construction of the scheme, including but not limited to aggregate, modular buildings and lighting columns. The scheme is not located within or nearby any Minerals Safeguarding Areas or Minerals Consultation Areas.

The principal sources of potential effects on material assets and waste during construction are:

- The depletion of natural resources and waste management infrastructure capacity

Procedure

Where possible, ensure that the waste hierarchy is followed when dealing with waste on-site: prevention, re-use and preparation for re-use, recycle, recovery, and disposal.

Waste audits would be required to measure the effectiveness of the waste management procedure.

Sourcing

In line with the BGCL Sustainability Policy and client requirements the use of materials from non-sustainable sources will be minimised. Materials from sustainable sources or materials with a recycled content will be specified by designers.

Materials which can be recovered at the end of the products lifecycle have been specified. These are shown below in Table 4.1

Table 4.1 Material recovery at the End of Product Lifecycle

Material	Sustainable Sourced	End of life
Timber for shuttering	FSC (or equivalent) sources in line with policy	Energy from waste
Concrete with recycled content	From a wrap approved source (WRAP recycled content in construction product database)	Remove for recycling
Recycled Aggregate	WRAP approved sources only or BES 6001 approved sources	Remove for Recycling

In addition, global ecological issues will be taken into account where timbers from high conservation value forests will be avoided through sourcing timber with FSC certification.

BGCL will procure almost 100% BES 6001 certified ready mixed concrete and aggregates will be procured from BES 6001 sources where possible.

Management

- Mixing of large quantities of concrete or bentonite slurries will be undertaken in enclosed or shielded areas
- The number of handling operations for materials will be kept to the minimum reasonably practicable
- Materials handling areas will be maintained to constrain dust emissions through the use of measures such as watering facilities to reduce or prevent escape of dust from the site boundaries
- Mixing of grout or cement-based materials will be undertaken using appropriate techniques/mitigation suitable for the prevention of dust emissions

- Where materials can be re-used they will be re-used

Storage

- Storage of any oil-based materials, including petrol, diesel, waste and vegetable and plant oil, and above ground fuel and oil storage tanks, the Principal Contractor will comply with the Control of Pollution (Oil Storage)(England) Regulations 2001, as amended, and the Environment Agency's PPG: Above ground oil storage tanks
- Chemical storage, handling and use will comply with PPG 26: Drums and intermediate bulk containers
- Stationary plant will be used with secondary containment measures such as plant nappies to retain any leakage of oil or fuel, which will be emptied at regular intervals to prevent overflow
- Fuel will be stored in dedicated bunded, impervious storage areas away from drains and watercourses
- Fuel tanks will be stored within a bund capable of holding 110% of their capacity
- Stockpiles and mounds will be kept away from sensitive receptors (including natural and historic features), watercourses and surface drains where reasonably practicable, and sites to take into account the predominant wind direction relative to sensitive receptors
- Stockpiles and mounds will be maintained to avoid materials slippage
- Materials stockpiles likely to generate dust will be enclosed or securely sheeted, kept watered or stabilised as appropriate
- Fine dry material will be stored inside buildings or enclosures with measures in place to ensure no escape of material and of overfilling during delivery
- Maintain a clean and tidy site, ensuring all material is stored in the correct areas

4.7 Ecology

The majority of the site is classed as improved grassland, with areas of hardstanding where the site was previously used as a runway. There are a number of sites designated within 2 kilometres of the site, however none are anticipated to be affected by the works.

Within the Preliminary Ecological Appraisal Report (PEAR) (418703-MMD-XX-NW-RP-BD-0002) it was noted that the bund and hedge line along the eastern extents of the scheme has potential for use by bats for foraging and commuting. Surveys determined that the linear feature along the east of the site provides good foraging opportunities to the local bat population with a minimum of eight species being recorded within this area. Additionally, low numbers of barbastelle *Barbastella barbastellus* were recorded, a Habitats Directive Annex II species. The hedgerow and scattered trees have the potential to support nesting birds and the vegetated bund has the potential to support reptiles and great crested newts (GCN).

The principal sources of potential effects on biological receptors during construction are:

- The removal of vegetation consisting of tall ruderal vegetation as well as an area of short mown improved grassland
- Construction noise, lighting and visual disturbance from the associated personnel, plant and traffic management
- The installation of the inspection shed, adjacent to the existing area of hardstanding

Procedure

In order to ensure no effects on protected species during construction, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of construction of the scheme:

- All vegetation removal will be supervised by a suitably qualified ecologist and be undertaken outside of the main breeding bird season (and therefore, will be undertaken between September to February)
- For any vegetation unable to be removed outside of the bird nesting season (March to August inclusive), a nesting bird check will be undertaken by a suitably qualified ecologist no more than 48 hours prior to works commencing. Should an active nest be identified during the survey, a demarcation zone will be implemented where no works can occur until the nest has fledged (up to six weeks depending on the species)
- Prior to works, a check will be carried out along the bund on the east side to check badgers are still absent
- In the event that any excavations are required, ensure that these are covered over night or that ramps are installed so that mammals do not become trapped
- Should any protected species be found during the works, works will stop immediately, and an ecologist contacted immediately via the Project Manager on-site. The Environment Manager will also be notified
- Should invasive species such as Japanese Knotweed be encountered on-site, works will stop immediately, and the area fenced off. An ecologist will be notified via the Project Manager on-site for further action. The Environment Manager will also be notified

In order to ensure no significant effects on bats during construction, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of construction of the scheme:

- To use low or high-pressure sodium lamps, instead of mercury or metal halide lamps, with the use of glass glazing preferred where possible. The use of Light Emitting Diodes will also be used in preference to mercury or metal halide lamps
- The main beam angle of any artificial lighting will be directed downward so as to minimise light spill
- To fit lighting at as low a height as is practicable
- Directional hooded and low-level lighting for the temporary lighting will be used
- The Principal Contractor will avoid lighting areas of vegetation within and outside of the site boundary
- In the case where lighting is required for security reasons, the use of lights with motion detectors or the use of Intelligent Video Analytics, which uses infra-red to detect movement, will also be considered. This would work to ensure areas are only lit when necessary
- To minimise the upward spill of lights with the use of directional luminaires, shields, louvres and baffles. This would direct light to where it is required and prevent unnecessary light spill into the surrounding environment
- A dark corridor is maintained along the vegetated bund which runs along the eastern boundary of the site. This would help maintain the existing bat foraging and commuting habitat

- Lighting will comply with the Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01⁵ and the provisions of BS 5489, Code of practice for the design of road lighting⁶, where applicable
- Lighting will be at the minimum luminosity necessary and use low energy consumption fittings
- Restrictions on night-time lighting during construction will be in place

4.8 Housekeeping

Procedure

To reduce the likelihood of an environmental incident or nuisance occurring, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- Regular inspection and treatment of perimeters, maintain cleanliness on-site, including the provision of staff facilities, waste management
- Effective preventative pest and vermin control and prompt treatment of any pest and vermin infestation, including arrangements for disposing of food waste or other attractive material, if an infestation occurs, the Principal contractor will take action to eliminate the infestation and prevent further occurrence
- No fires allowed on-site and measure will be taken to minimise the likelihood of fires
- Remove or stoppage and sealing of drains and sewers taken out of use
- No discharge of site run-off to ditches, watercourses, drains, sewers or soakaways without the agreement of the appropriate authority
- Maintenance of wheel-washing facilities or other containment measures
- Storage of machinery, equipment and temporary building outside flood risk areas where possible
- Management of staff congregating outside the site prior to commencing or leaving site to avoid risk of traffic collisions
- Maps showing sensitive areas and buffer zones where no pollutants are to be stored or used will be displayed in all welfare facilities
- Adequate welfare facilities will be provided
- A construction worker travel plan will be implemented to encourage use of public transport by site staff and control off-site parking
- Any fire hydrants and emergency water supplies must be kept in good repair and any defects must be repaired as soon as practicable

4.9 Landscape and Visual

There are multiple visual receptors within 1km of the scheme including residential properties, residential homes and roads. Those considered highly sensitive in assessment terms for this site include residential properties and Public Rights of Way as detailed below:

- There are a number of Public Rights of Way (PRoW) within the vicinity of the scheme. There would be some views of the site from PRoW 42 at the Rayley Lane / Vicarage Lane

⁵ Institute of Lighting Professionals (2011) Guidance notes for the reduction of obtrusive lights [online] available at: <https://www.theilp.org.uk/documents/obtrusive-light/> (last accessed December 2018).

⁶ British Standards Institution (2013) BS 5489, Code of practice for the design of road lighting. Lighting of roads and public amenity areas [online] available at: <https://shop.bsigroup.com/ProductDetail/?pid=000000000030217237> (last accessed December 2018).

roundabout intersection due to the gaps in the screening vegetation. However, PRoW 51 near Cripsey Brook and PRoW 31 to the other side of Rayley Lane would not have views of the site due to the presence of intervening screening vegetation

- Weald Hall Residential Home is located approximately 260m west of the scheme and Tawney's residential receptor is located 530m north of the scheme. Both are partially screened by trees and hedgerows in their gardens, but there would be views of the airfield across the flat landscape, particularly Weald Hall Residential Home due to the gap in garden vegetation that borders the airfield. Views of the site are likely to be greater from the upper storey windows and during the winter period due to the lack of leaf coverage
- The closest residential property is located approximately 200m north-east of the scheme. Residential receptors are also located approximately 300m south-east of the scheme and 420m to the west of the scheme. However, given the distance from the scheme and the positioning of vegetation, it is unlikely that there would be views of the airfield from these properties due to the intervening built form and vegetation. Wilhelm Mohr Court, the residential apartment building situated off Rayley Lane near to Scribbles Day Nursery, would have views of the site from the upper storey units looking east. However, views would be heavily screened and would be set in the context of the surrounding built form and boundary vegetation.

The principal sources of potential effects on visual intrusion and landscape character during construction are:

- The removal of a small section of the bund adjacent to Gate E to facilitate widening of this gate. This would require the removal of a small amount of vegetation consisting of tall ruderal vegetation as well as an area of short mown improved grassland.
- Machinery and materials would be present on-site which has the potential to disturb the landscape character of the area and cause a visual intrusion
- Lighting disturbance caused by temporary lighting during construction

Procedure

In order to limit visual intrusion and impacts upon landscape character, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of construction of the scheme:

As a minimum the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- At no point during construction will Memorial Garden area be utilised and will remain fenced off from all construction works
- Site fencing will be maintained in a satisfactory condition and to a standard acceptable to the local authority and client
- Site hoardings and fencing may be used as dust/ acoustic/ visual screens for worksites. These will be frequently maintained in order to ensure efficiency and visual impact
- Land take, construction activities, materials and waste storage shall all only take place within the boundaries of the work sites
- None of these activities shall take place outside the work sites except where there is prior consent from the relevant authorities, (for example work to local roads)
- Recognition will be taken of adjacent sites and businesses that may impact on-site from outside its boundary

- Use of directional, hooded and low-level lighting, as well as restrictions on night-time lighting during construction
- The height of any building (other than an existing building) must not exceed 15m
- The height of any gate, fence, wall or other means of enclosure erected or constructed, other than noise attenuation measures, must not exceed 4.5m
- No building other than plant, machinery, gates, fences, walls or other means of enclosure, or noise attenuation measures, may be erected or extended within 25m of the boundary of the curtilage of any residential dwelling

Vegetation clearance is required for the scheme. As standard, the following measure will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- No vegetation is to be removed that has not been identified in the scheme proposals for Special Development Orders (SDO) without prior consultation with the Scheme Arboriculturalist
- If at any point, the design is changed following formal SDO submission, the Scheme Arboriculturalist must be consulted to enable any subsequent arboricultural impacts to be reviewed and mitigated as appropriate
- All tree works to be carried out in accordance with BS3998:2010 *Tree Work – Recommendations*
- Protective barriers will be installed in accordance with BS5837:2012 around all of the trees in close proximity to the works, at the distances dictated by the root protection area (RPA) measurements
- An Arboriculturalist will site to confirm the final positioning of the protective fencing
- Vehicular movements will remain within the hardstanding of the car park at all times
- Compound areas and set down areas were not confirmed at the time of the site visit. It is recommended that they will be positioned on an area of hardstanding within the car park. If hardstanding is not available, they will be located outside of the RPAs of any trees on-site
- All excavated topsoil will be stripped, stockpiled and re-used in accordance with BS3882:2015 *Specification for Topsoil*
- No topsoil or other materials will be stored within the RPA of retained trees
- Any works relating to installation of services must be undertaken in accordance with the 'National Joint Utilities Group Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'. In addition, follow recommendations within BS 5837 2012 *Trees in relation to design, demolition and construction- recommendations*
- Any roots <25mm diameter which are exposed by the excavations are to be pruned properly in accordance with good practice using secateurs or a sharp saw. No roots >25mm are to be pruned or severed without prior agreement from the Scheme Arboriculturalist
- Exposed roots >25mm will be retained and covered with moist hessian until they are reburied
- If roots >25mm are uncovered, the Scheme Arboriculturalist will advise on whether the trees stability and integrity have been compromised and decide on appropriate action required. Any works relating to installation of services must be undertaken in accordance with the National Joint Utilities Group (NJUG) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees
 - In accordance with good arboricultural practice the following must be adhered to:
 - No actions to be undertaken that are likely to cause localised waterlogging

- No permanent alteration of ground levels within the RPA of retained trees
 - No construction of hard surfaces within RPA of retained trees
 - No boards, hoarding, cables, notices or fencing to be attached to trees
 - No fires are to be lit within 10m of tree canopies
- No handling, discharge or spillage of any chemical substance, including cement washings and vehicle washings are to occur within 10m
- Maintain a clean and tidy site, with particular attention to avoiding contamination of aviation areas with FOD.

4.10 Lighting

During construction, site lighting will be required to enable the safety and security of the construction-site.

Procedure

The following measure will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- Lighting will be at the minimum luminosity necessary and use low-energy-consumption fittings
- Where necessary, lighting to site boundaries will be provided and illumination will be sufficient to provide a safe route for the passing public
- Where appropriate, lighting will be activated by motion sensors to prevent unnecessary usage
- Lighting will comply with the Institute of Lighting Professionals' *Guidance notes for the reduction of obtrusive light* and the provisions of BS 5480, *Code of practice for the design of road lighting*, where applicable
- Lighting will be designed, positioned and directed so as not to unnecessarily intrude on any adjacent buildings, ecological receptors, structures used by protected species and other land uses to prevent unnecessary disturbance
- The positioning and design of temporary lighting to be installed during the construction work will be considered in relation to:
 - Minimum requirements for transport users
 - Safe operation of the railway and roads
 - Requirements for least disturbance to local ecology
 - Energy efficiency, ease of maintenance and disposal of light units (LED to be considered)
- Lighting columns powered off the mains will be used as a first priority but if not then either hybrid powered lighting columns or string (generator powered) lights will be used. Security lighting will be as low as reasonable during night-time periods
- All lighting shall be switched off when not in use
- To use low or high-pressure sodium lamps, instead of mercury or metal halide lamps, with the use of glass glazing preferred where possible. The use of Light Emitting Diodes will also be used in preference to mercury or metal halide lamps
- The main beam angle of any artificial lighting will be directed downward so as to minimise light spill
- To fit lighting at as low a height as is practicable
- Directional hooded and low-level lighting for the temporary lighting will be used

- The Principal Contractor will avoid lighting areas of vegetation within and outside of the site boundary
- In the case where lighting is required for security reasons, the use of lights with motion detectors or the use of Intelligent Video Analytics, which uses infra-red to detect movement, will also be considered. This would work to ensure areas are only lit when necessary
- To minimise the upward spill of lights with the use of directional luminaires, shields, louvres and baffles. This would direct light to where it is required and prevent unnecessary light spill into the surrounding environment
- A dark corridor is maintained along the vegetated bund which runs along the eastern boundary of the site. This would help maintain the existing bat foraging and commuting habitat
- Lighting will comply with the Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01⁷ and the provisions of BS 5489, Code of practice for the design of road lighting⁸, where applicable
- Lighting will be at the minimum luminosity necessary and use low energy consumption fittings
- Restrictions on night-time lighting during construction will be in place

Please refer to section 4.7 for lighting mitigation during construction to reduce construction effects on bats.

4.11 Noise and Vibration Management

The closest residential property is located approximately 200m north-east of the scheme. Weald Hall Residential Home for assisted living is located 260m west of the scheme and Scribbles Day Nursery for children is located 280m to the north-east.

There is the potential for a temporary, adverse effect on nearby residential receptors as a result of noise arising from the construction works associated with the scheme, such as during site clearance and preparation.

The principal sources of potential effects on noise and vibration during construction are:

- Noise arising from the construction works associated with the scheme, such as during site clearance and preparation
- Construction traffic, due to the transportation of materials and plant to and from the site.

Procedure- Noise

The following measure will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- 24-hour working will be utilised on-site. Most works will be completed between 07:30 and 19:00 on weekdays, and 08:00 to 17:00 Saturdays. Occasional Sunday working will be permitted between 09:00 and 14:00
- All noisy operations (such as excavation) will be completed between 08:00 to 18:00 hours on weekdays and 08:00 to 13:00 on Saturdays

⁷ Institute of Lighting Professionals (2011) Guidance notes for the reduction of obtrusive lights [online] available at: <https://www.theilp.org.uk/documents/obtrusive-light/> (last accessed December 2018).

⁸ British Standards Institution (2013) BS 5489, Code of practice for the design of road lighting. Lighting of roads and public amenity areas [online] available at: <https://shop.bsigroup.com/ProductDetail/?pid=000000000030217237> (last accessed December 2018).

- Activities conducted during night-time working (between 23:00-07:00) will not exceed 45 dB, 50 dB and 55 dB $L_{Aeq,T}$ at dwellings in categories A, B and C, respectively, as per clause E3.2 from BS5228-1⁹
- Any activities identified that could be undertaken outside of the working hours and limits set out above will require prior agreement (Section 61) with Epping Borough Council
- Construction works will comply with the recommendations for practical measures to minimise noise and the maximum permissible noise limits set out in BS5228-1. Should construction activities be identified that could exceed these limits, prior agreement will be sought with Epping Borough Council. In order to inform the establishment of suitable noise limits it is expected that a baseline noise monitoring survey will need to be undertaken at representative receptor locations based on a recognised standard such as BS 7445-1:2003 Description and Measurement of Environmental Noise. Guide to Quantities and Procedures. Where this is not possible a desktop study will be used to determine the appropriate ABC category
- All equipment and vehicles will be switched off and if applicable ignition key removed when not in use
- All equipment and vehicles will be switched off and if applicable ignition key removed when not in use. Use of temporary noise barriers where appropriate
- Noise and vibration will be controlled at source by using the following:
 - Fit equipment with silencers or mufflers
 - Manage deliveries to prevent queuing of site traffic
 - Do not leave plant running unnecessarily
 - Materials to be lowered instead of dropped from height
 - Use of adjustable or directional audible vehicle-reversing alarms or use of alternative warning systems (for example, white noise alarms)
 - Train and advise members of the construction team during toolbox talk briefings on quiet working methods
 - Sensitive placement of plant and equipment with the potential to generate emissions
 - Enclosure, shielding or provision of filters for plant likely to generate excessive quantities of dust or noise beyond the site boundaries
 - Adoption of quiet working methods including auger and vibration piling rather than impact piling
 - Early delivery of noise mitigation identified in the environmental analysis where reasonably practicable and relevant (e.g. acoustic bunds or fencing)
 - Use of less intrusive noise alarms that meet the particular safety requirements of the site, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms
 - Avoidance of the use of loudspeaker or loudhailer devices
 - Considerate working practices, such as avoiding noisier activities during anti-social hours and pre-notification of particularly noisy or drawn out activities to relevant receptors (including materials delivery)
- Where it has been identified that there will be noise levels above the lower exposure action value of 80 dB(A) $L_{EP,d}$ (daily personal exposure level), operatives will be issued with suitable hearing protection which under company policy they will be required to wear. The works will be noise monitored, and if it is found that the noise levels exceed the upper

⁹ BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites.

exposure action value of 85 dB(A) $L_{EP,d}$ an exclusion zone will be established that can only be entered by persons wearing adequate hearing protection.

Procedure - Vibration

The potential for vibration will be assessed on a task by task basis. When a task has been identified that requires the use of a vibrating tool with risk of a vibration exposure of 2.5 m/s^2 A(8) or higher, then form GP.1124.F01 Hand Arm Vibration Calculator Permit will be completed. This form identifies:

- Action limit time - this is where the task can be carried out with no further actions required
- Daily limits - this is the maximum exposure time on that piece of equipment/tool exposure - measured in m/s^2 A(8).

When there is a risk that 2.5 m/s^2 A(8) may be exceeded, the GP.1124.F01 chart will change from green to amber. At this stage, consideration must be given to control measures such as reducing the tool/ equipment vibration amplitude, reducing the exposure time, task rotation etc.

Persons operating vibrating/power tools/equipment etc. must not be exposed to any amplitude/ time combination which indicates red on the chart.

Refer to the relevant measures set out in Section 4.3 under Machine Use.

4.12 Pollution Prevention and Control

Existing drainage is present on-site.

Procedure

To reduce the likelihood of an environmental incident or nuisance occurring, the following measure will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- Activities must be managed in accordance with Construction Industry Research and Information Association (CIRIA) Guidelines and Environment Agency's Protect groundwater and prevent groundwater pollution
- Stationary plant will be used with secondary containment measures such as plant nappies to retain any leakage of oil or fuel, which will be emptied at regular intervals to prevent overflow
- Fuel will be stored in dedicated bunded, impervious storage areas away from drains and watercourses
- Fuel tanks will be stored within a bund capable of holding 110% of their capacity
- Spillage kits will be stored at key locations on-site as set out in a pollution incident control plan and in particular refuelling areas. Spillage kits will also be kept with mobile bowers
- Plant nappies will be in use during the refuelling process to catch any drips or spills between bowser and machinery
- Refuelling operations will only be undertaken by designated refuellers in line with refuelling procedures
- All staff will be trained to use spill kits efficiently
- The Principal Contractors will keep a record of all spillage incidents and inform the nominated undertaker of any spills which cause land contamination or pollution off-site
- The Principal Contractors will manage and dispose of foul water and sewage effluents from site facilities, complying with PPG4: Treatment and disposal of sewage where no foul sewer

is available, The Environment Agency's guidance document Groundwater protection: Principles and practice (GP3)

- Containment by temporary foul drainage facilities and disposal off-site by a licensed contractor
- By preference, connection to the local foul sewer system as agreed with the relevant authorities
- Where foul sewage is not present, appropriate treatment and discharge to a watercourse or soakaway with approval from the Environmental Agency, where required
- Any foul drainage discharge to the public sewer will require approval from the statutory water undertaker. If not permitted, provisions need to be adopted to remove the liquid from site for disposal, such as via a tanker
- Provision of maps showing the locations, together with address and contact details, of local emergency services facilities (e.g. police stations, fire authorities, medical facilities and other relevant authorities)
- Provision of contact details for the relevant authorities, such as the Environment Agency, and the persons responsible on the construction-site and within the Principal Contractors' organisation for pollution incident response
- The Principal Contractor will have a competent spill response company on standby which will be contacted at short notice in the event of a pollution incident for an immediate response. Contact details for the relevant spill response company will be displayed in all welfare facilities and notice boards
- Ensure staff competence and awareness in implementing plans and using pollution response kit
- Ensure that site drainage plans and flood risk management plans are available on-site and are kept up to date
- Ensure that pollution shut-off valves are used in compounds with formal drainage
- Any stockpiled materials to be stored within enclosed areas to enable the run-off to be stored and treated where required
- All plant and machinery to be maintained in a good condition and any maintenance required would be undertaken within safe areas
- Measures with Section 4.3 for Air Quality and Emissions, and measures within 4.8 Housekeeping will be undertaken to prevent pollution

Reporting incidents:

In the event of a pollution event, the following measures will be undertaken:

- A statement of appropriate information (i.e. Incident Report) will be provided in the event of any incident such as a spillage or release of a potentially hazardous material
- Appropriate emergency services, authorities and personnel on the construction-site will be notified
- Relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers will be notified of pollution incidents, as required

4.13 Traffic Management

Works will be carried out in accordance with the Traffic Management Plan in Appendix F. Construction activities are anticipated to be minimal and short in duration (period of

approximately nine weeks) and therefore no significant adverse effects are anticipated in relation to construction traffic movements.

During construction, the Principal Contractor will ensure that impacts from construction traffic on the local community will be minimised. The impacts of road-based construction will be reduced by implementing and monitoring clear controls on vehicle types, hours of operation, parking and routes for large goods vehicles.

Procedure

The following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- All public access will be maintained, where applicable
- Measures will be in place to ensure that the local community, economy and transport networks can continue to operate effectively
- Identify permitted access routes and accessed for construction traffic, site boundaries, main access/egress points for worksites and compounds
- No off-site parking permitted
- All practical measures will be put in place to avoid / limit and mitigate the deposition of mud and other debris on the highway, including:
 - Hardstanding at the access and egress points will be cleaned at appropriate intervals
 - Vehicle wash-down points to clean vehicle wheels at each exit point on to the highway
 - The correct loading of vehicles and sheeting of loads where necessary to avoid spillage during their journeys
 - Appropriate wheel-cleaning measures will be employed to prevent the transfer and accumulation of mud and other granular deposits on the public highway
 - The use of mechanical road sweepers combined with water sprays for the suppression of dust to clean hardstanding's, roads and footpaths in the vicinity of the site
 - Measures to avoid water run-off on to the adjacent highway (footways or carriageways), including avoiding ponding adjacent to hoardings on the carriageway
 - Ensure that no material is deposited on to the public highway which will affect drainage interceptors, etc.
 - The flushing of gullies in the vicinity of the site

4.14 Waste Management

Due to the scale of the scheme, it is expected that construction will generate minimal waste. Materials would be required for the construction of the modular buildings, fencing and new access. Waste materials would likely be generated from the removal of vegetation, hardstanding and kerbing through the site.

Procedure

To reduce the risk of waste impacting specifically on the aviation activities of the airfield, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- The Principal Contractor will implement measure to minimise the waste generated during construction such as:
 - 'Just in time' deliveries
 - Careful storage of materials on-site

- All skips and other storage receptacles will have appropriate signage to facilitate separation of waste for re-use, recycling, or disposal. Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage receptacles
- All skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, when waste is not being deposited into them to avoid debris being blown onto the airfield. They will also be covered to prevent the escape of waste whilst in transit and loaded for maximum payload efficiency
- All skips and storage receptacles will be inspected on arrival to ensure they are fit for purpose. Any not fit for purpose will be taken out of use immediately with appropriate signage to signify it will not be used
- The storage and segregation of waste will comply with any air quality management measures in section 4.3
- Sufficient number of litter bins will be located around the site with swing-bin covers to avoid the risk of debris being blown on to the airfield
- The Principal Contractor will adhere to the Safety Management Plan of the airfield

As standard practice, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

Minimisation of Waste:

- The Principal Contractor will implement measure to minimise the waste generated during construction such as:
 - ‘Just in time’ deliveries
 - Careful storage of materials on-site
 - Minimisation of packaging
 - Use of re-usable packaging

Management of Excavated Materials and Waste:

- All waste will be managed in accordance with the waste hierarchy (Prevention, preparing for re-use, recycling, other recovery and disposal)
- Excavated material that is uncontaminated will be managed in accordance with the controls specified by the CL:AIRE Definition of Waste: Development Industry Code of Practice or in accordance with an appropriate environmental permit or exemption from permitting
- Material Management Plans (MMP) will be developed describing the methods for re-using soils at specific sites
- Movement and placement of materials will be as described in the MMP tracking system and recorded in a verification report for the site

Should contaminated material or soils be encountered on-site, to reduce the likelihood of an environmental incident, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- Any excavations will be inspected for signs of contaminated material. Any suspected contaminated material (based on visual / olfactory observations) must be excavated and removed. Replace with clean fill instead if required
- All waste material must be appropriately handled, stored and transported to limit the potential for pollution and with the appropriate licences in place. For more information, refer to Government guidance on <https://www.gov.uk/guidance/pollution-prevention-for-businesses>

and the Environment Agency's PPG 6, Working at Construction-sites, section 10 (withdrawn in December 2016, however, still provides good guidance)

- In the event of encountering suspected contaminated materials, samples of excavated material will be taken for off-site testing for the presence of contamination, to characterise the soil and determine suitability for re-use and/or disposal, as appropriate

Identification and Classification of Waste:

- A Site Waste Management Plan (SWMP) will be prepared and maintained by the Principal Contractor
- Waste will be classified in accordance with the statutory controls governing the management of inert, non-hazardous and hazardous waste
- If asbestos is identified on-site, it will be removed by suitably licensed asbestos removal contractor and managed in accordance with the relevant statutory controls governing its disposal

Segregation and Storage of Waste:

- Skips and other storage receptacles used for the containment of construction, demolitions and excavation waste will be colour-coded in line with generic scheme developed by the Institution of Civil Engineers
- Hazardous waste and non-hazardous waste must be stored separately. The mixing of hazardous and non-hazardous waste, either whilst stored on-site or upon collection will not be permitted
- All skips and other storage receptacles will have appropriate signage to facilitate separation of waste for re-use, recycling, or disposal. Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage receptacles
- All skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, when waste is not being deposited into them. They will also be covered to prevent the escape of waste whilst in transit and loaded for maximum payload efficiency
- All skips and storage receptacles will be inspected on arrival to ensure they are fit for purpose. Any not fit for purpose will be taken out of use immediately with appropriate signage to signify it will not be used
- Liquid waste will be stored on hard-surfaced areas with secondary containment systems to prevent spillages
- Waste will not be stored within 10m of any controlled watercourse, borehole, well, spring, surface water drainage system or foul water drainage system
- The storage and segregation of waste will comply with any air quality management measures in section 4.3.
- Storage receptacles will be used for the collection and storage of waste within site operation facilities to facilitate the segregation of waste for re-use, re-cycling and recovering

Duty of Care Requirements and Authorisations:

- The Principal Contractor and all sub-contractors will maintain a duty of care at all times to ensure that waste generated during the construction period is handled in accordance with the relevant legislation governing its storage, transfer, treatment and disposal
- All relevant authorisations required will be in place prior to the removal of any waste from the site, with an up-to-date register maintained. This will be in relation to the transfer of waste

(waster carriers), any off-site waste management facilities (permitted or exempt sites) to which waste is taken, and any requirements for hazardous waste premises notification

- All environmental permit or registered exemption will be in place prior to any on-site transfer, treatment or disposal of waste being undertaken
- Any waste leaving the site will be accompanied by appropriate duty of care documentation in line with the relevant statutory requirements for waste transfer and hazardous wastes (as appropriate)
- Duty of care documentation will be retained by the Principal Contractor in line with statutory requirements
- The Principal Contractor will maintain a register of all waste loads leaving the site and/or a tracking system (defined in the MMP) for excavated material destined for re-use to provide a suitable audit trail and to facilitate monitoring and reporting of waste and material types, quantities and management methods

4.15 Water Management

The scheme is located approximately 200m west of Flood Zones 2 and 3. The entire scheme is located within a Surface Water Nitrate Vulnerable Zone (NVZ) (ID: 441 – Roding (Cripsey Brook to Loxford Water) NVZ). The scheme is located approximately 240m south of Cripsey Brook Water Framework Directive (WFD) surface water body (GB106037033481) and Main River. There are no underlying bedrock aquifers, however there is a Secondary (undifferentiated) superficial drift aquifer beneath the site.

Cripsey Brook

The Analysis of the Likely Environmental Effects of the Development (418703-MMD-XX-NW-RP-YE-0001) assessed that no significant effects are anticipated on the Cripsey Brook during construction. The requirements listed below will be implemented by the Principal Contractor to ensure the risk to the water environment will be managed.

Procedure

Activities must be managed in accordance with Construction Industry Research and Information Association (CIRIA) Guidelines. Guidance on best practice in relation to pollution prevention and water management is set out in the following documents:

- CIRIA's Environmental good practice on-site
- Environment Agency's Protect groundwater and prevent groundwater pollution

The following measure will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme to limit the impact of activities on the water environment include:

- All construction workers to be briefed on the use of spill kits as part of the site induction
- Any stockpiled materials to be stored within enclosed areas to enable the run-off to be stored and treated where required
- All plant and machinery to be maintained in a good condition and any maintenance required would be undertaken within safe areas
- Pollution prevention and spill response procedures to be developed by the Principal contractor and a spill kit and clean up equipment maintained on-site
- Dust suppression measures as described in AQ1 of this Record of Environmental Actions and Commitments

Groundwater

- Approval from the relevant regulatory body will be sought for plans of work likely to affect any surface or groundwater resource
- The necessary approvals will be obtained to enable discharge of dewatering, surface water run-off and wastewater from the construction-site to soakaway or filtration systems, watercourses, foul sewers or disposal off-site
- Bunds of non-erodible or silt or sediment fences will be installed where appropriate to avoid surface run-off to watercourses
- As far as is reasonably practicable, the good working practices detailed in the Environment Agency's pollution prevention guidelines will be adopted
- Use of temporary construction methods from the following CIRIA publications (including C532: Control of water pollution from construction-sites. C648: Control of water pollution from linear construction projects: technical guidance. and C649: Control of water pollution from linear construction projects: site guide)

Flood Risk

- All construction activities will be undertaken having regard to the requirements to avoid any significant increase of flood risk
- All watercourses will be kept clear of obstruction and debris to reduce blockage risk
- Suitable access and safe refuges are to be identified for use in the event of a flood
- The Principal Contractor will consult with the relevant regulatory authority and other relevant risk management authorities on areas at risk of flooding and make appropriate use of the Environment Agency's Floodline Warning Direct service for works within areas at risk of flooding
- Flood risk will be managed safely throughout the construction and implementation period and consider flooding when planning sites and storing materials
- A risk-based precautionary approach using the 'source-pathway-receptor' concept will be applied to temporary and permanent works

The measures set out in section 4.3 regarding air quality measures to limit adverse dust and air pollution and section 4.12 regarding pollution prevention associated with construction works will apply equally in relation to limiting the likelihood of polluted surface water run-off being generated.

4.16 Unexploded Ordnance

It is not anticipated that there will be any unexploded ordnance encountered during the works.

Procedure

Should any UXO be encountered on-site the following measure will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:

- Works will stop immediately, and the area evacuated and secured
- The police will be notified via the site Project Manager

5 Monitoring, Auditing and Reporting

5.1 Introduction

Monitoring and reporting of the project's performance against its environmental and social mitigation requirements will be carried out throughout construction.

5.2 Environmental Site Supervision

The Principal Contractor will assign an Environmental Manager to the site. The Environmental Manager will be responsible for supervising the overall environmental performance of the site. It is not anticipated that qualified specialists will be required to oversee any construction works. Should at any point during construction a suitably qualified specialists such as an ecologist, archaeologists etc, be required to oversee construction works unexpectedly, the Principal Contractor will ensure these roles are provided.

The Principal Contractor will review all environmental issues at progress meetings. Environmental issues will be communicated to all project personnel by inductions, toolbox talks and daily briefings. Acknowledgment of requirements will be recorded for all site personnel.

5.3 Environmental Inspections, Audits and Registers

The Principal Contractor will be responsible for all environmental inspections, audits and maintenance of risk, incident and consent registers. Environmental performance / compliance will be monitored against the measures set out in this Construction Management Plan (CMP).

Environmental inspections will be undertaken weekly and a record maintained. These inspections will focus on all areas of the site.

Due to the short construction period, as a minimum a pre-construction audit, two audits during construction, and a post-construction audit will be undertaken by the Principal Contractor. Audits will cover the entire construction-site.

5.4 Compliance and Non-Conformance / Corrective Action Reports

If a non-compliance with the CMP is identified, all personnel involved will be informed and corrective action notices served. Corrective actions will be addressed in both the short and long-term, and these actions will be shown to be effective and compliant with measures set out in the CMP. Short-term actions will address the immediate effects of non-compliance, while long-term actions will address the cause and look to prevent any further incidences of the same nature.

The Principal Contractor will have in place effective arrangements to investigate and provide reports on any potential or actual significant pollution incidents including:

- A description of the incident, location, type and quantity of containment and likely receptor
- Contributory cause
- Effects
- Measures implemented to mitigate effects
- Measures implemented to reduce the risk of similar incidents occurring

Prior to the issue of corrective action notices, the Environmental Manager will discuss the impacts of the non-compliance with the Project Manager. The Environmental Manager will issue corrective action notices with timescales for rectifications.

5.5 Review and Reporting

At the end of the project, the Principal Contractor will compile and produce an End of Project Environmental file as part of hand-over documentation. This file will contain all records of inspections, audits, registers, briefings and incidences.

A. Non-Technical Summary: Schedule of Environmental Requirements and Mitigation

Table 5.1 Schedule of Environmental Requirements and Mitigation

	Topic	Mitigation Measure	By Who?
Pre-Construction	Noise and Vibration	Section 61 will be agreed between Contractor and Epping Forest District Council.	Contractor Project Manager/ Environmental Manager.
During Construction	1. Air Quality and Emissions	<ul style="list-style-type: none"> COSHH (control of substances hazardous to health) assessments will be produced for potential impacts to human health (workforce and neighbours) specific to the environment being worked in. <p>Use of Machinery:</p> <ul style="list-style-type: none"> The use of mains electrical power, hybrid generator systems and battery powered equipment. All construction vehicles will conform to the current EU emissions standards (NRMM Stage V compliance for all plant with an engine capacity of between 37-560kW and all generators above 560kW). All plant to be switched off when not in use. No idling of vehicles. Low sulphur diesel fuel will be used in all plant. The Principal Contractor will maintain a register of all plant on-site to record inspection and set up a system of regular inspection of all plant. Vehicle and construction plant exhausts will be directed away from the ground and position them at a height to facilitate appropriate dispersal of exhaust emissions. <p>Dust Mitigation:</p> <ul style="list-style-type: none"> Minimise height of stockpiles and profile to minimise wind-blown dust emissions and risk of pile collapse. Enforce a maximum speed limit of 15mph on surfaced roads and a 10mph speed limit on unsurfaced haul roads and work areas, to prevent the generation of dust by fast moving vehicles. The placement of stone / soils / concrete by plant or equipment will be under control and as low as reasonably practicable to prevent undue creation of dust. Dust suppression systems to be in place where there is a foreseeable risk to air quality such as dampening down surfaces in dry conditions. 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> Aggregate and waste delivery vehicles will be covered. Stockpiles and mounds will be maintained to avoid material slippage and dust generation. Locate stockpiles out of the wind (or cover, seed or fence) to minimise the potential for dust generation. Vehicles transporting materials within or outside the construction-site will not be overloaded. Site accesses and local roads will be checked daily for mud and arrangements for it to be cleaned will be made immediately will it be required. No open fires to be permitted on-site. Measures to minimise fire risk must be implemented. Vehicle and construction plant exhausts will be directed away from the ground and position them at a height to facilitate appropriate dispersal of exhaust emissions. Movement of construction traffic around site will be kept to the minimum reasonable for the effective and efficient operation of the site and construction of the project. All cutting and grinding operations will use equipment and techniques which reduce emissions and incorporate appropriate dust suppression measures. Maintain a clean and tidy site to avoid accumulation of dust. 	
2. Archaeology and Built Heritage	<ul style="list-style-type: none"> Should heritage assets of potential national importance be unexpectedly revealed during construction, the procedure for the unexpected discovery of archaeological remains of national importance will be implemented: <ul style="list-style-type: none"> All works within the area to be suspended. Notify the county Archaeologist to determine further action via the Project Manager on-site. The Environmental Manager will also be notified. Make suitable provisions to allow a survey to be undertaken in accordance with Generic Written Scheme of Investigation: Historic Environment Research and Delivery Strategy (GWSI: HERDS). 	Principal Contractor and any sub-contractors
3. Carbon	<ul style="list-style-type: none"> Transportation of materials to site would prioritise low-carbon modes where possible. Where possible, low-carbon construction materials and products will be preferred. Where possible low-carbon construction plant and equipment would be used. Provision will be made to enable waste to be effectively segregated during construction, enabling materials to be effectively managed using the waste hierarchy, prioritising re-used and recycled over disposal. 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> • Circular economy principles, such as Modern Methods of Construction, would be implemented, where possible. 	
4. Construction Materials, Sourcing, Management and Storage	<p>Management:</p> <ul style="list-style-type: none"> • Mixing of large quantities of concrete or bentonite slurries will be undertaken in enclosed or shielded areas. • The number of handling operations for materials will be kept to the minimum reasonably practicable. • Materials handling areas will be maintained to constrain dust emissions through the use of measures such as watering facilities to reduce or prevent escape of dust from the site boundaries. • Mixing of grout or cement-based materials will be undertaken using appropriate techniques / mitigation suitable for the prevention of dust emissions. • Where materials can be re-used they will be re-used. <p>Storage</p> <ul style="list-style-type: none"> • Storage of any oil-based materials, including petrol, diesel, waste and vegetable and plant oil, and above ground fuel and oil storage tanks, the Principal contractor will comply with the Control of Pollution (Oil Storage)(England) Regulations 2001, as amended, and the Environment Agency's PPG: Above ground oil storage tanks. • Chemical storage, handling and use will comply with PPG 26: Drums and intermediate bulk containers • Stationary plant will be used with secondary containment measures such as plant nappies to retain any leakage of oil or fuel, which will be emptied at regular intervals to prevent overflow. • Fuel will be stored in dedicated bunded, impervious storage areas away from drains and watercourses. • Fuel tanks will be stored within a bund capable of holding 110% of their capacity. • Stockpiles and mounds will be kept away from sensitive receptors (including natural and historic features), watercourses and surface drains where reasonably practicable, and sites to take into account the predominant wind direction relative to sensitive receptors. • Stockpiles and mounds will be maintained to avoid materials slippage. • Materials stockpiles likely to generate dust will be enclosed or securely sheeted, kept watered or stabilised as appropriate. 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> Fine dry material will be stored inside buildings or enclosures with measures in place to ensure no escape of material and of overfilling during delivery. Maintain a clean and tidy site, ensuring all material is stored in the correct areas. 	
5. Ecology	<ul style="list-style-type: none"> All vegetation removal will be supervised by a suitably qualified ecologist and be undertaken outside of the main breeding bird season (and therefore, will be undertaken between September to February). Any vegetation unable to be removed outside of the bird nesting season (March to August inclusive) would require a nesting bird check which would be undertaken by a suitably qualified ecologist no more than 48-hours prior to works commencing. Should an active nest be identified during the survey, a demarcation zone will be implemented where no works can occur until the nest has fledged (up to six weeks depending on the species). In the event that any excavations are required, ensure that these are covered over night or that ramps are installed so that mammals do not become trapped. Should any protected species be found during the works, works will stop immediately, and an ecologist contacted immediately via the Project Manager on-site. The Environment Manager will also be notified. Should invasive species such as Japanese Knotweed be encountered on-site, works will stop immediately, and the area fenced off. An ecologist will be notified via the Project Manager on-site for further action. The Environment Manager will also be notified. 	Principal Contractor and any sub-contractors
6. Housekeeping	<ul style="list-style-type: none"> Regular inspection and treatment of perimeters, maintain cleanliness on-site, including the provision of staff facilities, waste management. Effective preventative pest and vermin control and prompt treatment of any pest and vermin infestation, including arrangements for disposing of food waste or other attractive material, if an infestation occurs, the Principal Contractor will take action to eliminate the infestation and prevent further occurrence. No fires allowed on-site and measure will be taken to minimise the likelihood of fires. Remove or stoppage and sealing of drains and sewers taken out of use. No discharge of site run-off to ditches, watercourses, drains, sewers or soakaways without the agreement of the appropriate authority. Maintenance of wheel-washing facilities or other containment measures. Storage of machinery, equipment and temporary building outside flood risk areas where possible. 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> • Management of staff congregating outside the site prior to commencing or leaving site to avoid risk of traffic collisions. • Maps showing sensitive areas and buffer zones where no pollutants are to be stored or used will be displayed in all welfare facilities. • Adequate welfare facilities will be provided. • A construction worker travel plan will be implemented to encourage use of public transport by site staff and control off-site parking. • Any fire hydrants and emergency water supplies must be kept in good repair and any defects must be repaired as soon as practicable. 	
7. Landscape and Visual	<ul style="list-style-type: none"> • At no point during construction will Memorial Garden area be utilised and will remain fenced off from all construction works • Site fencing will be maintained in a satisfactory condition and to a standard acceptable to the local authority and client. • Site hoardings and fencing may be used as dust / acoustic / visual screens for worksites. These will be maintained frequently in order to ensure efficiency and visual impact. • Land take, construction activities, materials and waste storage shall all only take place within the boundaries of the work sites. • None of these activities shall take place outside the work sites except where there is prior consent from the relevant authorities (for example work to local roads). • Recognition will be taken of adjacent sites and businesses that may impact on-site from outside its boundary. • Welfare units and temporary site offices in a colour that would aid integration with the surrounding landscape where possible. • Use of directional, hooded and low-level lighting, as well as restrictions on night-time lighting during construction. • The height of any building (other than an existing building) must not exceed 15m. • The height of any gate, fence, wall or other means of enclosure erected or constructed, other than noise attenuation measures, must not exceed 4.5m. • No building other than plant, machinery, gates, fences, walls or other means of enclosure, or noise attenuation measures, may be erected or extended within 25m of the boundary of the curtilage of any residential dwelling. <p>Arboriculture:</p>	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> No vegetation is to be removed that has not been identified in the scheme proposals for Special Development Orders (SDO) without prior consultation with the Scheme Arboriculturalist. If at any point, the design is changed following formal SDO submission, the Scheme Arboriculturalist must be consulted to enable any subsequent arboricultural impacts to be reviewed and mitigated as appropriate. All tree works to be carried out in accordance with BS3998:2010 <i>Tree Work – Recommendations</i>. Protective barriers will be installed in accordance with BS5837:2012 around all of the trees in close proximity to the works, at the distances dictated by the root protection area (RPA) measurements. An Arboriculturalist will attend site to confirm the final positioning of the protective fencing. Vehicular movements will remain within the hardstanding of the car park at all times. Compound areas and set down areas were not confirmed at the time of the site visit. It is recommended that they will be positioned on an area of hardstanding within the car park. If hardstanding is not available, they will be located outside of the RPAs of any trees on-site. All excavated topsoil will be stripped, stockpiled and re-used in accordance with BS3882:2015 <i>Specification for Topsoil</i>. No topsoil or other materials to be stored within the RPA of retained trees. Any works relating to installation of services must be undertaken in accordance with the 'National Joint Utilities Group Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'. In addition, follow recommendations within BS 5837 2012 <i>Trees in relation to design, demolition and construction - recommendations</i>. Any roots <25mm diameter which are exposed by the excavations are to be pruned properly in accordance with good practice using secateurs or a sharp saw. No roots >25mm are to be pruned or severed without prior agreement from the Scheme Arboriculturalist. Exposed roots >25mm will be retained and covered with moist hessian until they are reburied. If roots >25mm are uncovered, the Scheme Arboriculturalist will advise on whether the trees stability and integrity have been compromised and decide on appropriate action required. Any works relating to installation of services must be undertaken in accordance with the NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. <p>– In accordance with good arboricultural practice the following must be adhered to:</p>	

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> – No actions to be undertaken that are likely to cause localised waterlogging. – No permanent alteration of ground levels within the RPA of retained trees. – No construction of hard surfaces within RPA of retained trees. – No boards, hoarding, cables, notices or fencing to be attached to trees. – No fires are to be lit within 10m of tree canopies. and, • No handling, discharge or spillage of any chemical substance, including cement washings and vehicle washings are to occur within 10m. • Maintain a clean and tidy site 	
8. Lighting	<ul style="list-style-type: none"> • Lighting will be at the minimum luminosity necessary and use low-energy-consumption fittings. • Where necessary, lighting to site boundaries will be provided and illumination will be sufficient to provide a safe route for the passing public. • Where appropriate, lighting will be activated by motion sensors to prevent unnecessary usage. • Lighting will comply with the Institute of Lighting Professionals' <i>Guidance notes for the reduction of obtrusive light</i> and the provisions of BS 5480, <i>Code of practice for the design of road lighting</i>, where applicable. • Lighting will be designed, positioned and directed so as not to unnecessarily intrude on any adjacent buildings, ecological receptors, structures used by protected species and other land uses to prevent unnecessary disturbance. • The positioning and design of temporary lighting to be installed during the construction work will be considered in relation to: <ul style="list-style-type: none"> – Minimum requirements for transport users – Safe operation of the railway and roads – Requirements for least disturbance to local ecology – Energy efficiency, ease of maintenance and disposal of light units (LED to be considered) • Lighting columns powered off the mains will be used as a first priority but if not then either hybrid powered lighting columns or string (generator powered) lights will be used. Security lighting will be as low as reasonable during night-time periods. • All lighting shall be switched off when not in use. 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> To use low or high-pressure sodium lamps, instead of mercury or metal halide lamps, with the use of glass glazing preferred where possible. The use of Light Emitting Diodes will also be used in preference to mercury or metal halide lamps The main beam angle of any artificial lighting will be directed downward so as to minimise light spill To fit lighting at as low a height as is practicable Directional hooded and low-level lighting for the temporary lighting will be used The Principal Contractor will avoid lighting areas of vegetation within and outside of the site boundary In the case where lighting is required for security reasons, the use of lights with motion detectors or the use of Intelligent Video Analytics, which uses infra-red to detect movement, will also be considered. This would work to ensure areas are only lit when necessary To minimise the upward spill of lights with the use of directional luminaries, shields, louvres and baffles. This would direct light to where it is required and prevent unnecessary light spill into the surrounding environment A dark corridor is maintained along the vegetated bund which runs along the eastern boundary of the site. This would help maintain the existing bat foraging and commuting habitat Lighting will comply with the Institute of Lighting Professionals Guidance Notes for the Reduction of Obtrusive Light GN01¹⁰ and the provisions of BS 5489, Code of practice for the design of road lighting¹¹, where applicable Lighting will be at the minimum luminosity necessary and use low energy consumption fittings Restrictions on night-time lighting during construction will be in place <p>Please refer to section 4.7 for lighting mitigation during construction to reduce construction effects on bats.</p>	
9. Noise and Vibration	<ul style="list-style-type: none"> 24-hour working will be utilised on-site. Most works will be completed between 07:30 and 19:00 on weekdays, and 08:00 to 17:00 Saturdays. Occasional Sunday working will be permitted between 09:00 and 14:00 	Principal Contractor and any sub-contractors

¹⁰ Institute of Lighting Professionals (2011) Guidance notes for the reduction of obtrusive lights [online] available at: <https://www.theilp.org.uk/documents/obtrusive-light/> (last accessed December 2018).

¹¹ British Standards Institution (2013) BS 5489, Code of practice for the design of road lighting. Lighting of roads and public amenity areas [online] available at: <https://shop.bsigroup.com/ProductDetail/?pid=000000000030217237> (last accessed December 2018).

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> • All noisy operations (such as piling) will be completed between 08:00 to 18:00 hours on weekdays and 08:00 to 13:00 on Saturdays. • Activities conducted during night-time working (between 23:00-07:00) will not exceed 45 dB, 50 dB and 55 dB L_{Aeq,T} at dwellings in categories A, B and C, respectively, as per clause E3.2 from BS5228-1¹². • Any activities identified that could be undertaken outside of the working hours and limits set out above will require prior agreement with Epping Forest Borough Council. • Construction works will comply with the recommendations for practical measures to minimise noise and the maximum permissible noise limits set out in BS5228-1¹³. Should construction works exceed these limits, prior agreement will be sought with Epping Forest Borough Council. In order to inform the establishment of suitable noise limits, it is expected that a baseline noise monitoring survey will be undertaken at representative receptor locations based on a recognised standard such as BS 7445-1:2003 Description and Measurement of Environmental Noise. Guide to Quantities and Procedures. Where this is not possible a desktop study will be used to determine the appropriate ABC category. • All equipment and vehicles will be switched off and if applicable ignition key removed when not in use. Use of temporary noise barriers where appropriate. • Noise and vibration will be controlled at source by using the following: <ul style="list-style-type: none"> – Fit equipment with silencers or mufflers – Manage deliveries to prevent queuing of site traffic. – Do not leave plant running unnecessarily – Materials to be lowered instead of dropped from height – Use of adjustable or directional audible vehicle-reversing alarms or use of alternative warning systems (for example, white noise alarms) – Train and advise members of the constructions team during toolbox talk briefings on quiet working methods. – sensitive placement of plant and equipment with the potential to generate emissions. – enclosure, shielding or provision of filters for plant likely to generate excessive quantities of dust or noise beyond the site boundaries. 	

¹² BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites

¹³ BS 5228-1:2009+A1:2014 Code of Practice for noise and vibration control on construction and open sites.

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> – adoption of quiet working methods including auger and vibration piling rather than impact piling. – early delivery of noise mitigation identified in the environmental analysis where reasonably practicable and relevant (e.g. acoustic bunds or fencing). – use of less intrusive noise alarms that meet the particular safety requirements of the site, such as broadband reversing warnings, or proximity sensors to reduce the requirement for traditional reversing alarms. – avoidance of the use of loudspeaker or loudhailer devices. – considerate working practices, such as avoiding noisier activities during anti-social hours and pre-notification of particularly noisy or drawn out activities to relevant receptors (including materials delivery). • Where it has been identified that there will be noise levels above the lower exposure action value of 80 dB(A) $L_{EP,d}$ (daily personal exposure level), operatives will be issued with suitable hearing protection which under company policy they will be required to wear. The works will be noise monitored, and if it is found that the noise levels exceed the upper exposure action value of 85 dB(A) $L_{EP,d}$ an exclusion zone will be established that can only be entered by persons wearing adequate hearing protection. <p>Vibration:</p> <ul style="list-style-type: none"> • The potential for vibration will be assessed on a task by task basis. When a task has been identified that requires the use of a vibrating tool with risk of a vibration exposure of $2.5 \text{ m/s}^2 \text{ A}(8)$ or higher, then form GP.1124.F01 Hand Arm Vibration Calculator Permit will be completed. This form identifies: <ul style="list-style-type: none"> – Action limit time - this is where the task can be carried out with no further actions required – Daily limits - this is the maximum exposure time on that piece of equipment/tool exposure - measured in $\text{m/s}^2 \text{ A}(8)$. • When there is a risk that $2.5 \text{ m/s}^2 \text{ A}(8)$ may be exceeded, the GP.1124.F01 chart will change from green to amber. At this stage, consideration must be given to control measures such as reducing the tool/ equipment vibration amplitude, reducing the exposure time, task rotation etc. • Persons operating vibrating/power tools/equipment etc. must not be exposed to any amplitude/ time combination which indicates red on the chart. 	

Topic	Mitigation Measure	By Who?
10. Pollution Prevention and Control	<ul style="list-style-type: none"> Activities must be managed in accordance with Construction Industry Research and Information Association (CIRIA) Guidelines and Environment Agency's Protect groundwater and prevent groundwater pollution Stationary plant will be used with secondary containment measures such as plant nappies to retain any leakage of oil or fuel, which will be emptied at regular intervals to prevent overflow. Fuel will be stored in dedicated bunded, impervious storage areas away from drains and watercourses. Fuel tanks will be stored within a bund capable of holding 110% of their capacity. Spillage kits will be stored at key locations on-site as set out in a pollution incident control plan and in particular refuelling areas. Spillage kits will also be kept with mobile bowzers. Plant nappies will be in use during the refuelling process to catch any drips or spills between bowser and machinery. Refuelling operations will only be undertaken by designated refuellers in line with refuelling procedures. All staff will be trained to use spill kits efficiently. The Principal Contractors will keep a record of all spillage incidents and inform the nominated undertaker of any spills which cause land contamination or pollution off-site. The Principal Contractors will manage and dispose of foul water and sewage effluents from site facilities, complying with PPG4: Treatment and disposal of sewage where no foul sewer is available, The Environment Agency's guidance document Groundwater protection: Principles and practice (GP3). Containment by temporary foul drainage facilities and disposal off-site by a licensed contractor. By preference, connection to the local foul sewer system as agreed with the relevant authorities. Where foul sewage is not present, appropriate treatment and discharge to a watercourse or soakaway with approval from the Environmental Agency, where required. Any foul drainage discharge to the public sewer will require approval from the statutory water undertaker. If not permitted, provisions need to be adopted to remove the liquid from site for disposal, such as via a tanker. 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> Provision of maps showing the locations, together with address and contact details of local emergency services facilities (e.g. police stations, fire authorities, medical facilities and other relevant authorities) will be located in all welfare facilities and on notice boards. Provision of contact details for the relevant authorities, such as the Environment Agency, and the persons responsible on the construction-site and within the contractors' organisation for pollution incident response will be displayed in all welfare facilities and on notice boards. Provision of contacts with a competent spill response company which can be contacted at short notice for an immediate response (where appropriate). Ensure staff competence and awareness in implementing plans and using pollution response kit. Ensure that site drainage plans and flood risk management plans are available on-site and are kept up to date. Ensure that pollution shut-off valves are used in compounds with formal drainage. Any stockpiled materials to be stored within enclosed areas to enable the run-off to be stored and treated where required. All plant and machinery to be maintained in a good condition and any maintenance required would be undertaken within safe areas. Measures with Section 4.3 for Air Quality and Emissions, and measures within 4.8 Housekeeping will be undertaken to prevent pollution. <p>Reporting incidents:</p> <p>In the event of a pollution event, the following measures will be undertaken:</p> <ul style="list-style-type: none"> A statement of appropriate information (i.e. Incident Report) will be provided in the event of any incident such as a spillage or release of a potentially hazardous material. Appropriate emergency services, authorities and personnel on the construction-site will be notified. <ul style="list-style-type: none"> Relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers will be notified of pollution incidents, as required. 	
11. Traffic Management	<ul style="list-style-type: none"> All public access will be maintained, where applicable. Measures will be in place to ensure that the local community, economy and transport networks can continue to operate effectively. Identify permitted access routes and accessed for construction traffic, site boundaries, main access / egress points for worksites and compounds. 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> No off-site parking permitted. All practical measures will be put in place to avoid/limit and mitigate the deposition of mud and other debris on the highway, including: <ul style="list-style-type: none"> Hardstanding at the access and egress points will be cleaned at appropriate intervals. Vehicle wash-down points to clean vehicle wheels at each exit point on to the highway. The correct loading of vehicles and sheeting of loads where necessary to avoid spillage during their journeys. Appropriate wheel-cleaning measures will be employed to prevent the transfer and accumulation of mud and other granular deposits on the public highway. The use of mechanical road sweepers combined with water sprays for the suppression of dust to clean hardstanding's, roads and footpaths in the vicinity of the site. Measures to avoid water run-off on to the adjacent highway (footways or carriageways), including avoiding ponding adjacent to hoardings on the carriageway. Ensure that no material is deposited on to the public highway which will affect drainage interceptors, etc. The flushing of gullies in the vicinity of the site. 	
12. Waste Management	<p>To reduce the risk of waste impacting specifically on the aviation activities of the airfield, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:</p> <ul style="list-style-type: none"> The Principal Contractor will implement measure to minimise the waste generated during construction such as: <ul style="list-style-type: none"> 'Just in time' deliveries Careful storage of materials on-site All skips and other storage receptacles will have appropriate signage to facilitate separation of waste for re-use, recycling, or disposal. Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage receptacles All skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, when waste is not being deposited into them to avoid debris being blown onto the airfield. They will also be covered to prevent the escape of waste whilst in transit and loaded for maximum payload efficiency 	Principal Contractor and any sub-contractors

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> All skips and storage receptacles will be inspected on arrival to ensure they are fit for purpose. Any not fit for purpose will be taken out of use immediately with appropriate signage to signify it will not be used The storage and segregation of waste will comply with any air quality management measures in section 4.3 Sufficient number of litter bins will be located around the site with swing-bin covers to avoid the risk of debris being blown on to the airfield The Principal Contractor will adhere to the Safety Management Plan of the airfield <p>Minimisation of waste:</p> <ul style="list-style-type: none"> The Principal Contractor will implement measure to minimise the waste generated during construction such as: <ul style="list-style-type: none"> 'Just in time' deliveries. Careful storage of materials on-site. Minimisation of packaging. Use of re-usable packaging. <p>Management of excavated materials and waste:</p> <ul style="list-style-type: none"> All waste will be managed in accordance with the waste hierarchy (Prevention, preparing for re-use, recycling, other recovery and disposal). Excavated material that is uncontaminated will be managed in accordance with the controls specified by the CL:AIRE Definition of Waste: Development Industry Code of Practice or in accordance with an appropriate environmental permit or exemption from permitting. Material management plans (MMP) will be developed describing the methods for re-using soils at specific sites. Movement and placement of materials will be as described in the MMP tracking system and recorded in a verification report for the site. <p>Should contaminated material or soils be encountered on-site, to reduce the likelihood of an environmental incident, the following measures will be implemented by the Principal Contractor and all sub-contractors for the duration of the construction of the scheme:</p> <ul style="list-style-type: none"> Any excavations will be inspected for signs of contaminated material. Any suspected contaminated material (based on visual/olfactory observations) must be excavated and removed. Replace with clean fill instead if required. 	

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> All waste material must be appropriately handled, stored and transported to limit the potential for pollution and with the appropriate licences in place. For more information, refer to Government guidance on https://www.gov.uk/guidance/pollution-prevention-for-businesses and the Environment Agency's PPG 6, Working at Construction-sites, section 10 (withdrawn in December 2016, however still provides good guidance). In the event of encountering suspected contaminated materials, samples of excavated material will be taken for off-site testing for the presence of contamination, to characterise the soil and determine suitability for re-use and/or disposal, as appropriate. <p>Identification and classification of waste:</p> <ul style="list-style-type: none"> A Site Waste Management Plan (SWMP) will be prepared and maintained by the Principal Contractor. Waste will be classified in accordance with the statutory controls governing the management of inert, non-hazardous and hazardous waste. If asbestos is identified on-site, it will be removed by suitably licensed asbestos removal contractor and managed in accordance with the relevant statutory controls governing its disposal. <p>Segregation and storage of waste:</p> <ul style="list-style-type: none"> Skips and other storage receptacles used for the containment of construction, demolitions and excavation waste will be colour-coded in line with generic scheme developed by the Institution of Civil Engineers. Hazardous waste and non-hazardous waste must be stored separately. The mixing of hazardous and non-hazardous waste, either whilst stored on-site or upon collection will not be permitted. All skips and other storage receptacles will have appropriate signage to facilitate separation of waste for re-use, recycling, or disposal. Plastic sheeting will be used to prevent leaching from waste soils and aggregates where these are not contained within skips or other storage receptacles. All skips and storage receptacles will be sheeted, or otherwise remain lidded or closed, when waste is not being deposited into them. They will also be covered to prevent the escape of waste whilst in transit and loaded for maximum payload efficiency. 	

Topic	Mitigation Measure	By Who?
	<ul style="list-style-type: none"> • All skips and storage receptacles will be inspected on arrival to ensure they are fit for purpose. Any not fit for purpose will be taken out of use immediately with appropriate signage to signify it should not be used. • Liquid waste will be stored on hard-surfaced areas with secondary containment systems to prevent spillages. • Waste will not be stored within 10m of any controlled watercourse, borehole, well, spring, surface water drainage system or foul water drainage system. • The storage and segregation of waste will comply with any air quality management measures in section 4.3. • Storage receptacles will be used for the collection and storage of waste within site operation facilities to facilitate the segregation of waste for re-use, re-cycling and recovering. <p>Duty of care requirements and authorisations:</p> <ul style="list-style-type: none"> • The Principal Contractor and all sub-contractors will maintain a duty of care at all times to ensure that waste generated during the construction period is handled in accordance with the relevant legislation governing its storage, transfer, treatment and disposal. • All relevant authorisations required will be in place prior to the removal of any waste from the site, with an up-to-date register maintained. This will be in relation to the transfer of waste (waster carriers), any off-site waste management facilities (permitted or exempt sites) to which waste is taken, and any requirements for hazardous waste premises notification. • All environmental permit or registered exemption will be in place prior to any on-site transfer, treatment or disposal of waste being undertaken. • Any waste leaving the site will be accompanied by appropriate duty of care documentation in line with the relevant statutory requirements for waste transfer and hazardous wastes (as appropriate). • Duty of care documentation will be retained by the Principal Contractor in line with statutory requirements. • The Principal Contractor will maintain a register of all waste loads leaving the site and/ or a tracking system (defined in the MMP) for excavated material destined for re-use to provide a suitable audit trail and to facilitate monitoring and reporting of waste and material types, quantities and management methods. 	

Topic	Mitigation Measure	By Who?
13. Water Management	<ul style="list-style-type: none"> Construction activities must be managed in accordance with CIRIA Guidelines. Guidance on best practice in relation to pollution prevention and water management is set out in the following documents: <ul style="list-style-type: none"> CIRIA's Environmental good practice on-site. Environment Agency's Protect groundwater and prevent groundwater pollution. All construction workers to be briefed on the use of spill kits as part of the site induction. Any stockpiled materials to be stored within enclosed areas to enable the runoff to be stored and treated where required. All plant and machinery to be maintained in a good condition and any maintenance required would be undertaken within safe areas. Pollution prevention and spill response procedures to be developed by the contractor and a spill kit and clean up equipment maintained on-site. <p>Groundwater</p> <ul style="list-style-type: none"> Approval from the relevant regulatory body will be sought for plans of work likely to affect any surface or groundwater resource. The necessary approvals will be obtained to enable discharge of dewatering, surface water run-off and wastewater from the construction-site to soakaway or filtration systems, watercourses, foul sewers or disposal off-site. Bunds of non-erodible or silt or sediment fences will be installed where appropriate to avoid surface run-off to watercourses. As far as is reasonably practicable, the good working practices detailed in the Environment Agency's pollution prevention guidelines will be adopted. Use of temporary construction methods from the following CIRIA publications (including C532: Control of water pollution from construction-sites. C648: Control of water pollution from linear construction projects: technical guidance. and C649: Control of water pollution from linear construction projects: site guide). <p>Flood Risk</p> <ul style="list-style-type: none"> All construction activities will be undertaken having regard to the requirements to avoid any significant increase of flood risk. All watercourses will be kept clear of obstruction and debris to reduce blockage risk. Suitable access and safe refuges are to be identified for use in the event of a flood. 	Principal Contractor and any sub-contractors

Topic		Mitigation Measure	By Who?
		<ul style="list-style-type: none"> The Principal Contractor will consult with the relevant regulatory authority and other relevant risk management authorities on areas at risk of flooding and make appropriate use of the Environment Agency's Floodline Warning Direct service for works within areas at risk of flooding. Flood risk will be managed safely throughout the construction and implementation period and consider flooding when planning sites and storing materials. A risk-based precautionary approach using the 'source-pathway-receptor' concept will be applied to temporary and permanent works. 	
	14. Unexploded Ordinance	<ul style="list-style-type: none"> Works will stop immediately, and the area evacuated and secured. The police will be notified via the site Project Manager. 	Principal Contractor and any sub-contractors
	Post Construction	<ul style="list-style-type: none"> At the end of the project, the Principal Contractor will compile and produce an End of Project Environmental file as part of hand-over documentation. This file will contain all records of inspections, audits, registers, briefings and incidences. 	Contractor Project Manager/ Environment Manager.