Code of Construction Practice

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PROJECT: M25 J28

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Review and Acceptance on behalf of the Client			
Name:		**Job Title:**	
Signature:		**Date:**	

This is a live document and will be subject to regular amendments throughout the contract. When amendments have been made this document will be subject to formal revision control.

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1. Introduction & background to the project

1.1. Background

1.1.1. This plan details the actions to be taken by GRAHAM Construction regarding the handling and management of soils on the M25 J28 project (hereby referred to as the "Scheme").

1.1.2. The M25 J28 project as with many civil engineering projects involves a significant amount of landscaping which means that there is a lot of soil movement, storage and handling to be undertaken.

1.1.3. Soil is a fundamental and ultimately finite resource that fulfils many functions and services for society which are central to sustainability. Major impacts to soils occur through the construction industry due to the nature of the work and a lack of understanding of the complexities of soil dynamics.

1.1.4. One hectare of topsoil (the most productive layer) can contain up to 5 tonnes of living organisms and can take more than 500 years to form a 2cm thickness, it is therefore practically non-renewable so must be cared for during all phases of construction, from stripping, through stockpiling and then placement.

1.2. The Project

1.2.1. In December 2014, the Department for Transport (DfT) published its Road Investment Strategy (RIS) for the investment period 2015 and 2020, announcing £15 billion to invest in England's strategic road network. The RIS sets out a list of schemes that are to be delivered by National Highways over this investment period and identified M25 junction 28 as a key junction requiring improvement to address congestion and safety issues. In their second RIS (RIS2) for 2020 to 2025, published in March 2020, the DfT reiterate their support for improvements to M25 junction 28. The Scheme is described in RIS2 as an "*upgrade of the junction between the M25 and A12 in Essex, providing a free-flowing link from the northbound M25 to the eastbound A12"*.

1.2.2. The Scheme is located between Brentwood and Romford. This junction is one of the major improvement projects planned for the southeast region and will provide better access towards Essex and London, as well as connecting Brentwood, Chelmsford, Colchester and Suffolk with London and other key destinations. The Scheme was announced by National Highways in July 2017 and construction is expected to commence in spring 2022.

1.2.3. The Scheme has been developed further based following on consultation with stakeholders and members of the public, and more detailed assessments of

traffic, engineering, buildability and environmental factors. The Scheme has been developed to a level of detail sufficient to determine the size and location of the key works elements and the land interests required to construct, maintain and operate it.

1.2.4. The Scheme comprises the following key works elements:

- The creation of a new two lane loop road with hard shoulder, for traffic travelling from the M25 northbound carriageway onto the A12 eastbound carriageway, including the provision of three new bridges (Alder Wood bridge, Duck Wood bridge and Grove bridge) and an underpass (Grove Farm underpass) to carry the new loop road over a proposed access track.

- Realignment of the existing A12 eastbound exit (off-slip) road to accommodate the new loop road including the provision of a new bridge (Maylands bridge) and the extension of the existing Grove culvert.

- Improvements to the existing A12 eastbound and westbound carriageways and A12 eastbound entry (on-slip) road.

- Realignment of the existing M25 northbound on-slip.

- Improvements to the existing junction 28 roundabout, the existing M25 northbound carriageway and the M25 northbound off-slip.

- New gantries over the M25 carriageway.

- Alterations of existing private access and egresses and the provision of new private means of access to accommodate the new loop road.

- Three new attenuation ponds and associated drainage and access roads and a new drainage outfall pipe.

- Realignment of the Weald Brook and the Ingrebourne River.

- Two new flood compensation areas and the provision of new ecological compensation and mitigation areas and two new environmental ponds.

- Diversion of an already underground high pressure gas pipeline and diversion underground of an existing overhead electric line.

- Accommodation works to provide replacement facilities for Maylands Golf Course.

1.2.5 Non-motorised Users' Route - An opportunity has been identified to deliver a high-quality shared use cycling and walking route to:

- Support the development of a well-integrated, convenient and safe network to serve the needs of the local community and encourage a shift towards active transport modes.

- Reduce existing severance associated with highways infrastructure such as the M25 motorway by providing effective connections between the boroughs of Brentwood and Havering.

As such, it is proposed to undertake the conversion of 3.4 km of existing walking route into a high-quality shared use cycling and walking route, incorporating the shared use path that is integral to the proposed M25 junction 28 (M25 J28) upgrade. National Highways has identified the opportunity to contribute to the design development and funding through its Designated Funds programme. DCO Schedule 2 para. 17 Requirement is for a scheme to secure the full NMU route between Harold Hill and Brentwood to be submitted and approved, and the section of said scheme to be delivered within the limits of the Order, before the permitted opening of the new M25 loop road.
The NMU route is currently having the design finalised for inclusion within the scope of works for the M25 J28 scheme.

2. Purpose, Application and Enforcement of the CoCP

2.1.1. This CoCP sets out a series of proposed measures and standards of work, which shall be applied by GRAHAM and its sub-contractors throughout the construction period to:

- provide effective planning, management and control during construction to control potential impacts upon people, businesses and the natural and historic environment; and
- provide the mechanisms to engage with the local community and their representatives throughout the construction period. Measures will be applied to the construction to enable it to be undertaken economically and meet the requirements of the Contract and its associated commitments. GRAHAM and its sub-contractors will comply as a minimum with applicable environmental legislation at the time of construction, together with any additional environmental controls imposed by the Contract and its associated commitments. For this reason, the applicable statutory requirements are not repeated within this CoCP. Further guidance on specific areas, such as soil handling and dust management, will be considered from industry best practice guidance documents as set out in each discipline section of this CoCP. The references to guidance documents within this document are not intended to be exhaustive.

2.1.2. The CoCP will be implemented during the planning and undertaking of construction works. The provisions of the CoCP will be imposed by the GRAHAM and on their sub-contractors by means of the works contracts.

2.1.3. The contracts will incorporate both:

- general requirements; and
- site-specific requirements.

2.1.4. GRAHAM and sub-contracts will be required to comply with the terms of the CoCP and appropriate action will be taken by GRAHAM as required to ensure compliance. The requirements of the CoCP will apply to the whole of the works and to each construction contract let by the nominated undertaker. The nominated undertaker will develop an EMP, which will set out the arrangements and responsibilities for auditing and assuring compliance with the environmental mitigation set out in this CoCP.

3. General Principles

3.1. Construction Strategy

3.1.1. Overall construction strategy / phasing will be as follows:

Early works

- Site clearance
- Site enabling works
- Environmental mitigation works
- Archaeology surveys and mitigation works

Site Mobilisation

3.1.2. The site mobilisation works include the following activities:

- Mobilise site compound areas, including the creation of alternate access and exit routes from the satellite yard in the middle of the loop road
- Utilities diversions
  - BT Openreach
  - Essex and Suffolk Water
  - NRTS
  - Virgin Media
  - Telent
  - KPN
  - Thames Water
  - Telia
  - UKPN
  - Zayo and JSM
  - Cadent Gas

3.1.3. Ecological mitigation works will include the following activities:

- Install temporary amphibian fencing and start programme to capture and remove
- newts from the working area
- Gas diversion and clay works:
- Works can commence in newt area (gas main / site preparation)
- Deposit clay within the ecological mitigation area
- Building the ecological mitigation area:

- Commence creation of new habitats when earthworks are complete (including treatment of invasive plant and creation of new ponds)
- Localised treatment of invasive plants close to existing pond

Phase 1 works

3.1.4. Phase 1 works include the following activities:

- Construct new A12 off-slip including new bridge (Maylands bridge) which includes the realignment of the Ingrebourne River, installation of the culvert under the junction 28, roundabout, ground stabilisation, construction of embankments, construction of the bridge (Maylands bridge) and landscaping.
- Construct part of the M25 on-slip which includes the lane closure on the M25 and road marking alterations, construction of the retaining wall, construction of bridge (Alder Wood bridge), earthworks, paving and landscaping.
- Complete M25 on slip/earthworks which includes earthworks on the eastern side of M25 onslip and loop road and construction of road formation on the outside kerb on M25 slip road.

Phase 2 works

3.1.5. Phase 2 works include the following activities:

- Construct A12 eastbound off-slip tie ins which includes the construction of embankments, road formation levels, paving and road markings and switching traffic onto new A12 eastbound offslip.
- M25 northbound on-slip tie ins which include the completion of the carriageway from temporary to existing, a new retaining wall, completion of tie ins and completion of the culvert extension.

Phase 3 works

3.1.6. Phase 3 works include the following activities:

- M25 junction 28 loop road tie in to the A12 which includes construction of the embankment, drainage, road works, signage, paving and road markings and landscaping.
- M25 junction 28 loop road off-slip which includes completion of new embankments, roadworks and (Duck Wood bridge), drainage, paving and road markings and landscaping.
- M25 junction 28 loop road bridge which includes construction of the new bridge (Grove bridge) and bridge approach embankments.
- M25 junction 28 loop road bridge which includes construction of the new bridge (Duck Wood bridge) and bridge approach embankments.
- Construction of the Grove Farm underpass.

Phase 4 works

3.1.7. Phase 4 works include the following activities:

- Loop road which includes construction of embankments, roadworks and drainage
- Install utilities, paving and road markings and landscaping along the loop road.

Phase 5 works

3.1.8. Phase 5 works include the following activities:

- Complete A12 eastbound nearside / construction loop road tie in which includes remarking the A12 eastbound on slip tie in, construction of the tie in to the A12 loop road and construction of the tie in of the M25 to the loop road.

3.2. Environmental Management System

3.2.1. The Environmental Management System is set out in the Construction Environmental Management Plan (EMP). This document sets out the procedures, standards, work practices and management responsibilities for the implementation of the specified mitigation developed to address environmental effects arising from construction of the Project. This document follows requirements within LA 120: Environmental Management Plans (National Highways, March 2020).

3.2.2. The overall objectives of the Environmental Management Plan (EMP) are as follows:

- To minimise the risk of any type of pollution incident or other form of unauthorised discharge
- To avoid or minimise impact to nearby receptors
- To be compliant with statutory legislation and contract specification

3.2.3. The EMP is owned and maintained by GRAHAM. It is the second iteration of the EMP at construction stage and is in accordance with on the first iteration which was referred to as the ‘Outline Construction Environmental Management Plan’ (Outline CEMP) which was produced to support the application by National Highways (the “Applicant”) for a Development Consent Order (DCO) to authorise the construction of the M25 junction 28 improvement scheme (the “Scheme”). It is a ‘live’ document and will be maintained throughout the life of the Project. The EMP will be adopted during construction and updated at the end of construction stage (previously referred to as the ‘Handover EMP’ or ‘HEMP’) and included in the Construction Phase Health and Safety Plan. The EMP shall be refined and

updated when additional information comes to light to capture any necessary alterations to the proposed mitigation and management of environmental effects.

3.3. Health and Safety Principles

3.3.1. Health and Safety Aims for the Project

3.3.2. It is GRAHAM Construction's intention to demonstrate commitment to the project goals and aims implementing good practices and capturing new and innovative processes throughout the project. The ultimate Health and Safety goal on this project is to complete all work where no one is injured and property damage has not occurred. To further define this, GRAHAM has adopted the following aims on this project:

- Have no serious accident or any event to the level where the accident is reportable to the HSE.
- To complete health and safety inspections on site as required to monitor compliance. This compliments the daily site inspections completed by the Site Manager and Project Manager.
- To ensure industry best practice is utilised.
- To have an accident incident rate on this project lower that the industry average,
- To identify and share with the Principal Designer early warning of hazards to allow design modifications to take place as part of the coordination process of health and safety.
- Sequencing of works to avoid clashes and exposure to risks.
- To have no HSE Improvement or Enforcement Notices.

3.3.3. GRAHAM will also adopt National Highways's overarching approach to health, safety and wellbeing is 'Home Safe and Well' published in June 2019. The vision can be summed up as "we want everyone who works with us and everyone who travels on our network to get home safe and well".The new approach supports National Highways's first imperative, safety. It also keeps customers and delivery at the heart of what we do. "Home Safe and Well" sets out the following aspirations for the period up to 2025:

- Reducing the number of those killed or seriously injured on our roads by 20%
- Halving the number of lost-time incidents
- Halving suicides on our roads
- Halving service strikes
- Halving vehicle incursions into road works
- Halving bridge strikes

- Achieving the Workplace Wellbeing Charter for England
- Achieving ISO 45001 certification
- Doubling our hazard and near miss reporting
- Achieving level 4 cultural maturity

3.3.4. National Highways have developed a Road Worker Safety Strategy including the 'raising the bar' initiative which GRAHAM shall implement throughout the construction works.

3.4. Site Management

3.4.1. In order to assess and confirm that both the GRAHAM Contracts Director and GRAHAM Project Manager, who hold senior management positions on this project have suitable competence to fulfil the position, the Civils Managing Director will formally appoint the selected persons.

3.4.2. This formal appointment process seeks to assess skills, training and experience of the individual who will in turn acknowledge they understand their responsibility's in accepting the position and agree to implement these.

3.4.3. These completed forms of appointment are held in section 1 of the supporting documents connected to the Construction Phase Plan.

3.4.4. The integrated project team organisation chart, and the Project Organogram indicating the site management structure is TBC.

3.5. Training and Competence

3.5.1. Managers will have attended the SMSTS course. Holders of the IOSH Approved course on Managing Safely in the Construction Industry will be accepted upon review. Foremen and Engineers selected to supervise work activities on the project will have attended the Construction Industry Training Board SSSTS Site Safety Supervisors course as a minimum. As part of their regular refresher training, Site Supervisors will provide weekly Tool Box Talks to their Operatives. These tool box talks include those from the CITB tool box talk's manual; Risk Assessments and Method Statements for the works; or safety alerts and other relevant information sources.

3.5.2. Existing training will be confirmed by operatives when they present their competence cards at their site induction. Records of all training are held on site.

3.5.3. All site operatives and visitors to site will be given project specific induction training. All site operatives will be required to provide copies of their skills competence for their skill/ trade and for the itEMP of plant and machinery that

they will be required to operate. This will be in the form of certification, competency cards such as CPS or CSCS cards. Copies of all documentation will be retained on file by GRAHAM.

3.5.4. GRAHAM is committed to implementing Behavioural Based Safety (BBS). GRAHAM have partnered with MindSafety a training provider who specialise in occupational Safety, culture change processes, to encourage positive workplace behaviours based on understanding how we all behave as human beings. To implement BBS, GRAHAM have trained the Health and safety team of managers and advisors to be behavioural safety coaches and provided awareness training to all managers within the organisation. During site visits, the Health and Safety Manager/ Advisors will tutor, mentor, educate and coach the on-site operatives in how the human mind works and why we act the way we do. He explains how simple changes in behaviour could yet further improve the good approach to safety that GRAHAM currently has, and how if everyone was to change their safety behaviour, there would be exponential improvement of our safety culture across the whole site.

3.6. Responsible Procurement

3.6.1. Responsible Procurement and what our objectives are over the next 5 years within Highways works;

3.6.2. GRAHAM require a vibrant Supply Chain to meet its commitment to National Highways to deliver key infrastructure projects on the RDP scheme. Promoting best practice within the Procurement & Supply Chain department will be key to delivering on this promise, as such we are continuously reviewing our processes and procedures to promote a streamlining and efficiency conscious culture within the team. A category managed Procurement process that delivers best value in the market for National Highways promoting aligned strategies and using a balanced scorecard approach.

- Increase the number of Strategic partnerships from 3 to 10 in preparation for RIS 3 delivery (2025)
- Increase the percentage of National level agreements / service level agreements from 20 – 40% by 2025
- Exceed SME spend levels on all projects so that the average across all projects exceeds clients requirements (currently 25%)
- Implementation of Local Supply chain software integrating estimating, procurement, and commercial teams. Source, manage and engage GRAHAM approved suppliers with LSC's inbuilt procurement toolkit, helping the GRAHAM Procurement team to make informed decisions using live information and performance feedback.

3.7. Employment and Training Opportunities

3.7.1. We strive to create an inclusive workplace where people feel valued. Managers and staff will be trained on how this is best achieved. The objectives detailed below, when executed, will be the vehicle to achievement on the scheme.

3.7.2. Social Improvement, which will be achieved through local employment and skills opportunities, interaction with schools and colleges, financial and resource-based assistance for charities and local groups including pro-bona works and a volunteering time bank

3.7.3. Our robust governance structure will ensure the scheme level targets are monitored and KPI's designed to ensure that all supply chain partners contribute to the delivery of tangible benefits

3.7.4. Analysis will be carried at scheme level using data collected from various sources including, where relevant the HE EDIT tool. This will allow objectives to be targeted at groups most in need, maximising the benefits to the RDP community as well as customers and the wider local community

3.7.5. We will adhere to the Statement of Outputs as detailed below;

- Obtain accreditation as a National Skills Academy for Construction,
- one (1No.) apprenticeship for every £5,000,000 (five million GBP) included in the Price for Work Done to Date under the contract
- Our inclusive recruitment capability is verified as part of our Investors in People (IIP) Platinum Accreditation. The IIP Platinum accreditation is the highest accolade that can be achieved against the standard and is currently held by less than 1% of accredited organisations.

3.8. Community Consultation & Liaison / Helpline

3.8.1. The CoCP will be produced to an appropriate level of detail to enable the start of preliminary construction works on site, such as installation of newt fencing (if required as joining a District Level Licensing scheme is currently being explored), site clearance and utility diversions, which are targeted for late summer 2022.

3.8.2. The Community Engagement Plan and the Communications Plan are being developed alongside the detailed design and it will be completed and issued prior to the start of preliminary construction works on site.

3.8.3. The date for the planned public engagement event regarding Maylands Aerodrome archaeology will be confirmed in the construction stage (likely to be September/ October 22).

4. General Site Operations

4.1. Working Hours

4.1.1. Working hours are noted as being daytime 06:00 to 19:00 Monday to Friday. The majority of construction works will take place between 07:00 to 19:00 Monday to Friday. It is anticipated that between the hours of 06.00 to 07.00 on weekdays site activities will exclude noisy works. Where works with potential to generate significant adverse effects are proposed during day-time hours, this will be agreed in advance with the local authority pursuant to Section 61 of the Control of Pollution Act 1974.

4.1.2. It is anticipated that night-time working Monday to Friday will also be required on the existing highway network when closures would take place. It is anticipated that these activities will be undertaken between 23.00 and 07.00. All night-time works will be agreed in advance with the local authority pursuant to Section 61 of the Control of Pollution Act 1974. Night-time works are likely to include:

- Installing traffic management
- And various construction activities such as:
- Installing / Removing motorway gantries
- Road surfacing
- White lining
- Constructing the tie ins to the existing network

4.1.3. Where working outside of these hours, for instance, at weekends to enable programme efficiency, these would take place between 06.00 to 17.00 on Saturdays and Sundays. Any proposals for weekend working would be agreed in advance with the local authority pursuant to Section 61 of the Control of Pollution Act 1974.

4.2. Site Layout and Facilities

4.2.1. Site Layout Plan in Appendix A shows the location and layout of the site compound and site areas.

4.2.2. The Project will provide the following minimum welfare facilities. The Welfare Facilities will comply in full with the requirements of the Construction (Design and Management) Regulations 2015.

- Facilities for rest will have enough space for the number of operatives on site including rest areas with seats with suitable backs, food storage facilities and facilities for heating food and a fresh supply of wholesome drinking water

- Male and Female toilets with hot and cold running water for cleansing skin and provision of skin care products including pre-start barrier cream, hand cleanser, after work skin moisturiser and sun screen
- Changing rooms with storage and drying capabilities suitable for the number of men on site
- All welfare facilities will be cleaned daily.
- First Aid boxes will be located at The site office and canteen
- First aiders on site will be identified by a first aid sticker on their safety helmet.
- Notwithstanding trained First aiders from the various sub-contractors GRAHAM propose to have adequate members of staff available on site to cover both, holidays and sickness as well as the various site locations.

4.2.3. To reduce the likelihood of an environmental incident or nuisance occurring, the following measures will be used, where relevant:

- treatment of perimeters, cleanliness on site, 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, GRAHAM will take action to eliminate the infestation and prevent further occurrence;
- prohibition of open fires, and a requirement to take measures to minimise the likelihood of fire
- no discharge of site run-off to ditches, watercourses, drains, sewers or soakaways without the agreement of the appropriate authority;
- provision and maintenance of wheel-washing facilities or other containment measures
- location of storage, machinery, equipment and temporary buildings to minimise environmental effects and, where practicable, outside flood risk areas
- controls on lighting/illumination to minimise visual intrusion or any adverse effect on sensitive ecology
- the location of site accommodation to avoid overlooking residential property;
- smoking areas at site offices/compounds or worksites equipped with containers for smoking wastes – these would not be located at the boundary of working areas or adjacent to neighbouring land; and
- the implementation of a construction workers travel plan to encourage use of public transport by project staff and control off-site parking.

4.2.4. We will display adequate clean, clear and visible warning signage around the site to warn of the dangers of the construction site. The site will be secured with

a physical fence and access gate to prevent unauthorised access. All site management team have the authority to challenge any person who are believe are not authorised to be on site. All person working on and visiting the site will be required to sign the site attendant register.

4.2.5. Site lighting and signage will be provided to enable the safety and security of the construction sites. It will be at the minimum luminosity necessary and use low-energy consumption fittings. Where appropriate, lighting to site boundaries will be provided and illumination will be sufficient to provide a safe route for the passing public. In particular, precautions will be taken to avoid shadows cast by the site hoarding on surrounding footpaths, roads and amenity areas. Where appropriate, lighting will be activated by motion sensors to prevent unnecessary usage.

4.2.6. Temporary site background and task lighting will also be positioned and directed so as not to intrude on adjacent buildings, ecological receptors, structures used by protected species and other land uses to prevent unnecessary disturbance, interference with local residents and passing motorists. This provision will apply particularly to locations where night working will be required. In addition, at construction sites where potentially significant impacts are identified, GRAHAM will develop and implement lighting controls as part of their EMP.

4.3. Emergency Planning and Response

4.3.1. Fire and Emergency Procedures

4.3.2. The project emergency plan will be prepared prior to start on site.

4.3.3. A fire risk assessment and evacuation plan for the site will be completed prior to site offices being occupied and will be reviewed by the site management as required.

4.3.4. A drawing showing designated walkways/escape routes and assembly point will be posted in the site office and site canteen and all operatives on site will be shown this emergency plan at their induction.

4.3.5. The warning sound for emergency evacuation will be shout ‘FIRE FIRE’ followed by ringing the warning bell or three short blasts of the air horn.

4.3.6. Fire extinguishers will be available in the site offices and Hot work permits will be enforced on site which will also require extinguishers to be present

4.3.7. A copy of the project site fire management plan will be prepared prior to start on site.

4.3.8. Specific details will be added at the start of the construction phase

4.3.9. The person in charge in the event of an emergency is the Project/ Site Manager

4.3.10. Police/ Fire/ Rescue/ Ambulance – contact 999

4.3.11. Nearest hospital with Accident and Emergency:

Kings George Hospital

King George Hospital, Barley Ln,

Essex IG3 8YB

Tel: 03304004333

4.4. Environmental Emergency Procedures

4.4.1. Oil spillage kits will be available onsite at all time and a team of operatives will be trained in the use of the spill kit materials. Training may be carried out in-house or by an external provider.

4.4.2. A team of operatives will be trained in the use of the site spill kits. Training will be carried out by the Graham environmental manager. The response plan will be displayed onsite and communicated to all operatives.

4.4.3. All operatives will receive awareness training in the procedures to follow in the event of spillage through regular toolbox talks. Arrangements for practicing emergency plans through simulated incidents will be carried out as part of the pollution incident training. All operatives will be made aware that any fuel spillage must be reported to the Graham site staff as soon as it happens.

4.4.4. Environmental Incidents as a result of the Works will be recorded on the Environmental Complaints/ Spills/ Incident Form.

4.4.5. Every effort will be made to establish the cause of the issue leading to a complaint/ spill/ incident. Assuming the issue arose from the failure of a control system, the issue will be put right at the earliest opportunity.

4.4.6. The response action will be recorded on the Environmental Complaints/ Spills/ Incidents Report by the Site Manager. A log of all complaints/ spills/ incidents and follow-up actions will be kept and made available for inspection.

4.4.7. Environmental Complaints/ spills/ incident forms will be forwarded to the Environmental Manager who is responsible for investigating environmental

incidents. The Environmental Manager will retain all records with relation to an environmental complaint/ spill or incident.

4.5. Fire Prevention and Control

4.5.1. All construction sites and associated accommodation and welfare facilities will have in place appropriate plans and management controls to prevent fires.

4.5.2. Fire risk assessment and evacuation plan for the site will be completed prior to site offices being occupied and will be reviewed by the site management as required. A drawing showing designated walkways/escape routes and assembly point will be posted in the site offices and site canteens and all operatives on site will be shown this emergency plan at their induction.

4.5.3. The warning sound for emergency evacuation will be shout ‘FIRE FIRE’ followed by ringing the warning bell or three short blasts of the air horn.

4.5.4. Fire extinguishers will be available in the site offices and Hot work permits will be enforced on site which will also require extinguishers to be present

4.5.5. Specific details will be added at the start of the construction phase. The person in charge in the event of an emergency is the Project/ Site Manager.

4.6. Cranes

4.6.1. There will be a number of lifting operations required for the construction of the structures and statutory undertakers diversions using cranes, predominantly mobile and crawler cranes. Lift Plans will be produced and will be developed alongside the detailed design..

4.7. Public Utilities

4.7.1. Existing services have been identified and the Site Management Team will take cognisance of Electrical Services, Street Lighting, Water Services, Fire Hydrants, Land Drains, Drainage Services, Sewer Services, Disused drains, Telephone Services, Communication SystEMP. In order to eliminate these risks, the following provisions will be implemented and maintained throughout the Project: -

4.7.2. The control measures for managing the risk of coming in contact with services will be detailed within Risk Assessment and Method Statement (RAMS).

4.7.3. Prior to commencing the works, the sub-contractor will conduct a review of all existing services which will be maintained by the sub-contractor.

4.7.4. Existing Services will be located and identified by a competent person. Records will be updated on existing drawings/details.

4.7.5. A permit to work system will be implemented and managed by the Site Management Team.

4.7.6. Where existing services are unearthed, services will be backfilled prior to the end of each shift.

4.7.7. The site will be fenced off to minimise attraction of trespassers.

4.7.8. Work on live electrical systEMP will only be carried out by a competent sub-contractor this will include clear and concise labelling of live circuits.

4.7.9. Goal post and bunting will be erected as necessary to high the location of overhead cables. Warning signage will also be erected.

4.7.10. Within the scheme there is a requirement for diversion of an asset owned by Cadent Gas. The diversion work will be undertaken by the sub-contractors working directly for Cadent Gas. The sub-contractor, Cadent Gas and GRAHAM will collaborate to resolve any interface issues. Please refer to the Cadent site layout drawings (PREM518-GEN-0000-0014, PREM518-GEN-0000-0017, PREM518-GEN-0000-0018, 071-M25_J28- Proposed Road & Services-20210318) for more information on these works

4.7.11. Refer to the Statutory Undertakers Estimate PCF product (HE551519-JGC-VSU-ZZ-SU-PC-50001 for details of all the Statutory Undertakers diversion works.

5. Environmental Management

5.1. Biodiversity management – general provisions

5.1.1. The EMP will be produced to an appropriate level of detail to enable the start of preliminary construction works on site, such as installation of newt fencing, site clearance and utility diversions, which are targeted for late summer 2022. The Landscape and Ecological Management Plan will be developed alongside the detailed design. It will be completed prior to the start of main works on site, which is targeted for October 2022.

5.1.2. Any landscape and ecological management requirements related to the Great Crested Newt trapping and mitigation works will be contained within the Natural England protected species licence application (if required as joining a District Level Licensing scheme is currently being explored), which will form an appendix to the EMP. This is currently in production.

Further measures to reduce potential impacts on biodiversity

5.1.3. The Landscape and Ecological Management Plan will be developed alongside the detailed design. It will be completed prior to the start of main works on site, which is targeted for October 2022.

Control of invasive and non-native species

5.1.4. Chemical or mechanical treatment and removal of invasive non-native plant species shall be carried out where found within all areas. Chemical treatment shall include selective application of herbicides. Mechanical treatment shall include digging up or scraping of topsoil where the plant(s) is present.

5.1.5. The following species are considered to be invasive non-native plants:

- Early goldenrod (Solidago gigantea)
- Canadian goldenrod (Solidago canadensis)
- Himalayan balsam (Impatiens glandulifera)

Landscape and visual – general provisions

5.1.6. Extensive environmental works are proposed including

- Compensation for the loss land within the Ingrebourne Valley Site of Metropolitan Importance (SMI), temporary and permanent loss of habitatsand effects on protected species. This work is planned to enhance an areawithin the Ingrebourne Valley SMI affected by the Scheme.
- Maintaining and providing important visual screening.

- Mitigation measures to minimise the adverse effects to the Ingrebourne River and Weald Brook from the construction of the new loop road and realignment of the A12 slip road.
- Appropriate reinstatement of habitats in temporary working areas, on new earthworks, and around balancing ponds and flood compensation areas (grassland, scrub, woodland habitat).
- Implementing specific mitigation protection measures for species including creation of ponds and refuges for great crested newts, creation of basking areas for reptiles, bird and bat boxes, re-profiling for a kingfisher bank on Weald Brook, maintaining connectivity at watercourse crossing points with widespan bridges.
- Control of non-native invasive plant species, including goldenrod and Himalayan balsam.
- Maintaining and providing sufficient woodland screening vegetation along the new loop road to screen views from nearby residents at Maylands Cottages and properties along the eastern edge of Harold Hill.
- Enhancement of the River Ingrebourne and Weald Brook including realignment of sections of existing straight channel to new sinuous courseson both rivers, and selective coppicing of trees to reduce shade cover
- Lowering of floodplain to improve the river and floodplain integration and create wetland habitat by creating backwaters and floodplain scrapes.
- Incorporation of a natural riverbed and installation of mammal passages within the culverts and creation of unlined drainage ditches to manage clean runoff and provide habitats.
- Appropriate long-term management of all habitats

5.1.7. Existing Vegetation and Trees to be retained, shall be protected in accordance with BS5837-2012 “Trees in Relation to Design, Demolition and Construction”

5.1.8. Maintaining and providing sufficient woodland screening vegetation along the new loop road to screen views from nearby residents at Maylands Cottages and properties along the eastern edge of Harold Hill.

5.1.9. Maintaining and providing important visual screening

5.1.10. Woodland creation is provided for replacement of vegetation lost through construction of the Scheme and for providing visual screening from sensitive receptors. New woodland areas will also aid with integration of the Scheme into the wider landscape context.

5.1.11. Locations:

- West of the loop road - Woodland blocks shall be created along the outside perimeter of the loop road Within highways verge and associated land

- Woodland will be created on the new earthworks and elsewhere within the new highway boundary of the Scheme. Woodland will be restricted to locations away from the highway so as not to impact upon sightline zones.
- Selected areas within scheme extents particularly outside road corridor Woodland blocks will be planted within and along the entry and exit slip roads of the M25 where space and sightline zones permit.
- Linear woodland block will be created along the new boundary of the golf course
- Woodland block to the west of W15 within the Golf Course Work Area.

5.2. Monitoring

5.2.1. GRAHAM will undertake the necessary monitoring as outlined for each environmental topic to comply with the requirements of this CoCP and any additional consent requirements and their EMP.

5.2.2. Monitoring will include:

- monitoring the effectiveness of mitigation measures;
- monitoring the impact of construction works; and
- taking other actions as may be necessary to enable compliance.
- Monitoring, together with provisions for any corrective action required, will be implemented under the Principal GRAHAM EMP.

5.2.3. Best practicable means (BPM) will be applied during construction works to minimise noise (including vibration) at neighbouring residential properties and other sensitive receptors (including local businesses and quiet areas designated by the local authority) arising from construction activities.

5.2.4. BPM are defined in Section 72 of the Control of Pollution Act 1974 and Section 79 of the Environmental Protection Act 1990 as those measures which are “reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge and to financial implications”.

5.2.5. The Section 61 Application has been submitted prior to the start of preliminary construction works onsite.

5.2.6. The effects of noise and vibration from construction sites will be controlled by introducing management and monitoring processes to ensure that BPM are planned and employed to minimise noise and vibration during construction. As part of the GRAHAM EMP, a noise and vibration management plan will be prepared and will set out these processes. The plan will include management and monitoring processes to ensure, as a minimum:

- integration of noise control into the preparation of method statements
- proactive links between noise management activities and community relations activities
- consideration of the impacts on relevant ecological areas
- preparation of risk assessments to inform structural surveys of buildings and structures that may be affected by vibration from construction
- development of a noise and vibration monitoring protocol, including a schedule of noise and vibration monitoring locations and stages during construction of the Scheme when monitoring will be undertaken
- preparation of and submitting Section 61 consent applications
- the undertaking and publication of all monitoring required to ensure compliance with all acoustic commitments and consents
- implementation of management processes to ensure ongoing compliance, improvement and rapid corrective actions to avoid any potential non compliance.

5.3. Traffic and transport

5.3.1. Works requiring temporary Traffic Management on the TfL and NH networks will be in place only during off-peak periods, with the majority of works undertaken offline.

5.3.2. Access points back onto the TfL and NH networks will utilise wheel washing facilities to prevent mud being taken onto public highway.

5.3.3. The Project Manager will develop a traffic management plan for the scheme prior to any work commencing on site. All site operatives will be instructed to follow the traffic management plan (TMP), which will be explained to them at their induction. This will clearly define pedestrian and vehicular routes. The TMP will be updated regularly as the work progresses and the initial site develops. Where the traffic management plan changes, these will be communicated to all operatives.

5.3.4. The TMP will be posted in the site welfare facilities.

5.3.5. A Method Statement/ Risk Assessment will be completed for loading/ unloading materials.

5.3.6. A daily inspection of the vehicle and pedestrian management plan will be completed and recorded by the project Manager.

5.3.7. The Project/ Site Manager will liaise with persons and parties potentially affected by deliveries to ensure that deliveries to site are planned minimise disruption to adjacent road users.

5.3.8. The TMP will be produced before works start on site and take into account any highways traffic issues that are current at the time, example local road closures. At all times this TMP will be communicated to all sub-contractors and interested parties prior to attending site and be put in place as part of the site management plan and briefing and induction.

5.3.9. In line with National Highways requirements GRAHAM conform to policies and procedures relating to managing Work Related Road Risk (WRRR) which are fully embedded in our health and safety management system and are subject to our own assurance processes

5.3.10. The scheme is outside the area of the TfL DVS and HGV Safety Permit enforcement zone.

5.3.11. Site vehicles will have appropriate safety features fitted including, as necessary, prominent signage on the rear of the vehicle to warn cyclists of the dangers of passing the vehicle on the inside; side guards; a close proximity warning system; and a Class VI mirror. GRAHAM will also ensure that its drivers are appropriately licensed and trained.

5.3.12. GRAHAM will be responsible for maintaining the cleanliness of all roads, private accesses and public rights of way affected by the works. GRAHAM will propose procedures for maintaining the cleanliness of all roads, private accesses and public rights of way affected by the Works for acceptance by the Project Manager.

5.3.13. This is planned to be achieved by installation of mechanical Enviro Wheel Wash units at exit points onto the highways.

5.3.14. The Scheme has been further developed following consultation with stakeholders and members of the public, and more detailed assessments of traffic, engineering, buildability and environmental factors.

5.3.15. Public Footways and PROWs will remain open for use throughout the duration of the scheme.

5.3.16. The site compound will provide disabled parking spaces near the office entrance which will be step – free accessible.

5.4. Air Quality

5.4.1. Dust, Noise and Nuisance Management Plan (DNNMP) was developed to detail the controls that GRAHAM will adopt to ensure that BPM and relevant statutory controls are implemented to control emissions to air from activities associated with the works.

5.4.2. The DNNMP will be developed with regard to relevant legislation and will detail:

- Management of site activities
- Control Measures inc. summary of key construction activities and sources of dust from each activity and risk level
- control measures to be implemented during the construction activities and residual risks

5.4.3. Any requirement for dust monitoring will be developed by GRAHAM in consultation with the relevant local authority. This would include:

- Daily on site and off site inspections
- Record of complaints/exceptional dust events

5.5. Water Resources and Flood Risk

5.5.1. The Environment Agency main river map (Environment Agency, 2021) identifies two main rivers, Ingrebourne River and Weald Brook, within the study area and the DCO boundary. Weald Brook flows in a southeast direction adjacent to the M25 south bound carriageway, north of the M25 junction 28. It crossed under the M25 and flows in a southerly direction to the west of the Proposed Scheme before its confluence with Ingrebourne River. Ingrebourne river flows in westerly direction adjacent to the A12, it is culverted under the M25 junction 28 and remerges to the west of the junction. It then flows adjacent to the A12 until its confluence with Weald Brook before it crosses under the A12.

5.5.2. Both rivers have areas of associated flood plain which are designated as Flood Zones 1, 2 and 3a which are defined as the following:

- Flood Zone 1 – Areas with a ‘low probability’ of flooding and where the annual probability of flooding is lower than 1 in 1000 (0.1%) for fluvial flooding.
- Flood Zone 2 – Areas with ‘medium probability’ of flooding and where the annual probability of flooding is between 1 in 1000 (0.1%) and 1 in 100 (1%) for fluvial flooding or between 1 in 1000 (0.1%).
- Flood Zone 3 – Areas with a ‘high probability’ of flooding and where the annual probability of flooding is 1 in 100 (1%) or greater for fluvial flooding.

The NPPF recommends that appropriate development is based upon further classification into 3a ‘high probability’ and 3b ‘functional floodplain’ (where water must be allowed to flow or be stored in times of flooding during the 1 in 20 (5%) event).

5.5.3. The majority of these high-risk areas are associated with watercourses and are

considered as fluvial flood risk, as described in the sub section above. The other areas shown to be at risk are either likely to be associated with isolated depressions in topography and areas along the A12 and M25 which are at a slightly lower elevation than other sections of the road. The notable areas at risk from surface water flooding that are not associated with the main rivers are the drainage channels flowing west to east into Weald Brook on the western side of the Proposed Scheme boundary.

Water Conservation

5.5.4. A Water Framework Directive (WFD) compliance assessment addendum was completed as part of the detailed design of the Proposed Scheme (Appendix B HE5519-SWE-EWE-ZZ-RP-LX-50006). This document is an addendum to the WFD compliance assessment (National Highways, 2020b) completed for the Stage 3 preliminary design of the Proposed Scheme and DCO application.

5.5.5. The purpose of the WFD compliance assessment and addendum report is to establish the nature and magnitude of the effects of any components of the Proposed Scheme which have changed as part of the detailed design and are anticipated to impact WFD classification elements of the water bodies affected by the Proposed Scheme.

Site Drainage

5.5.6. The proposed drainage strategy is discussed in the Drainage Strategy Report (document number HE51519-SWE-HDG-ZZ-RP-CD-50001)

5.5.7. The overall drainage strategy has been designed so the proposed discharge rate should not exceed the existing discharge rates for all catchments.

5.5.8. As per DMRB guidelines, drainage has been designed to ensure that the following design standards are met:

- The highway drainage will not surcharge in the 100% (1 in 1 year) annual exceedance probability (AEP) event
- There will be no flooding in the 20% (1 in 5 year) AEP event.
- There is no surface water flooding extending beyond the site boundary in the
- 1% (1 in 100 year) AEP event.

Protection of watercourses

5.5.9. Effective design of traffic control measures to reduce dust generation and minimise the amount of traffic within working areas, use of wheel washes and spraying of working areas and roadways.

5.5.10. Limiting the area of earthworks at any one time to reduce temporary effects on topography, soil compaction and erosion.

5.5.11. Implementing appropriate pollution incident control measures e.g. plant drip trays and spill kits during construction.

5.5.12. Implementing appropriate and safe storage of fuel, oils and equipment during construction.

5.5.13. Implementation of suitable piling methodologies

5.5.14. The Surface Water Management and Monitoring Plan (HE551519-SWE-EWE-ZZ-RP-LX-50006) has been developed specifically for the scheme.

Control of Pollution of Groundwater

5.5.15. Working method statements during construction to manage groundwater and surface water appropriately and ensure that there is no run-off from the works, material / waste stockpiles or from storage containers into adjacent surface watercourses in line with the WFD

5.6. Site Contamination and Protection of Groundwater

5.6.1. The majority of works are going to be carried out on farmland which ties into existing road networks. The likelihood of significant contamination in soils and groundwater beneath the site is considered to be low. The most likely source of contamination is going to be run off from nearby roads along with old fly tipping sites.

5.6.2. The works could therefore disturb existing land contamination and spread / cause further contamination if not managed appropriately. Contamination could potentially affect groundwater, surface water and human health and safety.

5.6.3. The CLMP forms part of the Construction Environmental Management Plan (CEMP) developed for the construction of the Scheme. The CEMP includes those areas of the scheme subject to operation in accordance with a Waste Deposit for Recovery Permit (currently under application), for which additional management controls are required as detailed in the Permit application submission. The CLMP and CEMP documents are considered relevant to both the permitted and non-permitted operations in view of the commonality of certain

approaches and interfaces between work areas. Reference should therefore also be made to the following document: M25 J28 Improvements DfR Permit, Environmental Management System, Sweco, December 2021.

5.6.4. The CLMP describes how GRAHAM will manage contaminated land and minimise impacts during construction of the Scheme.

5.6.5. If any contamination of ground is identified or suspected during the course of the M25 Junction 28 works, GRAHAM will implement a response plan and undertake further specific investigations.

5.6.6. Where ground contamination is identified, the borough council Pollution Team and the Environmental Agency will be notified. Where ground-water contamination is suspected, Environment Agency will be contacted, and the next steps agreed.

5.6.7. The main guidance and best practice is stated within Land Contamination Risk Management (LCRM)1. This process replaces the old CLR11 Standards.

5.6.8. Should any unidentified contaminated land be discovered the LCRM will map out how the contaminated land is to be dealt with onsite.

5.6.9. To enable classification of the waste for disposal purposes, analysis of the waste material will be arranged and appropriate disposal undertaken in conjunction with the Waste Manager. If material is found to be contaminated, its appropriate storage before removal from site will ensure no cross contamination with non-contaminated materials.

5.7. Materials Management

5.7.1. Appropriate barriers will be installed to prevent public access to construction areas.

5.7.2. Management and prevention of dust emissions in accordance with the Air Quality Management Plan (AQMP).

5.7.3. Appropriate erosion and sediment controls and staging of site activities to minimise the extent of disturbed areas, and hence to minimise the potential run-off of contaminated soils in accordance with the requirements of the Erosion and Sediment Control Plan (ESCP).

5.7.4. Controls for material haulage, such as covering loads or wetting material to reduce airborne dust emissions in accordance with the AQMP and Construction Traffic Management Plan (CTMP).

5.7.5. Documentation of all contaminated material during transport operations (including the descriptions of processes, personnel and organisations involved in the removal, transportation and placement of contaminated material).

5.7.6. Procedures for managing exposure of construction workers to potential contaminants in soil and water are to be implemented. This includes the use of personal protective equipment (PPE) and hygiene controls, and documentation of inspections and workplace health and safety compliance throughout construction and operation and other actions as addressed in the Occupational Health and Safety Plan (OH&S Plan).

5.8. Unexploded Ordnance and Emergency Response Plan

5.8.1. Any suspect devices encountered must be notified to Essex Police. All site work must be stopped and the site evacuated until such time as the matter has been appropriately dealt with and the site declared safe.

5.9. Resources and Waste Management

5.9.1. GRAHAM will manage construction and excavation waste at the work sites in accordance with the waste hierarchy. The principal objectives of sustainable resource and waste management are to use material resources more efficiently, reduce waste at source and, through recycling and other means, reduce the quantity of waste that requires final disposal. These are translated as: the application of designing-out waste principles to minimise construction waste; the segregation of construction and excavation materials; and the use of a suitable waste contractor to maximise diversion from landfill via re-use, recycling and recovery.

5.9.2. Waste from the construction of the works will be dominated by excavated material. Waste management measures will be prepared that facilitate the reuse of excavated material and diversion of waste from landfill in line with the waste hierarchy. Excavated material that is either uncontaminated or which can be remediated to a suitable standard and can be used for site engineering and restoration purposes will be managed in accordance with the controls specified by the CL:AIRE Definition of Waste: Development Industry Code of Practice (Contaminated Land: Applications In Real Environments (CL:AIRE), 2011). This will help to maximise opportunities for re-use of excavated material.

5.9.3. Alongside minimising material use and waste generation during the project, GRAHAM will also ensure the potential impacts from the waste it does produce is minimised by implementing best practice in the classification, storage, transfer and disposal of waste. GRAHAM will ensure staff are suitably trained to

undertake these duties, which will include, but will not be limited to, waste management handling, inspection and reporting.

5.9.4. A Site Waste Management Plan (SWMP) will be developed and will be utilised as an internal waste management and monitoring tool during the course of the project. The purpose of a SWMP is to assist in forecasting and managing waste materials efficiently, ensuring the legal disposal of waste, and that material recycling, reuse and recovery is maximised in accordance with the waste hierarchy.

5.9.5. Where generated, waste will be classified in accordance with the statutory controls governing the management of inert, non-hazardous and hazardous wastes. These will be identified in the SWMP along with the quantities of each waste type likely to arise during the project. This will ensure compliance with legislation and ensure waste is handled and disposed of correctly.

5.9.6. Prior to any demolition or alteration of the structure the project manager will request a copy of the Refurbishment and Demolition Survey undertaken to identify suspected ACM. Where the Asbestos is to be removed this will be sub-contracted to a specialist organisation.

5.9.7. Asbestos awareness training will be carried out as appropriate to site operatives who are tasked with breaking the structure of the building.

5.9.8. Site scheme specific Asbestos Management Plan (HE551519-JGC-MAN-ZZ-PL-WM-50001)

5.10. Historic Environment

5.10.1. Appropriate archaeological investigation or mitigation measures will be undertaken in accordance with an Archaeological Management Plan document HE551519-SWE-HER-ZZ-MS-LH-50001 and Written Scheme of Investigation prepared and approved in advance. This may include general or targeted watching briefs, trial trench evaluation and / or detailed excavation

5.10.2. GRAHAM will carry out the works in such a way as to ensure that disturbance to potential archaeological sites and deposits will be managed in accordance with the aforementioned.

5.10.3. Maylands Aerodrome Recording - there are four concrete floors/foundations corresponding to the mapped locations of the former aerodrome buildings. All are heavily overgrown. The former conning tower has some wall rubble atop it that may hide upstanding wall remains. The hangar floor is quite substantial, with some architectural details around the old pedestrian entrance.

5.10.4. We understand that a survey of these four structures is required, and we propose to carry out the following:

• shift the rubble from the top of the former conning tower;

• expose the edges of the foundations/floors and clean around any details – extensive clearing/cleaning is NOT proposed;

• undertake a GPS survey and compile a digital photographic record of the exposed structures.

5.10.5. The survey is to be undertaken as a mini field school, attended by volunteers from local interest groups. We would propose to undertake two half-day sessions (c. 3 hours each) wherein we provide the attendees with some background to the site and guide them through the processes of GPS surveying and photographing the structures. It is assumed that both of these sessions will take place on the same day. The sessions will include supervised visits to other elements of the scheme if/where possible, given logistical and health & safety/operation concerns.

5.11. Energy Management

5.11.1. GRAHAM will implement working methods that reduce energy consumption and aim to continually improve energy efficiency on the working areas

5.11.2. This will include where practicable but not be limited to:

- avoiding unnecessary day and night time site, accommodation and office lighting
- installing energy efficient security and task lighting, e.g. Light Emitting Diodes (LEDs)
- providing well insulated site accommodation

Potential Measures: Construction energy	Feasibility	Potential for energy/ CO2 Savings	Note
Minimising the use of diesel and petrol powered generators and instead using mains electricity or battery power	High	Medium	Tools and equipment will be battery powered. Where applicable mains electric points will be installed
Power down equipment and/ or plant when not being used	Medium	Medium	Plant and equipment will not be left idle where appropriate
Select energy efficient plant	High	Medium	Fuel efficient plant, machinery and vehicles will be used where ever possible

Keep spent fuel record	Medium	Low	Maintain records of all fuel used on site to determine usage characteristics
Set energy targets	High	Low	Put in place SMART targets which will be briefed to all starters
Efficient lighting and small power	High	Medium	Use low energy equivalents of common equipment e.g. low energy lighting
Provide well insulated site accommodation	Medium	Low	Provide appropriate levels of thermal insulation to the relevant areas of site accommodation

Appendix A – The location and layout of the site compound and site areas