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Draft Code of Construction Practice (CoCP)
**PREFACE: DEVELOPMENT OF THE DRAFT COCP**

This draft Code of Construction Practice (CoCP) sets out Heathrow’s proposed approach to manage the potential impacts to people, businesses, and the natural and historic environment for the Heathrow Expansion Project. Stakeholders are invited to comment on the draft CoCP as part of the Airport Expansion Consultation (June 2019) along with other consultation documents, including the Construction Statement.

This draft CoCP will be subject to further engagement with relevant local authorities and other statutory bodies prior to submission of the Development Consent Order (DCO) application for the Heathrow Expansion Project (‘the DCO Project’). The draft CoCP may therefore be subject to refinement where necessary as the scheme design and construction approaches develop.

At DCO application, a further developed CoCP will be submitted, with the intention that it will become a ‘certified document’ – a document certified as a final document by the Secretary of State, with which compliance will be required by the DCO. Non-compliance with the CoCP would therefore be a breach of the terms of the DCO. In the event of a breach, Heathrow and its contractors would be open to enforcement action under Section 161 of the Planning Act 2008.

The draft CoCP is being developed alongside the Environmental Impact Assessment process. The likely significant effects of the DCO Project, taking into account the mitigation set out in the draft CoCP, is reported in the Preliminary Environmental Information Report (PEIR).

The text outlined in grey within this document represents explanatory content provided at the Airport Expansion Consultation (June 2019) to be deleted at DCO submission.
1. **INTRODUCTION**

1.1.1 This document is the draft Code of Construction Practice (CoCP) for the Heathrow Expansion Project (‘the DCO Project’). Heathrow Airport Limited (‘Heathrow’) proposes to remodel and expand the current two runway, four terminal, Heathrow Airport (‘the Airport’). The expansion includes adding a third runway and associated taxiways, additional passenger terminal facilities with stands and baggage systems, and a wide arrangement of associated development.

1.1.2 The expansion of the Airport includes changes to the infrastructure and facilities surrounding the current operational Airport, as well as major changes to the M25 and the motorway junctions serving the Airport, replacing and re-routing local roads such as the A4 and A3044 and alterations to the water environment in the Colne Valley. Other development to ensure the expanded Airport can operate successfully also forms part of the DCO Project, including supporting facilities and related development such as aircraft maintenance, aviation fuel storage and car parking.

1.1.3 The draft CoCP includes control measures and standards to be implemented throughout the construction of the DCO Project. Whilst multiple construction works will run concurrently throughout the DCO Project, the final CoCP will act as the overarching document for all construction related activity. As such, the CoCP will present a consistent approach to the management of construction activities for the entire proposed works.

1.1.4 This draft CoCP forms part of the Airport Expansion Consultation (June 2019) and sets out Heathrow’s proposed approach to mitigating the potential impact of construction.

1.2 **Structure of this document**

1.2.1 The draft CoCP comprises the following sections:

1. Preface: The development of the draft CoCP
2. Purpose of the draft CoCP (section 1.3)
3. Implementation (section 2)
4. Community and stakeholder engagement (section 3)
5. General requirements including hours of work, pollution incident control and security etc. (section 4)
6. Requirements by topic (sections 5 -14) – setting out measures that will be implemented to limit disturbance from construction activities, where reasonably practicable, in relation to the following topics:

a) Air quality and odour
b) Biodiversity
c) Carbon and greenhouse gases
d) Historic environment
e) Land quality
f) Landscape and visual amenity
g) Noise and vibration
h) Resource efficiency
i) Traffic and transport
j) Water environment

1.2.2 These topics correspond to relevant chapters of the Environmental Statement (ES). Other topics (such as Health and Major Accidents and Disasters) are referenced in a number of sections of the draft CoCP.

1.3 Purpose of the draft CoCP

1.3.1 This draft CoCP outlines the proposed measures and standards of work that will be implemented by Heathrow and its main contractors throughout the construction period. The aim is to:

1. Provide effective planning, management and control during construction in order to manage potential impacts to people, businesses and the natural and historic environment.

2. Provide mechanisms to engage with the local community and their representatives throughout the construction period.
2. **IMPLEMENTATION**

2.1 **Legislative, consent and licence compliance**

2.1.1 Heathrow and its contractors will, as a minimum, comply with all legislative requirements for all topics set out in this CoCP, including the provisions of the DCO. Furthermore, Heathrow/the main contractors will be required to obtain all necessary licences and consents for all proposed works that are not included in the DCO itself. The scope of these consents will be set out in a Consents and Agreements Position Statement, which will be submitted with the application for the DCO Project.

2.1.2 The topic chapters of this CoCP therefore do not refer to the relevant legislative or consent requirements for that discipline, with the exception of biodiversity.

2.2 **Delivery Model**

2.2.1 Heathrow will establish a capable delivery management team that encompasses all the functions of a major programme of capital development. This includes but is not limited to project management through health and safety, community and stakeholder engagement to assurance/compliance. This will be implemented by the delivery management team, main contractors, principal designers and their sub-contractors and supply chains.

2.2.2 The exact structure of the team and contractual relationships for the development of the DCO Project are being developed by Heathrow. As such, the draft CoCP is not definitive at this stage as to who will be specifically identified to carry out the individual measures set out in the CoCP. The draft CoCP therefore refers to ‘Heathrow/the main contractors’ being responsible for implementing measures whilst this work is on-going.

2.3 **Environmental Management System**

2.3.1 Heathrow has committed to having an environmental management system (EMS) that is certified to ISO 14001, including for the DCO Project.

2.3.2 Heathrow will require each of the main contractors to have and apply an EMS that is certified to ISO 14001. Their EMS will include roles and responsibilities to be assigned, appropriate control measures and monitoring systems to be employed during the planning and undertaking of the works.
2.4  Enforcement

2.4.1 Compliance with the CoCP will be a requirement of the DCO, applicable to both Heathrow and its contractors.

2.4.2 The requirements of the CoCP will be imposed by Heathrow on the main contractors through the works contracts. These contracts will incorporate both general requirements and environmental topic requirements.

2.4.3 The main contractors and their sub-contractors will comply with the conditions outlined in the CoCP and appropriate action will be taken by Heathrow where necessary to ensure compliance.

2.5  Contractors’ method statements

2.5.1 The main contractors will set out the procedures to be followed for construction operations in method statements, which will address health, safety, site security and the environmental issues associated with construction operations. The operations requiring a method statement will be identified using a risk-based approach. As a minimum, method statements will be prepared for site preparation, construction activities and reinstatement of land and/or infrastructure following completion of the main construction works.

2.5.2 Method statements will define any specific environmental control measures, including environmental and historic environment protection works, to be implemented to meet the requirements of the CoCP and will set out the measures required to reduce cumulative effects of concurrent construction activities.

2.5.3 An assurance programme will be established by Heathrow and its main contractors to ensure compliance with these arrangements.

2.6  Monitoring

2.6.1 Heathrow/ the main contractors will complete the necessary monitoring and reporting as outlined for each topic in order to ensure compliance with the requirements of the CoCP and Heathrow's and the main contractors' EMS.

2.6.2 Monitoring will include:

1. Monitoring the effectiveness of mitigation measures
2. Monitoring the impact of construction works
3. Taking other actions as may be necessary for compliance.
2.7 Training and competence

2.7.1 Heathrow will require main contractors to employ an appropriately qualified workforce with sufficient experience on construction-related works. Where appropriate, this will include registration with relevant recognised competence schemes and training programmes.

2.7.2 The main contractors are responsible for delivering training requirements for their workforce in order to meet the requirements set out in the CoCP. They will be required to ensure that suitably qualified and experienced professionals are employed to identify training requirements, and where necessary, provide appropriate training.

2.7.3 The training will be comprehensive and will include a holistic range of activities including site briefings and toolbox talks to equip relevant staff with a suitable level of knowledge on health, safety, environmental topics, and community relations, in addition to the ability to adhere to environmental control measures. The training should also advise the workforce of amendments and changing circumstances as the construction works progress.

2.8 Considerate Constructors Scheme

2.8.1 Heathrow intends to adopt the principles of the Considerate Constructors Scheme. Refer to the glossary for further information.

2.9 Supervision

2.9.1 Supervision is necessary to ensure safe and effective construction related works. Supervisory staff will be suitably qualified and experienced personnel, such as professionally qualified environmental management staff with appropriate experience in the environmental topics outlined within the CoCP.

2.9.2 Supervisory staff will supervise and report on the implementation of appropriate environmental mitigation measures and safeguards.

2.10 Contact person

2.10.1 For any relevant construction works, a single point of contact will be identified, who will be the single point of contact for the regulatory authorities. Heathrow will provide the regulatory authorities with relevant contact details prior to the commencement of construction.
2.11 Interface management between adjacent construction activities

2.11.1 Heathrow will require the main contractors to put in place measures to manage the environmental impacts and effects of interfaces between adjacent construction activities, including the boundaries between areas under the control of different contractors and (where reasonably practicable) other third-party contractors that are not delivering the DCO Project.

2.12 Changes in construction methodology

2.12.1 The DCO Project is a complex large-scale project which will take place over many years. As such, in developing the scheme, Heathrow/ the main contractors may determine that a change in construction methodology or related mitigation measures from that presented at DCO application stage may be required during the construction phase of the DCO Project. This could arise, for example, due to technological changes in the intervening period, contractor innovation, or encountering unexpected construction constraints when on site.

2.12.2 However, if such amendments are proposed, they should only be brought forward if the proposed method will not give rise to materially new or materially different environmental effects, having regard to the assessment criteria used in the ES to determine the significance of effects for the affected receptors.

2.12.3 In the context of this draft CoCP, it is proposed that where such changes relate to methodologies or mitigation measures set out in subsidiary plans that the draft CoCP requires to be produced (e.g. Construction Traffic Management Plan, Construction Workforce Travel Plan) or will be submitted with the DCO Application (e.g. the Water Environment Plan), such amendments will be able to be brought forward by Heathrow/ the main contractors to the body who was consulted/approved the original version of that plan pursuant to the CoCP. In so doing, Heathrow/ the main contractors must demonstrate to that body that the proposed method will not give rise to significant adverse effects that were not reported in the ES, having regard to the assessment criteria used in the ES to determine the significance of effects for the relevant affected receptors.

2.12.4 In relation to changes in methodology or mitigation measures that do not form part of a subsidiary plan, Heathrow/ the main contractors will be obliged to carry out an assessment before making that change to consider whether the changed method will give rise to significant adverse effects that were not reported in the ES, having regard to the assessment criteria used in the ES to determine the significance of effects for the relevant affected receptors. These assessments will need to be sent to the relevant stakeholder for approval prior to the works commencing.
2.12.5 In the draft CoCP that is submitted with the DCO application, Heathrow will set out proposals for a process by which these amended subsidiary plans and subsequent assessments should be dealt with by relevant stakeholders, and identify who the relevant stakeholders will be, in order to provide certainty for all parties and enable the efficient and expeditious development of the DCO Project, whilst affording due protection for affected receptors.

2.12.6 This will include proposals in relation to timescales and dispute resolution that will vary dependent on the type and size of change proposed as well as who should be, and provide for a minimised level of change that will not require subsidiary plans or assessments to be put forward.
3. **COMMUNITY AND STAKEHOLDER ENGAGEMENT**

3.1 **General provisions**

3.1.1 Heathrow intends to develop and maintain positive relationships with the stakeholders and various groups that collectively form the local community. This includes groups such as local residents and businesses, community groups/charities, local authorities and members of the public.

3.1.2 Heathrow will maintain a dialogue with affected communities, underpinned by the following principles:

1. Open: Heathrow will engage in an open and transparent manner so that communities have access to the information that is relevant and specific to them.

2. Engaging: Heathrow will engage with communities on a continual basis throughout all stages of the DCO Project.

3. Timely: Information on the DCO Project will be shared regularly and at the right times.

4. Receptive: Heathrow will be open to receiving feedback and supporting communities to access the opportunities that the DCO Project will present.

5. Accessible: Information will be made available in a variety of formats and languages to ensure all members of the community can feel engaged.

3.2 **Community engagement**

3.2.1 Heathrow will prepare and implement a community engagement plan, a draft of which will be submitted with DCO application.

3.2.2 The community engagement plan will provide the approach to community engagement and will build on the continuous local engagement already taking place between Heathrow and the local community. This will include procedures to:

1. Deliver an effective community engagement programme to ensure local communities continue to be informed about the DCO Project and construction activities that may affect them.

2. Inform affected communities in advance of the relevant construction works commencing, including the timetable of construction activities, and how the effects of construction activities will be managed and mitigated.
3. Provide information on how communities can engage with the DCO Project including understanding the opportunities, raising enquiries and providing feedback.

4. Provide a small claims process relating to construction impacts.

3.2.3 The approach presented for DCO application will be informed by, and take account of, the views of the Heathrow Community Engagement Board (HCEB) and other interested parties.

3.3 Communications

3.3.1 As part of the community engagement plan, a programme of high quality, effective and sustained communications will be put in place. This will include a range of measures, such as:

1. Digital media – information will be made available online via a range of platforms. This will include the latest information on the progress of the construction works, how to get involved in the DCO Project including employment opportunities, areas affected by construction, mitigation in place to reduce adverse effects of construction, information regarding planned construction works, road closures and works recently completed.

2. Printed media – information will be available through the regular issue of printed publications. These will provide information regarding the DCO Project’s progress and planned construction works and how to get involved in the DCO Project including employment opportunities.

3. Active Communication – information will be made available in the community through a programme of local engagement events. These events will provide relevant information that is specific to the community.

4. Provision of information on progress of construction works – the relevant local authority, district councils, parish councils, councillors, Members of Parliament and other relevant persons will be kept informed of the progress of construction works.

5. Accessible communications – the methods used for notifying and contacting affected communities will consider the needs of the local population. For example, material will be available in a range of different formats, will be easy to read and understand and where required will be available in a number of different languages.

6. Notification – occupiers of adjacent or affected properties and businesses will be notified in advance, where reasonably practicable, of the nature and...
anticipated duration of planned construction works that may affect them. Information included in the notifications will include, as appropriate:

a) The location of the planned works

b) The activities to be carried out

c) The anticipated duration of the planned works and the periods within which works will be undertaken

d) An outline of the potential effects of the planned works

e) Enquiries and complaints procedure.

3.4 How to engage with the DCO Project

3.4.1 There will be a procedure to manage enquiries and communication from the public including a phone line and email address. The relevant contact number, email and website addresses for Heathrow will be displayed on signs around the construction sites.

3.4.2 Heathrow will prepare a communication procedure which includes commitments to response times.

3.4.3 The procedure and associated system will:

1. Log enquiries and complaints in a register

2. Manage enquiries and feedback appropriately

3. Take appropriate and timely action and respond to enquiries and complaints

4. Outline the process for reviewing enquiries and feedback regularly to assess the adequacy, efficiency and effectiveness of the communication procedure and the measures being taken to respond to any enquiries and feedback

5. Consider feedback on the improvements to the procedure that would make it more accessible and helpful for local people and those with specific requirements.
4. **GENERAL REQUIREMENTS**

4.1 **Working hours**

4.1.1 Working hours will vary by activity and across different construction sites depending on land uses and receptors surrounding construction sites.

4.1.2 Shift start and finish times will be staggered to reduce pressure on local transport services, roads and construction site infrastructure.

4.1.3 The proposed working hours are outlined in the following sections.

**24 hour day, seven days a week working**

4.1.4 24 hour day, seven days a week working, including Bank Holiday working, will be required for activities directly related to ensuring that the new runway can be operational as soon as possible.

4.1.5 Activities where 24 hour day, seven days a week working, including Bank Holiday working, may apply include:

1. Earthworks, airfield construction, establishing construction support sites, work on or close to road infrastructure (including construction of bridges), tunnelling (e.g. M25 tunnel) and railhead construction and any directly associated activities

2. Railhead operation, operation of manufacturing/ production facilities (e.g. concrete batching, asphalt plants), logistics support activities for subsequent shifts, operation of worker car parks, bussing operations, welfare and office facility operations, security, essential plant maintenance, repairs and refuelling, abnormal load delivery, or those requiring a police escort (e.g. delivery of prefabricated bridge beams or heavy plant)

3. Work requiring possession of, or to avoid impact to, major transport infrastructure (road, rail, airport)

4. Certain other specific construction activities for reasons of engineering practicability or to take advantage of daylight hours including, but not limited to, surveys (e.g. for wildlife or engineering purposes), major concrete pours, piling/ diaphragm wall works

5. Utilising periods of low traffic flow for activities such as abnormal loads/ construction plant delivery, works within the highway or footpaths, works affecting operational railways, utility diversions
6. Where it is beneficial to minimise disruption to the daytime operations of third parties.

**Exceptions to 24 hour day, seven days a week working**

4.1.6 In preparation for the DCO application, Heathrow will be considering its construction mitigation proposals (for example, bunds or buffer zones) to take account of 24 hour day, seven days a week working, particularly in relation to matters such as noise and lighting, and further to the ongoing environment assessment of effects to sensitive receptors arising from the DCO Project.

4.1.7 As part of this exercise, Heathrow will consider locations and activities where 24 hour day, seven days a week working may cause unacceptable effects, and will propose reduced working hours/activity restrictions in the CoCP submitted with the DCO.

4.1.8 The approach set out above reflects the development of Heathrow’s proposals for the DCO Project to date. In the CoCP submitted with the DCO application, Heathrow will set out the working hours proposals on a locational basis, based on the principles set out above.

**Short notice working**

4.1.9 There may be isolated occasions where there is the potential for unforeseen/unplanned works outside the working hours agreed pursuant to the process set out in section 11 of the CoCP, which, if not completed, would be unsafe or harmful to the works, staff, the public or the local environment, and that need to be completed or undertaken to secure and make safe construction operations. On these occasions, where required, the relevant local authority will be informed as soon as reasonably practicable of the reasons for the works and their likely duration. Examples of the type of work envisaged include where unexpectedly poor ground conditions, encountered whilst excavating, require immediate stabilisation.

**4.2 Construction site layout and good housekeeping**

4.2.1 To mitigate against the likelihood of either an environmental incident or nuisance occurring during construction works, Heathrow/the main contractors will adopt measures including, as appropriate:

1. Prevention of discharge of site runoff to ditches, watercourses, drains, sewers or soakaways without agreement of the relevant authority

2. Maintenance of run-off and emission containment measures, such as wheel washing facilities
3. Location of storage, machinery, equipment and temporary buildings to reduce environmental effects and potential accidents, where reasonably practicable, beyond flood risk areas

4. Effective approaches to managing site staff arrivals and departures to minimise likelihood of staff congregating outside the site beyond the core working hours

5. Containing and limiting visual intrusion of construction sites, where reasonably practicable

6. Minimising visual intrusion into residential property from site accommodation and facilities, where reasonably practicable

7. Identification and effective management of sensitive areas and buffer zones where no pollutants are to be stored or used

8. Avoidance of the use of loudspeaker or other audio enhancement devices, with the exception of audio warnings for plant movements and other health and safety related uses

9. Security methods, including closed circuit television (CCTV). This will include the positioning and direction of the view of security cameras or blocking software as a mechanism to prevent intrusion to residential properties

10. Where reasonably practicable, enabling continued use of public rights of way (including diversions) for pedestrians, cyclists and equestrians affected by the DCO Project, including reasonable adjustments to maintain or attain inclusive access

11. The provision of sufficient and appropriate welfare facilities for staff

12. Preventative pest and vermin control and prompt treatment of any pest and vermin infestation, including arrangements for disposal of food waste or other attractive material. If infestation occurs, Heathrow/ the main contractors will seek to eliminate the infestation and prevent further occurrence

13. Smoking and vaping areas at site offices/ compounds or construction sites equipped with containers for smoking-related waste. These should not be located at the boundary of working areas or adjacent to any neighbouring land.

4.3 Site lighting

4.3.1 To enable the safety and security of the construction sites, site lighting and signage will be provided by Heathrow and its main contractors. The site lighting will provide the minimum illumination levels required to enable safe and secure construction sites.
4.3.2 Where necessary, and for security, health and safety, lighting to site boundaries, on-site construction routes, construction access routes and public diversion routes will be provided with sufficient illumination levels to provide a safe route for the construction workforce and pedestrians. Measures will be adopted to enhance feelings of safety and security within and around the construction sites, minimise, where reasonably practicable, casting shadows from the site on surrounding footpaths, walkways, roads and amenity areas. Lighting will be combined with smart-technology where reasonably practicable, such as lighting activated with motion sensors to avoid unnecessary usage and act to as a security method.

4.3.3 Task-based lighting will be provided for specific tasks.

4.3.4 An environmental zone plan will allow limitations on obtrusive light to be applied to different environmental zones.

4.3.5 Proposed lighting will comply with the following guidance documents:

1. The Institute of Lighting Professionals’ Guidance notes for the reduction of obtrusive light (GN01:2011)
2. BS EN 12464-2: Lighting of workplaces – Outdoor (2014)
3. BS 5489: Code of practice for the design of road lighting (2013)

4.3.6 Lighting will also be designed, positioned and directed to account for aesthetic and environmental conditions. As such, lighting will seek to avoid intrusion on adjacent buildings, sensitive receptors, ecological receptors and structures used by other protected species, and additional land uses to prevent unnecessary disturbance. The identified aesthetic and environmental measures will be most applicable to sites where night working will be undertaken.

4.3.7 Site lighting will be located and directed so that it will not cause undue interference with railway operations, highway users, airport operations or aircraft safety.

4.4 Worksite security

4.4.1 Measures to prevent unauthorised access to construction sites will include the following, as appropriate:

1. A Project-wide security regime to monitor access and egress of personnel
2. Security guards and patrols during and beyond working hours on site
3. Infrared surveillance, CCTV and alarm systems where required
4. Communication programmes to warn local schools other affected public services of construction-related dangers
5. Consultation with relevant stakeholders such as neighbours and local crime prevention officers on site security matters

6. Immobilisation of plant outside of working hours, removing or securing hazardous materials from site, securing fuel storage containers and preventing unauthorised use of scaffolding to gain access to restricted areas and neighbouring properties.

4.5 **Fencing and screening**

4.5.1 Heathrow/the main contractors will ensure that there are security measures that will include an adequate provision of appropriately well-designed and well-maintained perimeter security. This may take the form of fencing, barriers, ditches/bunds or hoarding of suitable strength and dimensions where necessary. These elements will be designed so that they respond to landscape character, visual amenity and biodiversity in each location, whilst taking account of site security and public safety needs and vulnerabilities.

4.6 **Management of trees**

*Protection of trees*

4.6.1 Heathrow/the main contractors will employ a specialist arboricultural consultant to oversee works relating to the protection of trees.

4.6.2 The main contractors will protect trees in line with the recommendations in BS5837: Trees in relation to design, demolition and construction (BSI, 2012). The arboricultural consultant will identify trees that are to be retained and which require protection, based on those that are identified within BS5837 (2012) and which have stem diameter greater than 75mm measured at 1.5m above ground level.

4.6.3 Measures to protect retained trees will be discussed with the relevant local authority prior to implementation. These will include the following, as appropriate:

1. The provision of appropriate protective fencing around Root Protection Zones (RPZ) to reduce the risks associated with vehicles operating over root systems or beneath canopies

2. Measures to prevent compression of soils within Root Protection Zones by vehicles and plant movement, storage of materials

3. Processes for the selective removal of lower branches to reduce the risk of arboricultural damage by construction plant, machinery and vehicles

4. Maintenance of vegetation buffer strips, where reasonably practicable.
4.6.4 All tree surgery operations conducted throughout the DCO Project will comply with the recommendations in BS 3998; 2010 Tree work Recommendations, where appropriate.

**Tree felling**

4.6.5 Where there are no windthrow or visual issues, tree felling will be reduced to an appropriate level to facilitate the safe construction and operation of the DCO Project. Where appropriate, tree surgery, such as crown reduction and pollarding methods, will be employed foremost to felling to maintain the maximum biodiversity and landscape value and visual amenity. All tree surgery and felling operations must consider the legal protection given to significant species such as roosting bats and breeding birds. The main contractors will be responsible for undertaking tree felling and will give appropriate consideration to the Forestry Commission’s Forest and Water Guidelines, Forestry Commission (2003).

4.6.6 The selected arboricultural consultant should coordinate with Heathrow/ the main contractors to establish the quantities of cut timber and brash that should be retained on site for habitat creation measures, such as the creation of log piles and hibernacula.

**Tree planting**

4.6.7 The main contractors will undertake all works relating to the supply, storage, handling, planting and maintenance of new planting. This will be conducted in accordance with BS 4428: Code of practice for general landscape operations (excluding hard surfaces), BSI (1989) and other guidance such as the UK Forestry Standard and the United Kingdom Woodland Assurance Standard, UKWAS (2008).

4.6.8 When procuring trees and shrubs, consideration will be given to appropriate biosecurity measures to minimise the risk of pests and diseases being introduced to the immediate environment.

**4.7 Unexploded ordnance**

4.7.1 Owing to the potential presence of unexploded ordnance (UXO), an emergency response plan will be prepared in accordance with Unexploded ordnance, A guide for the construction industry CIRIA C681, CIRIA (2009) as part of the main contractors’ EMS and implemented by the main contractors to respond to any discovery of UXO. This will include notifications to the appropriate local authorities and emergency services, in accordance with the approach set out in section 4.13.

4.7.2 Through site induction processes, toolbox talks and appropriate training, the main contractors will raise awareness of hazards from UXO. Relevant training and
awareness would thereby support the development of appropriate actions in the event of discovery of anticipated UXO.

4.7.3 In the identified areas with a moderate UXO hazard level, and above, clearance certification for borehole or pile locations will be carried out. Where deep excavations are required, and practical feasibility allows, investigation by non-intrusive geophysical methods will be undertaken. In this case, excavations will be supervised by an explosive ordnance clearance (EOC) operative.

4.7.4 In the identified areas with a low UXO hazard level, the main contractors will follow recommendations detailed in CIRIA C681 (2009) on risk mitigation as appropriate for the proposed construction-related activities.

4.8 Management of site earthworks

4.8.1 The site earthworks will require the management of topsoil and natural subsoils as well as waste materials associated with existing landfills.

4.8.2 The earthworks have been developed with the objective of making the site self-sustaining where reasonably practicable, including:

1. Sourcing fill required for development of the earthworks on-site, limiting the requirement for the import of materials to site

2. Minimising waste volumes by recovering suitable fill materials from excavated wastes where reasonably practicable in available timescales

3. Within the constraints of the construction sequence, accommodating unsuitable waste materials within the site boundaries in new landfills or extension of existing landfills where appropriate, limiting the requirement for off-site disposal of waste materials.

4.8.3 The main contractors will handle excavated acceptable material in an appropriate manner to ensure it remains of sufficient quality to be used as engineered fill for infilling works and structural embankments or environmental mitigation earthworks to reduce the environmental effects of the DCO Project. All earthworks operations will be subject to the measures described in section 5.4.

4.8.4 The earthworks will be phased to limit the volume of soils requiring temporary stockpiling. Where stockpiles are required, these will be carefully designed to reduce visual intrusion and spreading of dust. The location of stockpiles will be dictated predominantly by the timing of land availability, construction efficiency and to maximise opportunities for re-use. There will be no temporary stockpiling within areas of active flood risk. Contaminated materials that require stockpiling will be held in contained areas with impermeable bases and bunding to prevent infiltration and run-off of contaminated waters.
4.8.5 The main contractors will remove any waste material requiring disposal to waste facilities as soon as reasonably practicable to avoid the build-up and need for temporary stockpiling of waste materials on site.

4.9 **Worker Code of Conduct**

4.9.1 Contractors will require all workers to sign up to a Worker Code of Conduct, which is cascaded through the workforce.

4.9.2 The Code of Conduct will cover general behaviour expected of those in involved in construction activities, including their interaction with local communities, in line with Heathrow’s values.

4.9.3 Particular provisions will be included relating to construction workers using temporary workforce accommodation, car parking, use of local community and recreation facilities, anti-social behaviour and communicable diseases.

4.10 **Temporary workforce accommodation**

4.10.1 The majority of the construction workforce is expected to be drawn from the existing construction labour market residing within a commutable distance from the works and so would not require accommodation to be provided.

4.10.2 In order to prevent the use of unlicensed caravan sites, dedicated areas of hard standing for caravans will be located within the boundary of the construction support sites.

4.10.3 In addition to the existing Heathrow network of temporary accommodation options, and where reasonably practicable, the DCO Project may also utilise accommodation that comes into the ownership of Heathrow in the areas around the site for accommodating construction workers.

4.11 **Welfare and occupational healthcare**

4.11.1 Welfare and catering facilities, offices, parking for fleet vehicles, and storage depots are planned to be located within the boundary of the construction support site.

4.11.2 To avoid negative impacts to occupational health and wellbeing, Heathrow will ensure that there is provision for access to occupational healthcare either on-site or in appropriate locations. The occupational healthcare facilities will include occupational health nurses and doctors where required. The service will include health and wellbeing campaigns, including, but not limited to, the promotion of healthy living and wellbeing, and mitigation advice against workplace accidents and injuries.
4.11.3 The occupational healthcare will be available to all construction workers during working hours. Outside of working hours, a contact number will be available for construction workers (including those using temporary accommodation) to direct them to the appropriate health/social care provider. The level of use of health and social care services by construction workers will be monitored by Heathrow. This mechanism will enable visibility of the demand that the DCO Project places on local healthcare. Additional requirements for occupational health care and first aid provision will be determined based on a systematic identification of the occupational health and safety risks arising as a result of the construction activities. Appropriate health surveillance will be provided.

4.11.4 Construction workers will receive training on the health consequences of risk-taking behaviour and controlling communicable diseases.

4.12 Clearance of sites on completion

4.12.1 The main contractors will be required to ensure that the construction sites are thoroughly cleared of all construction related machinery, facilities, structures, materials and waste upon completion of their activities.

4.13 Emergency preparedness and major accidents and disasters

Emergency preparedness

4.13.1 Heathrow/ the main contractors will develop emergency arrangements for each construction and work site. Where reasonably practicable, the arrangements will be standardised across the various construction and work sites and will take account of the anticipated hazards relevant to the site-specific layout.

4.13.2 The emergency arrangements will be developed in consultation with Heathrow operational airport, the emergency services, local authorities, local resilience fora, and other third parties as relevant. Consultation will also take account of the works on existing airports and will thereby be produced in accordance with established industry best practice.

4.13.3 The emergency arrangements will contain emergency phone numbers and the method for notifying statutory authorities. A suitable method for contacting the appropriate main contractors’ representatives in a timely manner will also be included within the arrangements. See also section 2.10.

Emergency access

4.13.4 Heathrow/ the main contractors will ensure that there is sufficient provision for access and egress to the site in event of an emergency. Emergency access and egress routes will be designed and developed taking into account the types of
emergency that could occur and the extent and severity of their effects. Heathrow/the main contractors will engage with the relevant fire and rescue service(s) and other emergency services to identify their requirements so as to ensure that emergency vehicles can access/ egress the site, if required in an emergency, without delay. The access points may alter over the duration of the construction works and will therefore be reviewed and updated as required.

**Major accidents and disasters**

4.13.5 Heathrow/the main contractors will identify all credible major accidents and disasters that could arise during construction and as far as reasonably practicable eliminate/ minimise the hazards, building on any measures identified in the ES. Where this is not reasonably practicable, Heathrow/the main contractors will implement measures to reduce, control and mitigate the effects of the major accident/ disaster on people and the environment.

4.13.6 The main contractors’ EMS will incorporate specific consideration of arrangements for the identification, prevention, control and limitation of major accidents and disasters during construction, in a proportionate manner. This will include processes to ensure that any significant changes are assessed and documents (including method statements, risk assessments and emergency plans) and procedures are reviewed and updated as required. The main contractors will monitor the effectiveness of these arrangements to prevent, control and limit the risk of major accident, using means tailored to the major accidents that could arise and their mitigation.

4.13.7 Heathrow/the main contractors will put in place emergency arrangements with the objective of containing and controlling major accidents/ disasters and protecting people and the environment. The emergency arrangements will include emergency procedures, all information (e.g. drawings) and guidance (e.g. job aids) required to ensure execution of the arrangements effectively. The emergency arrangements will include:

1. Strategy for responding to major accidents/ disasters, including proportionate consideration of low probability and high consequence events, and actions that need to be taken on-site and off-site. These actions will include the following, as appropriate:

   a) procedures for mobilising internal and external resources

   b) accounting for people on site

   c) enacting emergency actions

   d) lines of communication (with Heathrow, the off-site authorities and other third parties)
e) maintaining an incident log
f) the preservation of the scene.

2. Roles and responsibilities of those required to effect the response and ensuring that they are competent for their role in an emergency by appointing appropriately qualified and experienced personnel to those roles, and provision of appropriate training

3. Identification and provision of facilities required to enable effective response, including alternatives where the effects of a major accident/disaster could render them in accessible or unusable. Note these need not be dedicated to emergency response but can utilise existing facilities including at third parties by agreement e.g. use of an existing office facility as control centre. Facilities will be of sufficient reliability, to ensure their effectiveness in an emergency.

4. Identification and provision of suitable equipment and materials required to respond to an emergency, including a system of inspection and maintenance to ensure that they can be deployed effectively when required.

5. Consideration of potential adverse effects resulting from emergency actions

6. Procedures for clean-up and restoration following a major accident/disaster.

4.13.8 The emergency arrangements will be subject to suitable drills and practice at appropriate intervals, and/or whenever a significant change to the arrangements is made.

4.13.9 The emergency arrangements will be kept under review and updated in the event of significant change or in the event that the drill/practice reveals flaws in the arrangements.

4.14 Pollution prevention and incident control

4.14.1 Appropriate measures to control the risk of pollution from construction-related activities and severe weather events will be developed and implemented by Heathrow/the main contractors. A variety of measures will be introduced to mitigate against risk of pollution, including a Pollution Incident Control Plan. This plan will recognise the risk of pollution from construction works and provide proactive management practices to control any pollution incidents that may occur. Such pollution incidents must also be remediated and where necessary reported to relevant parties in accordance with legislative requirements. The plan will also define the criteria for the implementation of relevant measures. The plan will outline the measures to be implemented to address any of the adverse findings from the monitoring procedures during and following completion of construction works.
4.14.2 The Pollution Incident Control Plan will include consideration of firewater run-off and any other discharges arising from emergency actions.

4.14.3 The main contractors will adopt measures to manage the risk of pollution incidents, aligned with Heathrow’s existing processes where appropriate, to ensure coordination and an effective response. Measures will include:

1. A statement of appropriate information which will remain on site and be provided immediately in the event of any incident such as a spillage or release of a potentially hazardous material

2. Maintenance of spill kits on site and use of drip trays for static plant and during refuelling of plant

3. Provision of impermeable surfacing and bunding in areas used for the storage of pollutant materials such as fuels, chemicals and oils in order to avoid significant releases.

4. Bunds capable of retaining 110% of the total volume of materials stored within them, or 25% of the total tanks, if this is greater, in line with the Oil Storage Regulations

5. Consideration of the risks to pollutant materials storage sites from flooding and, where necessary, implementation of specific measures such as raised construction compounds

6. The provision of maps depicting the locations, address and contact details, of local emergency service facilities, such as police stations, medical facilities, fire authorities and other appropriate authorities

7. Up-to-date site drainage and flood risk management plans, which will remain on site

8. The provision of contact details for the relevant authorities, such as the Environment Agency, and those responsible on construction sites and within the main contractors’ organisation for pollution incident response

9. The provision of contact details for those with a competent spill response company which can be contacted at short notice for an immediate response to incidences

10. The provision of pollution shut-off valves in compounds with positive drainage systems

11. Notification of relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers of pollution incidents where required
12. Notification of relevant emergency services, authorities and personnel on the construction site.

4.14.4 Further details of pollution control measures are outlined in section 9 of this draft CoCP.

4.14.5 Heathrow/ the main contractors will consult with appropriate organisations, including statutory bodies and other relevant parties, in the preparation of the local pollution incident response measures.

### 4.15 Fire prevention and control

4.15.1 Prior to mobilisation and before finalising arrangements, Heathrow/ the main contractors will ensure that fire risk is assessed by a suitably competent and suitably qualified and experienced fire risk assessor.

4.15.2 The fire risk assessment will be kept under review including at appropriate milestones, in event of a significant change to arrangements (e.g. numbers and locations of people, equipment and materials present etc.), or in light of new information, or in event of a relevant near miss.

4.15.3 Heathrow/ the main contractors will ensure that relevant plans account for the fire safety of all construction sites, associated welfare facilities and areas of hard standing for caravans.

### 4.16 Severe weather events

4.16.1 Heathrow/ the main contractors will pay due consideration to the impacts of severe weather events and related conditions during construction. The contractors will use a short to medium range weather forecasting service from the Met Office or other meteorological data and weather forecast provider to inform short to medium term programme management, environmental control and impact mitigation measures. In respect of areas of flood risk, Heathrow/ the main contractors will register with the Environment Agency’s flood warning service.

4.16.2 The main contractors will ensure measures within the CoCP are implemented and will, as appropriate, take additional measures to ensure the resilience of the proposed mitigation of impacts during severe weather events. A risk assessment of severe weather impacts on the construction process will be produced by Heathrow/ the main contractors to inform mitigations. Any receptors and/ or construction-related operations and activities potentially sensitive to severe weather events will be considered in the assessment.

4.16.3 The main contractors’ EMS should consider measures deemed necessary and appropriate to manage severe weather events and should as a minimum cover
training of personnel and prevention and monitoring arrangements. As appropriate, construction method statements should also consider severe weather events where risks have been identified.
5. **AIR QUALITY AND ODOUR**

5.1 **General provisions**

5.1.1 The main contractors will manage dust, air pollution, plant-related emissions and odour during the construction works of the DCO Project in accordance with best practicable means (BPM). This will include the following, as appropriate:

1. Reference to the general site management and good housekeeping procedures (relevant to limiting dust, odour and air pollution, as described in section 4)
2. Controls and measures to control or mitigate the impact of potential adverse effects caused by the construction works
3. Dust, odour and air pollution monitoring measures to be employed during construction of the DCO Project
4. Construction Electricity Supply (CES) from grid electricity, where reasonably practicable, to reduce use of mobile generation plant
5. Reference to publications on ‘best practice’ at the time of implementation. Current best practice includes:

   
   
   c) The Control of Dust and Emissions during Construction and Demolition: GLA Supplementary Planning Guidance, Greater London Authority (2014)
   
   
   

5.1.2 As part of the main contractors’ EMS, management plans will be used to document the approach to managing construction related dust and odour, focusing in particular on the risks arising from the excavation of the historic and authorised landfill sites beneath the construction area, the excavation of new borrow pits to extract aggregate minerals and the infilling of new landfills with waste materials generated from the earthworks (including landfill material).
5.1.3 Any general protocols documented in the management plans will be assessed and adapted for each individual site using a site-specific strategy and risk assessment.

**Site management**

5.1.4 Heathrow/the main contractors will plan the site layout to ensure that where reasonably practicable, machinery, plant and dust-causing activities are situated away from sensitive receptors.

5.1.5 Heathrow/the main contractors will also employ relevant methods, such as the erection of hoardings or additional barriers along the site perimeter. These will be implemented where appropriate to control the spread of dust to any sensitive buildings or other environmental receptors.

5.2 **Construction plant and vehicle emissions**

5.2.1 The main contractors will implement measures to reduce the emissions from construction plant and vehicles. Measures will include the following, as appropriate:

1. The main contractors will operate all construction plant in line with the manufacturer’s written guidelines and recommendations
2. The main contractors will inspect and maintain all construction plant in accordance with the manufacturer’s written procedures as a minimum, but also taking into account site-specific conditions and usage
3. All vehicles, plant, and other machinery will be switched off when not operational
4. Consideration will be given to the use of low emission plant and machinery, including the use of electric vehicles, plant and equipment where reasonably practicable
5. Site access points will be designed and developed to manage the likelihood of queuing traffic
6. Construction plant and vehicle exhausts should be positioned away from the ground and should be positioned at a height that facilitates the appropriate dispersal of exhausts emissions, reducing impacts on environmental and human health
7. The movement of construction traffic around construction sites will be planned to ensure the effective and efficient operation of the site and construction of the DCO Project and avoidance of unnecessary vehicle movements
8. Construction plant will be situated away from the site boundaries which are close to sensitive receptors (where reasonably practicable)

9. Cutting and grinding operations will be carried out using techniques and equipment which incorporate adequate dust suppression measures where reasonably practicable

10. Mains electricity or battery powered equipment will be used to reduce the use of diesel or petrol-operated generators or equipment where reasonably practicable

11. Vehicle, plant, and equipment maintenance records will remain on-site and these will be readily available upon request by Heathrow

12. All Non-Road Mobile Machinery (NRMM) will use Ultra-Low Sulphur Diesel (ULSD) and will be required to meet Stage IIIB of EU Directive 97/68/EC (giving regard to the GLA exemptions and retrofit policy)

13. In order to mitigate impacts on local air quality, Heathrow will require all construction vehicles during construction, to be powered by set minimum vehicle emission standard engines. Heavy Goods Vehicles (HGVs) will be required to comply with Euro VI emission standards. Petrol Light Duty Vehicles (LDVs) will be required to comply with Euro 4 emission standards and Diesel LDVs will be required to comply with Euro 6 emission standards.

5.3 Transportation, storage and handling of materials

5.3.1 Heathrow/ the main contractors will implement measures to reduce pollution through the effective transportation and storage of materials. Measures include the following, as appropriate:

1. Construction vehicles transporting materials within or outside construction sites will not be overloaded beyond outlined capacity

2. Construction vehicles delivering and/ or removing materials or loads from construction sites via the highway will be required to be covered by a fixed cover or sheeting (which must be appropriately effective at preventing the spillage of materials and dust) or to use alternative dust suppression measures (e.g. sprinklers, dry fog systems)

3. Where reasonably practicable, stockpiles and mounds will be kept away from sensitive receptors, water sources and surface drains. Measures such as re-vegetated surfaces, hessian, mulches or topsoil will be considered to cover the exposed surface to mitigate the potential for windborne dust and particulates arising from the stockpiles.
4. Stockpiles and mounds will be positioned at a suitable angle and will avoid sharp changes in shape to prevent material slippage

5. Appropriate dust suppression measures (e.g. covering, fencing, watering, seeding) will be employed where material stockpiles have the potential to generate dust through wind whipping

6. Weather conditions (e.g. wind, rain, dry periods, low temperatures) will be considered when planning the handling and transportation of materials

7. Where stockpiles pose a heightened threat of dust or air pollution, surfaces will be stabilised or covered with appropriate sheeting

8. Enclosed or shield areas will be provided when mixing significant quantities of concrete or bentonite slurries

9. Sufficient storage space will be provided for fine, dry material within buildings or enclosures

10. The quantity of handling operations for materials and resources will be kept to a minimum practicable level, including the optimisation of materials movements to minimise double handling of materials where reasonably practicable

11. Handling areas for materials will be maintained to constrain dust emissions. This includes appropriate measures such as carrying out watering to reduce or prevent release of dust from site boundaries

12. The mixing of grout or cement-based materials will be carried out using a process suitable for the prevention of dust emissions.

5.4 **Excavations and earthworks activities**

5.4.1 Dust pollution from excavations and earthworks activities will be limited through the use of the following measures, as appropriate:

1. Topsoil will be stripped as close as reasonably practicable to the period of excavation or other earthworks activities to avoid risks associated with runoff or dust generation

2. Drop heights from excavators to vehicles involved in the transport of excavated material will be kept to the reasonably practicable minimum

3. Materials will be compacted after deposition, with the exception of topsoil and subsoil on land to be restored for agriculture, forestry, landscaping and wildlife habitats
4. Soil spreading, seeding, planting or sealing of completed earthworks will be undertaken as soon as reasonably practicable following completion of the earthworks.

5.5 **On-site construction routes**

5.5.1 Heathrow/ the main contractors will provide on-site construction traffic routes for construction vehicles to use and access construction work areas safely. The construction and maintenance of on-site construction traffic routes will include, but are not limited to, the following measures, as appropriate:

1. Planning routes so that they are located as far as reasonably practicable from receptors

2. The maintenance of on-site construction traffic routes to limit dust emissions as far as reasonably achievable, considering the intended level of traffic movements by the main contractors

3. The regular and timely inspection of on-site construction traffic routes, essential for monitoring the need for repair and recovery including maintenance of a smooth-running surface and timely repair of potholes

4. The provision of areas of hard surfacing and hard standing at the approach to site access and egress points for use by waiting construction vehicles

5. The reuse of on-site construction traffic route materials where the locations of on-site construction traffic routes change throughout the construction process

6. The enforcement of speed limits on on-site construction traffic routes for safety reasons and to suppress dust emissions

7. Methods to clean and suppress dust on on-site construction traffic routes and in designated vehicle waiting areas, such as watering. The frequency of cleaning will be suitable for purposes of supressing dust emissions from site boundaries.

5.6 **Construction Access Routes**

5.6.1 In order to reduce the effects of construction traffic utilising the public highway, Construction Traffic Management Plans (CTMPs) will be prepared, as described in section 13.

5.6.2 Specific air quality measures included in the CTMPs will include where reasonably practicable:

1. Priority given to transport of materials by rail

2. Selection of designated routes to consider areas of poor air quality
3. Selection of designated routes that minimise the distance travelled on public roads
4. Consolidation of freight to reduce the number of movements
5. Provision of HGV parking areas to reduce queuing or waiting on the public highway
6. Timing of deliveries and movements to manage potential congestion impacts
7. Monitoring and enforcement to ensure that contractors use designated routes only.

5.7 Demolition activities

5.7.1 Demolition activities may cause dust pollution and this will be controlled through the adoption of appropriate mitigation measures. Mitigation measures include the following as appropriate:

1. Effectively covering and securing skips
2. Stripping building interiors prior to demolition
3. Enclosing or shielding rubble chutes and/or using water to suppress dust emissions from equipment
4. Spraying buildings and/or structures to be demolished with water or screening as necessary, prior to and during demolition
5. Programming activities that are close to schools or routes to school to avoid times where children are likely to be nearby
6. Prohibiting the burning of material on site
7. Avoiding the prolonged storage of waste materials on site, and compliance with this draft CoCP in relation to material storage
8. The removal of waste from construction sites will comply with the requirements outlined within this draft CoCP in relation to the transportation of materials.

5.8 Conveying, processing, crushing, cutting and grinding activities

5.8.1 Dust emissions associated with processing and crushing rock (for use as aggregate or other materials within the works), and for any conveying of material, processing, crushing, cutting and grinding, and liming will be limited. This will be achieved through the use of the following measures, as appropriate (to be determined in relation to distance to receptors):
1. Drop heights from conveyors, excavators, and crushing plant to stockpiles will be kept to the reasonably practicable minimum

2. The enclosure of conveyer transfer points, and where appropriate damping of conveyor loads

3. Enclosed conveyors where crossing roads, other public areas and property not owned by the Heathrow

4. Suitable temporary enclosures for cutting and grinding activities

5. The application of water sprays to damp down in dry weather.

5.9  

**Odour**

5.9.1  
As excavated materials could contain volatiles that may give rise to odour impacts, Heathrow/ the main contractors will implement the following measures as appropriate:

1. Landfill waste will be excavated and placed directly into new landfill sites

2. Early identification of materials that could generate odour

3. Segregation of potentially odour forming materials into separate stockpiles

4. Taking measures to control the emission of any odours (e.g. covering up/tenting any potentially odorous materials uncovered where appropriate)

5. Locating stockpiles of potentially odour forming materials as far away from residential receptors as reasonably practicable

6. Careful programming to limit the duration of work with potential to generate odour nuisance

7. Removing potentially odour forming material sources in a timely fashion to limit the formation of odours

8. Where odour forming materials are encountered and cannot be removed or avoided, spraying with an approved oxidising agent will be undertaken if appropriate to control the potential for release of odour

9. Use of an odour guard or masking agents will also be considered in situations where the risk of odour release cannot be eliminated or controlled.

5.10  

**Monitoring**

5.10.1  
Heathrow/ the main contractors will implement inspection and monitoring processes to assess the effectiveness of mitigation measures to reduce odour, dust and air pollutant emissions.
**Dust and particulate monitoring**

5.10.2 For each construction site, or cluster of construction sites, a dust risk assessment of construction activities will be undertaken. The risk assessment will adopt best practice methodology, drawing on IAQM (2014) and the Mayor’s Supplementary Planning Guidance to ascertain the risk of each site in order to ensure that the appropriate monitoring is employed.

5.10.3 Construction sites will be categorised as either low, medium or high risk, in accordance with IAQM guidance, within the dust risk assessment. The categorisation of each construction site will dictate the level of monitoring. Visual inspections and maintenance of logs of activities and complaints will suffice for the management of low risk sites, for instance; whereas at medium and high-risk sites, the monitoring of dust and particulate matter will be undertaken through the use of a combination of deposition monitors and continuous automatic monitoring instruments in adherence with current best practice guidance. Monitoring will commence in advance of construction in order to establish a baseline against which changes can be considered.

5.10.4 The monitoring process will be developed in accordance with the Mayor of London’s Supplementary Planning Guidance on the Control of Dust and Emissions from Construction and Demolition (2014) and in consultation with all relevant local authorities.

5.10.5 At all sites, as a minimum, the following measures will be carried out:

1. Site inspections covering the establishment of operation of the construction site
2. Visual assessment of activities that may be generating particulate matter and air pollution in areas adjacent to the construction-site
3. Inspection of the maintenance schedules for construction vehicles, plant and machinery
4. Inspection processes relating to the level of traffic movements, use and condition of on-site construction traffic routes.

5.10.6 For the continuous automatic monitoring of particulate matter (PM$_{10}$), instruments will be used that digitally send an alarm to the relevant person. Trigger levels will be set, above which investigation will be required. For automatic PM$_{10}$ measurement, this trigger level will be 250µg/m$^3$ in accordance with the Mayor’s Supplementary Planning Guidance. The alarm will be sent when the trigger level is breached.

5.10.7 In the event that the trigger level is breached, the following on-site process will be adhered to:
1. The nominated representative will investigate construction site activities, as soon as reasonably achievable to determine if any visible dust is emanating from the site or if any activities are occurring on site that are not in line with dust control measures.

2. Identify the source and put in place remedial actions to address the pollution incident. Any identified causes of threshold exceedance will be mitigated against and relevant actions will be recorded.

3. In the event that the source of the incident cannot be identified as originating from construction site operations, the outcome of the investigation and the reasons for this conclusion will be recorded and reported.

**Monitoring of pollutants around construction traffic routes**

5.10.8 When construction traffic routes on public highways have been determined, the need for additional air quality monitoring and any appropriate remedial actions on these routes will be identified and discussed with the local authorities. The starting point for this will be the location of the existing monitoring sites operated by the local authority or Heathrow, sensitive receptors in the area, baseline air quality and the likely construction related impacts of the DCO Project. The need for any additional monitoring sites will also be considered and discussed with local authorities.

**Odour monitoring**

5.10.9 Where any potentially odorous material is being uncovered, or extracted, emissions of odour will be managed in accordance with the Guidance on the assessment of odour for planning, Institute of Air Quality Management (2018). The management regime will include suitable monitoring as determined using this guidance.

**Reporting**

5.10.10 Heathrow/ the main contractors will prepare quarterly reports of dust and air quality monitoring data. The quarterly reports will include a summary of the construction activities occurring, any complaints received, the data recorded over the monitoring period broken down into appropriate time periods, any periods in exceedance of the agreed trigger levels and the results of any investigations and identified source. Where the works have been found to be the source of an exceedance, the reports will set out any action taken to resolve the issue and to prevent a re-occurrence.
6. **BIODIVERSITY**

6.1 **General provisions**

6.1.1 Appropriate measures will be adopted to protect the biodiversity of the area in which the DCO Project will be constructed, with special attention to specified areas of ecological value, as identified within the ES.

6.1.2 Heathrow/ the main contractors will manage impacts from construction on ecological resources, including the following:

1. Designated sites including European sites designated for nature conservation, Sites of Special Scientific Interest (SSSIs), Local Nature Reserves and local wildlife sites (i.e. non-statutory sites designated for nature conservation)

2. Legally protected and conservation notable species

3. Other habitats and features of ecological importance (including ancient woodlands, linear/ecological corridors and surface and groundwater bodies).

6.1.3 Within the DCO Project boundary, Heathrow/ the main contractors will aim to minimise habitat loss and where reasonably practicable protect and enhance biodiversity.

6.1.4 Where habitat is removed, displaced or destroyed, it will be replaced pursuant to the requirements of the DCO and licensing.

6.1.5 The main contractors will need to account for the requirements in this draft CoCP relating to dust and air quality, noise and vibration, lighting, and protection of the water environment, respectively in order to protect ecologically important habitats and species both within and adjacent to construction sites.

6.1.6 Heathrow/ the main contractors will be required to undertake pre-construction surveys to determine the status and distribution of protected species and locally important species, including their current status and distribution. Heathrow/ the main contractors will ensure that exclusion zones are maintained in line with good practice and the context of the construction works to be undertaken.

6.2 **Ecological management measures**

6.2.1 Management measures for potential ecological impacts are addressed in other sections of this document and are not repeated here. These include measures relating to:

1. Management of trees (see section 4)
2. Protection of retained habitat (see section 10)
3. Control of dust (see section 5)
4. Control of water quality and flow (see section 14)
5. Control of noise and vibration (see section 11)
6. Lighting (see section 4)
7. Measures to manage the effects of major accidents (see section 4)

6.2.2 In addition to the measures described in other sections, management of construction activities will include, where reasonably practicable:

1. Provision of an ecological clerk of works during the construction works
2. Relocation or translocation of species, soils and plant material
3. Effective ecological management/ supervision of the river diversion works, including effects on habitats, fish and all aquatic fauna as appropriate
4. Reinstatement of any areas of temporary habitat loss and any arrangements necessary for displaced species to maintain long-term conservation status of those species concerned
5. Restoration and replacement planting (e.g. trees, hedgerows, scrub and grassland) to reinstate any retained habitats adversely affected during construction
6. Use of by-products of construction to enhance mitigation provision (e.g. use of felled timber to provide dead wood habitat)
7. Measures to eliminate, reduce and control risk of major accidents.

6.2.3 Heathrow and the main contractors will implement measures to ensure biodiversity is protected. This will include, where reasonably practicable, the following:

1. The careful siting of compounds, materials storage areas, and on-site construction traffic routes to avoid conflict with semi-natural habitats and protected species, including as a result of accident
2. Avoiding using lighting, generators, and other noisy equipment after working hours. This is particularly relevant to areas of sensitive habitat, such as woodland and watercourses, and should also be undertaken in accordance with Guidance Note, 8 Bats and Artificial Lighting, Institute of Lighting Professionals and Bat Conservation Trust (2018) and the Interim Advice Note 116/08 Nature Conservation Advice In Relation To Bats, Highways Agency (2008)
3. Careful and regular management of soil storage areas to maximise their future value in landscape planting and to discourage badgers and other burrowing animals from colonising them in the interim stages

4. Reducing the impact of habitat severance by maintaining habitat features intact as long as possible

5. Ensuring that habitat connectivity is maintained where reasonably practicable.

6.3 Conservation of legally protected and notable species

6.3.1 Heathrow/the main contractors will obtain and comply with the requirements of any protected species licences and accompanying method statements that are required for construction of the DCO Project. Licences and accompanying method statements may include the following, as appropriate:

1. European protected species derogation licences – in respect of any works likely to breach the Conservation of Habitats and Species Regulations (2017), as amended. (Species potentially requiring a derogation licence include the great crested newt, otter and bats)

2. Badger development licences – in respect of any works likely to result in the disturbance, damage or destruction of a badger sett

3. Breeding bird method statement – a document that details how breeding birds and their nests will be safeguarded from damage or disturbance during construction. A copy of this document will be submitted to Natural England for their comment and incorporated into a breeding bird species management plan

4. Reptile method statement – a document that details how the four-common species of reptile (as applicable) will be safeguarded from killing and injury during construction. A copy of this document will be submitted to Natural England for their comment and incorporated into the reptile’s species management plan.

6.3.2 The programme for the construction works will account for the best practice requirements relating to seasonal constraints for the protection of all protected and notable species and habitats, such as breeding birds, bat roosts, habitats used by reptiles and great crested newt breeding ponds.

6.3.3 Heathrow/the main contractor will, where reasonably practicable, ensure that vegetation is removed during the period when birds are not typically breeding (September through to mid-March). Where this is not reasonably practicable, vegetation removal will be undertaken under supervision and halted if active nests are present. Exceptions occur such as the undertaking of a thorough inspection of the vegetation for active bird’s nests prior to its clearance by a competent
ecologist. Once the inspection is completed, the ecologist will need to provide confirmation that no birds, their eggs, or their nests will be harmed or disturbed whilst breeding and/or that there are suitable measures put in place to protect nesting birds on the site.

6.3.4 Consideration should also be given to impacts on nesting birds in close proximity to the site, such as adjacent to the site. Heathrow/ the main contractors will manage impacts on all statutory designated sites of ecological interest (including SSSIs), non-statutory sites of ecological interest (e.g. Sites of Importance for Nature Conservation) and other areas of notable habitat (including ancient woodland).

6.3.5 The ecological clerk of works will be responsible for dealing with all instances relating to ecological assets on and around site, including the discovery or suspicion that protected or other species may be affected.

6.3.6 Heathrow/ the main contractors will obtain and/or comply with the requirements of any wildlife licences, including all protected species licences necessary for construction of the DCO Project.

6.4 Control of invasive and non-native species

6.4.1 Appropriate measures for the treatment/ control of invasive, non-native species (both plants and animals) and injurious weeds will be implemented.

6.4.2 Appropriate construction, handling, treatment and disposal procedures will be implemented in relation to these and any other species listed in Schedule 9, Part I or Part II of Section 62 the Wildlife and Countryside Act (1981), as amended, or the Weeds Act (1959) to prevent the spread of such species. Advice in the Managing invasive non-native plants, Environment Agency (2010), will also be referenced in determining the strategy.

6.4.3 Project-wide measures will be implemented to promote bio-security and minimise the risk that invasive non-native species and diseases are spread as a consequence of the DCO Project.

6.4.4 A programme of works will be implemented that will reflect the fact that it can take a number of years to eradicate invasive species such as Japanese knotweed.

6.4.5 Removal of invasive species will take account of ecological best practice guidance and appropriate measures will be taken to identify and protect other features of environmental importance (e.g. heritage assets).
6.5 Monitoring

6.5.1 In preparing the DCO application, Heathrow/ the main contractors will consult with relevant authorities, such as Natural England, local authorities and the London Wildlife Trust amongst others in relation to the monitoring and survey works to be undertaken prior to construction. The monitoring and survey works will update the baseline ecological and arboricultural conditions as identified in the ES. The survey works will be planned to provide sufficient baseline data to inform the development of appropriate construction programmes, methods and mitigation measures.

6.5.2 Heathrow/ the main contractors will undertake suitable monitoring throughout the construction works.
7. **CARBON AND GREENHOUSE GASES**

7.1 **General provisions**

7.1.1 Construction related greenhouse gas emissions (hereinafter referred to as ‘carbon’) will be managed through a series of mitigation measures which have been grouped into three distinct activities: construction material selection, site construction works, and site logistics and transport.

**Construction material selection**

7.1.2 Construction material selection considers the cradle-to-gate carbon (i.e. manufacturing emissions) of construction material. Related mitigation measures may include, where reasonably practicable, the following:

1. Consideration of carbon impacts when selecting construction materials and products including the use of low carbon alternatives and maintenance and replacement frequency or the use of low carbon alternatives

2. Use of secondary or recycled construction materials, where use of such materials results in carbon reductions (see section 12 for more detail on resource efficiency considerations)

3. Appropriate management and reuse of excavated material throughout construction works (see section 12.4 for more detail on the management of construction waste and excavated materials)

4. Sourcing of construction materials and products locally to where they are used

**Site construction works**

7.1.3 Heathrow/ the main contractors will aim to reduce carbon emissions arising on-site during construction through careful selection of plant and construction activity approaches. Related mitigation measures may include, where reasonably practicable, the following:

1. Use of carbon efficient plant and the application of management measures to limit carbon emissions (see also section 12)

2. Construction Electricity Supply (CES) from grid electricity to reduce use of mobile generation (see sections 5.1 and 5.3)

3. Provision of suitable levels of thermal insulation to the appropriate areas of site accommodation to reduce energy demand for heating.
Site logistics and transport

7.1.4 Site logistics and transport focuses on the efficient movement of materials, workers, and waste to and from construction sites. Related mitigation measures may include, where reasonably practicable, the following:

1. Enhancement of the efficiency of materials transport through the use of a Construction Traffic Management Plan (see section 13.3)
2. Use of Logistics Hubs
3. Use of rail freight to deliver materials to and from site
4. Consideration of alternative transport modes such as electric vehicles and water.

7.2 Monitoring

7.2.1 In order to track performance, a carbon emissions inventory will be developed and regularly updated, where reasonably practicable.
8. **HISTORIC ENVIRONMENT**

8.1 **General provisions**

8.1.1 All construction works will be managed in accordance with industry best practice and guidance adopting, as appropriate, the standards and guidance produced by Historic England, the Chartered Institute for Archaeologists and the Institute of Historic Building Conservation. This will include but is not limited to measures in relation to designated heritage assets and non-designated heritage assets.

8.1.2 A number of broad management measures for the historic environment will be undertaken. These will include the following, as appropriate:

1. Provision to main contractors of locations and descriptions of all known historic environment assets within and adjacent to construction sites where these have been identified in the ES or subsequently

2. Preparation of a schedule of historic environment investigation, surveys and protective arrangements to be implemented prior to and during construction works.

8.1.3 Interventions, recording, analysis, dissemination and archiving will be carried out by appropriately qualified and demonstrably experienced organisations.

8.2 **Historic environment research framework**

8.2.1 Heathrow’s existing historic environment research framework will inform the coordinated and collaborative delivery programme for archaeological investigation and heritage management during the DCO Project.

8.3 **Written Scheme of Investigation**

8.3.1 Heathrow’s overarching Written Scheme of Investigation (WSI) will cover the entirety of the DCO Project, including all historic environment investigative works, from evaluation to excavation, historic building/landscape recording and through analysis, publication and museum archiving. The overarching WSI will outline the locations, principles, standards, approaches and techniques to be utilised and outline the engagement to be undertaken with local authorities, Historic England and the Greater London Archaeology Advisory Service (GLAAS) on the DCO Project for historic environment works.

8.3.2 Further detail, describing location specific integrated historic environment investigation and construction working processes and site arrangements, will be
8.4 Historic Environment Management Strategy

8.4.1 A draft Historic Environment Management Strategy will be developed and submitted at DCO application. The Strategy will cover the entirety of the DCO Project, including all aspects of construction processes that interface with historic environment receptors described in the ES. The Historic Environment Management Strategy will describe the principles, standards, approaches and techniques to be employed for the entirety of the DCO Project for the protective management of the historic environment, including any associated mitigation works.

8.4.2 The Historic Environment Management Strategy will set out control processes and procedures that will be adopted by the main contractors. These include, the following, as appropriate:

1. Construction control processes that:
   a) design works to minimise potential risks from construction activities that might result in settlement or structural damage
   b) actively manage the effects of construction vehicles in the vicinity of heritage assets such as scheduled moments and listed buildings

2. Procedures for:
   a) archaeologists guiding topsoil stripping and excavation prior to the commencement of archaeological investigation works
   b) the discovery of unexpected assets
   c) preparation of the main contractors’ risk assessments, to inform the types of plant and working methods for use where heritage assets are close to work sites or attached to structures that form part of work sites. Such risk assessments to be informed by appropriate baseline studies to be undertaken with asset owner approval, including structural or condition surveys and vibration modelling. This will be undertaken prior to the commencement of, during, and following all construction-related activity. The risk assessments will include, but will not be limited to, specific buildings identified in the ES and the Historic Environment Management Strategy
   d) basic protective measures to be implemented for heritage assets retained within the land required for construction, including temporary support, hoardings, barriers, screening and buffer zones around heritage assets and archaeological mitigation areas within and adjacent to worksites
e) security and condition monitoring arrangements for historic buildings not in use

f) installation with asset owner approval of non-intrusive temporary protection/ supports or monitoring devices to management impacts to the fabric of the historic building structures

g) secure repository for recording, and storage of portable items removed from buildings that are to be returned to original locations at the earliest safe and secure opportunity.

8.4.3 The Historic Environment Management Strategy will also provide guidance on construction working processes and arrangements related to specific integrated historic environment protection measures such as:

1. Any preventative intrusive works to historic or listed buildings, whether structural support, or to be mothballed for protection

2. Any remedial action to listed or historic buildings necessary to ensure the preservation of the building

3. Any requirement to remove and reinstate structures of heritage and significance

4. Works to listed or historic buildings that require the removal of fabrics, such as roof coverings, windows or floor surfaces

5. Measures to retain the character of conservation areas and the setting of listed buildings, including boundary walls, trees, gardens, roads and pavement surfaces, and street furniture. Items that contribute positively to character to be protected on site and traffic or plant movement directed away from such features.

8.5 Metal detectors

8.5.1 During construction site preparation and works the use of metal detectors will be prohibited within areas of identified and/ or defined archaeological interest. The exception to this is deployment by archaeological specialists or other appointed persons in the execution of their activities. The use and purpose of metal detectors on site will be detailed in the WSI.

8.6 Human remains

8.6.1 In the case of the identification and discovery of human remains during archaeological works as part of construction activity or full construction works, this will be appropriately recorded in accordance with the terms of specific WSI developed pursuant to the framework created by the outline WSI.
8.6.2 The removal of identified human remains will be carried out in accordance with the provisions of the DCO and Guidance for best practice for treatment of human remains excavated from Christian burial grounds in England (second edition), Advisory Panel on the Archaeology of Burials in England (2017).

8.7 Measures in the event of unexpected discoveries of national significance

8.7.1 In the event of the discovery of unexpected cultural heritage assets of potential national significance during construction works, a process for managing the assets will be agreed and implemented by Heathrow/ the main contractors in conjunction with the local authorities, Historic England and GLAAS, in line with the outline WSI. Mitigation may include, the following, as appropriate:

1. Investigation and assessment of all discoveries to determine their significance if this cannot be determined from the asset as found
2. Assessment of the potential project impacts to inform design of appropriate mitigation measures for the historic environment
3. Preparation of a WSI for each stage of archaeological work required
4. Excavation, recording and reporting on any discoveries
5. Recording and implementing measures to preserve any discoveries in situ, if necessary.
9. **LAND QUALITY**

9.1 **General provisions – Mitigation of potential impacts**

9.1.1 Measures will be implemented by the main contractors to assess and control potential risks to human health and controlled waters. Measures could include pathway management techniques such as cut-off walls or capping layers.

9.1.2 The presence of ground gas and/or vapours will also be considered by the main contractors for any work in locations where there may be confined spaces, such as during excavations. In the event of the identification of significant ground gas issues, appropriate monitoring will be carried out, and where necessary, relevant ground gas protection measures will be provided by the main contractors. Any work in locations where there may be confined spaces will be subject to specific risk assessment and controls in line with current legislation and HSE guidance on confined space working.

9.1.3 An assessment of soils to be reused will be carried out by the main contractors. This will ensure that the reused soils are suitable for use by assessing risks to human health and the water environment. See also section 9.3.

9.1.4 Groundwater levels will be monitored and assessed, where appropriate, by the main contractors. The main contractors will also consider land stability and as such will undertake structural or dilapidation surveys of buildings or structures adjacent to the works where there may be potential settlement risks or a risk of lateral ground movements which may damage structures.

9.1.5 The main contractors will also assess land stability issues associated with the excavation of borrow pits and other structures including the effects of dewatering which have the potential to draw potentially contaminated groundwater through the underlying aquifer.

9.2 **Site ground investigation**

9.2.1 Ground investigation has been undertaken as part of the DCO application to inform the assessment of potentially significant effects. Where necessary, the main contractors may be required to carry out further targeted ground investigation and monitoring to accommodate changes in design, to further assess contamination conditions or monitor construction activities. Where required, this investigation will be undertaken in accordance with UK best practice, including BS 5930:1999+A2 Code of practice for site investigations, BSI (1999) BS 10175:2011+A2:2017 Investigation of potentially contaminated sites code of practice, BSI (2017).
9.2.2 Management of risks from unexploded ordnance will be undertaken as detailed in section 4.

9.2.3 Heathrow/ the main contractors will develop a suite of remedial options to manage unacceptable risks to human health, controlled waters and other property. Where remediation as part of the DCO Project is necessary, an options appraisal will be undertaken to select the most appropriate remediation technique to be employed from the suite of options. This suite of options and selection of appropriate technique will take into account the results of the ongoing ground investigation and site-wide risk assessment process and be based on multi-criteria attribute analysis that considers environmental, resource, social and economic factors in accordance with Sustainable Remediation Forum UK: A Framework for Assessing the Sustainability of Soil and Groundwater Remediation (Sustainable Remediation Forum UK, 2010). The selected remediation technique will then be developed into a remediation strategy, which will be consulted on with the relevant regulatory authorities.

9.2.4 Where remediation is undertaken, this will be documented to provide a formal record and to evidence that appropriate assessment, remediation and verification has been undertaken in line with CLR11, Model Procedures for the Management of Land Contamination, Environment Agency (2004)

9.3 Construction on or adjacent to contaminated land

9.3.1 Heathrow/ the main contractors will implement suitable measures for construction works on or adjacent to contaminated land. The measures will include, the following as appropriate:

1. Waste water generated by vehicle washing, wheel washes, excess surface water, dewatering of underground structures and tanks or lowering groundwater for geotechnical purposes will be collected, suitably stored and disposed of

2. Redundant services near potentially contaminated areas will be either removed or isolated and sealed to avoid creating potential migration pathways for contamination

3. Material identified as or anticipated to be contaminated will be stockpiled and tested prior to reuse, recovery, or disposal. Stockpiles will be separated and labelled subject to the source of the material and the nature of the contamination. Stockpiles will be placed on a low permeability liner, suitably protected from damage by earthmoving plant, to prevent leaching of contaminants into underlying groundwater and surface watercourses. Proposed known/suspected contamination stockpile areas will be thoroughly examined prior to and after use to highlight the absence of cross-
contamination. Stockpiles will be managed as detailed in section 5.3 to manage risks associated with the generation of dust

4. Earthworks materials deemed unacceptable for direct reuse will, if achievable, be treated at a soil treatment facility prior to reuse

5. Pre-classification testing of soils will be carried out prior to the reuse of site-won materials. Pre-classification test data will be assessed against suitably developed criteria for potential unacceptability

6. All imported fill must meet the soil and soil leachate acceptance criteria derived in the detailed design stage and will be subject to a detailed testing regime prior to acceptance on site

7. Piled foundations and ground improvement works located on existing landfill sites or potential or known areas of land contamination will require a site-specific environmental risk assessment. The main contractors will adhere to appropriate guidance including the Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention, National Groundwater and Contaminated Land Centre (2001)

8. Within areas of known or predicted contamination, buried services such as highways drainage, utilities and telecom ducts should be designed to reduce the risks from the ingress of mobile and aggressive contaminants. In the case of drainage runs, the infiltration of surface water into the underlying contaminated ground should be minimised and clean or lined service corridors installed to provide a suitable barrier to potential migrating ground gases adjacent to known/potential sources

9. Any earthworks material used for the DCO Project (for example fill materials, landscaping materials, river sediments) will be proven ‘suitable for use’ by adoption of acceptance criteria and will be deposited under either permit or the Definition of Waste. Development Industry Code of Practice, CL:AI RE (2011) following consultation with relevant stakeholders.

9.3.2 An unexpected contamination protocol will be produced by Heathrow/ the main contractors. The protocol will be implemented if contamination over and above that identified during ground investigation is encountered during construction. During the site works, and in particular during the initial below-ground works, Heathrow/ the main contractors will ensure that the works are routinely monitored for contamination, e.g. the presence of odours and unusual staining, as well as oily, tarry or fibrous materials.

9.3.3 In the event that such contamination is suspected, works in the immediate area will be made safe and secure and the event reported via a defined reporting procedure, which will be set out in the unexpected contamination protocol. A
contaminated land specialist will inspect the site and, where deemed necessary, arrange for further sampling and laboratory testing of soils or liquids. Further risk assessments to receptors will be carried out as necessary and reported to Heathrow, the local authority and the Environment Agency.

9.3.4 Should unacceptable risks be identified, Heathrow/ the main contractors will prepare a revised remediation method statement in consultation with the regulators.

9.3.5 Heathrow/ the main contractors will comply with the requirements of the Control of Asbestos Regulations 2012 (CAR-2012) the approved code of practice (AcoP) ‘Managing and working with asbestos’ and the HSE approved CL:AIRE guidance document Interpretation for Managing and working with Asbestos in Soil and Construction and Demolition Materials (CAR-SOILTM).

9.3.6 The potential for Asbestos Containing Materials (ACM) to be present in buildings/ materials which will be demolished/ dismantled as part of the construction works will be assessed through pre-construction hazardous materials surveys and, where identified, Heathrow/ the main contractors will arrange for this to be removed by licenced contractors under appropriate controls and Duty of Care in line with CAR-2012 and the AcoP.

9.3.7 Where ground investigation works identify the presence of asbestos in soils, Heathrow/ the main contractor will review the control measures for the management of construction works in line with CAR-2012 and its interpretation for soil within CAR-SOILTM and, where appropriate, implement additional monitoring and control measures to reduce the risks from asbestos in soils.

9.3.8 A Materials Management Plan (MMP) will be developed in consultation with relevant stakeholders. The MMP will outline a process which seeks to retain materials (such as Made Ground, landfill material, natural soils and river sediments) for reuse within the DCO Project (for example as general earthworks fill, landscaping etc.) and detail procedures for the screening and treatment of excavated soils to ensure they are suitable for the proposed reuse in line with the CL:AIRE 2011 Definition of Waste: Development Industry Code of Practice (DoW CoP).

9.3.9 The MMP will include chemical and geotechnical re-use screening criteria, which will be used to assess of suitability of materials excavated during the construction works to be reused within the DCO Project. The MMP will also set out how verification and recording of the sampling, screening and reuse process will be undertaken by Heathrow/ the main contractors.
9.4 Measures to reduce potential impacts on geodiversity and mineral resources

9.4.1 Where any geodiversity sites (e.g. local geological sites) are identified that may be impacted by the DCO Project, procedures will be agreed in consultation with stakeholders to reduce the potential impact of the construction works. Such measures would include, as appropriate, inspections, the appropriate recording of geological information, and mapping of soil and rock exposures.

9.4.2 Where land required for construction crosses designated mineral resources and active quarries and may have a negative impact (either by isolation or sterilisation) on the future working of such resources, Heathrow/ the main contractors will be required to consult with the Mineral Planning Authority and other relevant stakeholders with regard to mitigating the potential loss of mineral resources and active quarries. A protocol will be developed by the Heathrow/ the main contractors setting out a decision-making process to be used when mineral deposits are encountered during construction, to determine the most appropriate course of action.

9.4.3 The MMP will incorporate good practice mitigation measures, seeking to maximise the reuse of clean mineral resources excavated as part of the DCO Project. See also section 9.3.

9.5 Agricultural land quality

9.5.1 Controls will be implemented to mitigate potential avoidable impacts on agricultural soils and for this purpose Heathrow/ the main contractors will:

1. Identify the agricultural soils adjacent to the construction site

2. Identify watercourses fixed irrigation pipes and sources of irrigation water and fixed water supplies

3. Undertake a pre-construction survey of existing land drainage.

9.5.2 The controls will include the following, as appropriate:

1. Protecting agricultural land adjacent to the construction site, including avoidance of traffic over the land leading to soil compaction

2. Reinstating any agricultural land which is used temporarily during construction to the reasonable satisfaction of the landowner

3. Modifying existing drainage to avoid adversely affecting the drainage of adjacent agricultural or other land (e.g. drainage ditches are not blocked)
4. Protecting farm accesses that may be affected by construction, including documenting the manner in which farm access will be maintained, and avoiding traffic over land which is used temporarily during construction.

9.5.3 Heathrow/ the main contractors will:

1. Advise landowners, occupiers and agents in advance, as appropriate, regarding the intended commencement of construction works in areas of the site adjacent to agricultural holdings, and when any agricultural land used temporarily is intended to be returned to agricultural use

2. Advise the programme of works and access routes to be used

3. Take precautions in developing the construction programme to reduce disturbance to agricultural soils.

9.6 Measures to reduce potential impacts on soil resources

9.6.1 Appropriate measures will be implemented, in accordance with Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, Department for Environment, Food and Rural Affairs (Defra) (2009), in relation to undertaking works on or adjacent to agricultural land.

9.6.2 Prior to works commencing, surveys will be undertaken to record agricultural soils disturbed for the DCO Project. These surveys will collect data that will inform agricultural restoration, landscape design and ecological mitigation measures. Soil surveys will be carried out on land required for the construction of the DCO Project, including from existing agricultural land, other ecological habitats and public and private open spaces, where access to such land becomes available. The soil information will be used to inform soil handling that may be necessary for the reinstatement of land and preparation of tree planting and habitats.

9.6.3 The soil surveys will provide the necessary information to delineate, quantify (in cubic metres) and characterise the topsoils and subsoils (upper and lower, if both are present within a soil profile) available within the construction site prior to these materials being stripped. The surveys will provide sufficient detail to assess the suitability of the different soil materials for agricultural and other land uses, and to recommend appropriate methods for handling and storing soils in order to protect their natural functions during the construction period. This information will also determine the soil storage areas required.

9.6.4 Agricultural restoration will rely principally on identifying and recording the physical characteristics of the soil profile. Landscape planting and habitat creation will also be informed by the chemical and organic matter characteristics of the soil horizons to be recorded.
9.6.5 These soil surveys will include as appropriate:

1. Relevant local topographic features (local relief, slope, aspect, micro-relief), land use and ground cover, flood risk and climatic information
2. Depth of the topsoil, upper subsoil (where present) and lower subsoil horizons
3. Soil textures
4. Soil structures
5. Soil colours
6. Stone content
7. Signs of impeded drainage and presence of slowly permeable layers
8. Presence of calcium carbonate
9. Sampling for laboratory analysis of pH, major nutrients (extractable phosphorus, potassium and magnesium) and organic matter content.

9.6.6 Other features that will be recorded for reinstatement include:

1. Drainage, irrigation and water supplies
2. Hedgerows, ditches, field boundaries and irrigation ponds
3. Forest land, including individual trees and ancient and other woodlands.

9.6.7 Where land used temporarily for construction is to be reinstated to agricultural use, reinstatement works will be implemented to the reasonable satisfaction of the landowner. Such reinstatement will be carried out under appropriately qualified supervision.

9.6.8 During construction, topsoil may become buried under subsoil or topsoil may be sterilised by development. Preventative measures will include the following:

1. Topsoil will be removed from areas where it is likely to be affected by development and, where reasonably practicable, reused on site
2. Where there is surplus topsoil, Heathrow/ the main contractors will be required to identify ways to use the surplus for landscape schemes as part of the DCO Project or elsewhere (for example through local community or allotment schemes, where reasonably practicable).

9.6.9 Reasonable precautions will be taken in relation to the handling and storage of agricultural soils, including the following, as appropriate:
1. Topsoil and sub soils will be stripped separately, where reasonably practicable in dry weather. Soils will not be stripped during heavy rainfall or if the soil is already saturated with water.

2. Topsoils and subsoils will be stored separately using a methodology that will be defined with reference to good practice guidance (BS 3882:2007).

3. Where soils are exposed, particularly on slopes, they will be covered with suitable barrier materials (e.g. tarpaulin), to prevent erosion and gullying due to the effects of rain and wind.

4. The use of plant and machinery on soils potentially vulnerable to erosion will be minimised.

5. Outside areas of excavation soils compaction will be minimised by the use of a combination of temporary tracks, low ground pressure types, tracked vehicles and low axle loads, and limiting the use of machinery in wet weather.

6. Reinstated soils/natural soils over which construction vehicles have travelled will be surveyed to determine whether there is a need for soil ripping/loosening of soils to reduce compaction or for vegetation to be established to reduce soils erosion.

7. Using seed for grass cover or sealing medium or long-term excavated material and soil stockpiles.

8. Preventing soil contamination with chemicals or other construction materials.

9. Controlling of weeds on soil stores, either through treatment or removal.

9.6.10 The stripping, storage and reinstatement of soils will be carried out with reference to soil resource plans and will be accompanied by a soil audit report produced by Heathrow/ the main contractor. The storage of soil stockpiles (size, height etc.) will be undertaken in accordance with Construction Code of Practice for the Sustainable Use of Soils on Construction Sites, Defra (2011).

9.6.11 The sources, locations, contents and approximate volumes of soil stockpiles will be available from the soil survey records completed by the main contractors prior to commencement of works (including the stripping and storage of soils). In defining target restored profiles, the volumes of available soils in storage will be related to the areas of each parcel of land to be restored.

9.6.12 Soils will be handled when least susceptible to damage and in accordance with Defra’s Construction Code of Practice for the Sustainable Use of Soils on Construction Sites. The MAFF Good Practice Guide for Handling Soils (2000) (Sheets 1 to 4) describes the typical machinery that will be used in most cases to strip and transport soil materials into and out of store, and to reinstate topsoils and subsoils.
subsoils. For example, alternative specialised machinery will be used for landscape planting on areas with steeper slopes. Soil handling machinery will be restricted to marked on-site construction traffic routes and will not traverse undisturbed or replaced soils, except where such trafficking is essential for the delivery of the DCO Project and no alternative route is available.

9.6.13 Defra’s Construction Code of Practice for the Sustainable Use of Soils on Construction Sites describes methods for the construction of soil stockpiles and the Design Manual for Roads and Bridges (DMRB) provides guidance on the storage of topsoils for engineering purposes. These documents set out a range of heights for topsoil and subsoil storage. Where reasonably practicable, soils will generally be removed, transported and reinstated without a period of storage. These documents will be referenced and followed by the main contractor.

9.6.14 Good practice mitigation measures will be incorporated into the MMP which will seek to retain clean topsoil for reuse on the DCO Project and to maintain soil integrity during excavation and removal/transport.

9.7 **Monitoring**

9.7.1 Suitably qualified environmental management staff, whose responsibility will include the monitoring of topsoil and subsoil stripping, handling, storage and replacement, as appropriate, will be appointed to facilitate compliance with this section of the draft CoCP in relation to soils.

9.7.2 The main contractors will keep detailed records of the volumes and nature of the soils and other materials excavated and either disposed of offsite, disposed of in new onsite landfills or reused elsewhere on the DCO Project under the MMP, in accordance with Duty of Care requirements.

9.7.3 Suitably qualified environmental management staff, whose responsibility will include the evaluation of human health and controlled waters risks and remediation validation (where required) will be appointed to facilitate compliance with this section of the draft CoCP in relation to land contamination.

9.7.4 The main contractors will prepare and implement a groundwater and surface water monitoring strategy, where necessary, to ensure construction activities do not impact on controlled waters. Water monitoring will be undertaken in accordance with BS 5930:1999+A2 and BS 10175:2011+A2:2017.

9.7.5 The main contractors will prepare and implement a gas and vapour monitoring strategy, where necessary, due to the potential for the presence of landfill and ground gases. Gas monitoring will be undertaken in accordance with measures set out in BS8576:2013 Guidance on investigations for ground gas. Permanent gases and Volatile Organic Compounds (VOCs), BSI (2013).
9.7.6 Monitoring requirements will be identified in relation to land quality for inclusion in this section of the draft CoCP following consultation with relevant stakeholders.
10. LANDSCAPE AND VISUAL AMENITY

10.1 General provisions

10.1.1 Construction-related impacts on landscape and visual amenity will be controlled through the following:

1. Protection of existing elements of the landscape that are to be retained
2. Careful design and management of temporary construction components in response to landscape character and visual amenity
3. The effective implementation of operational design measures, as early reasonably practicable during the construction programme, which have a role in mitigating landscape and visual impacts.

10.2 Measures to reduce potential impacts

10.2.1 Heathrow/the main contractors will implement appropriate control measures to manage the impacts of construction-related impacts on landscape character and visual amenity.

10.2.2 Control measures will include the following, as appropriate:

1. Protection of existing trees and other vegetation to be retained in order that these elements continue to make a contribution to landscape character and visual amenity, as described in section 4
2. The use of well-maintained temporary hoardings and fencing, designed in response to landscape character and visual amenity, as described in section 4
3. Management of site lighting with consideration for visual amenity and visual disturbance, as described in section 4
4. Well-maintained temporary earthworks, including borrow-pits and soil stockpiles, designed in response to landscape character and visual amenity. This will include temporary landscape proposals, where appropriate, such as seeding of soil stockpiles. Refer to sections 4 and 9
5. Protection of soil to be used for landscape purposes, as described in section 9
6. Implementation of proposals, including landscape design proposals, in accordance with design documents submitted with the DCO application
7. Maintenance and management of landscape proposals in accordance with landscape design documents submitted with the DCO application
8. Provision of suitably qualified and experienced specialists with responsibility for monitoring landscape works in order that they are carried out in accordance with the design.

10.2.3 Where no conflict exists with construction activities or other requirements of the DCO Project, landscape design measures will be implemented as early as reasonably practicable.

10.2.4 Suitable locations for landscape proposals will relate to the findings of the ES regarding mitigation of adverse effects on landscape and visual receptors.

**10.3 Monitoring**

10.3.1 Appropriate monitoring of the effectiveness of landscape and visual amenity mitigation proposals will be undertaken.
11. **NOISE AND VIBRATION**

11.1 **General provisions**

11.1.1 Best practicable means (BPM) will be used by Heathrow/the main contractors to minimise noise (including vibration) emanating from the worksites in order to protect people and other noise sensitive receptors from the adverse effects of noise.

11.1.2 BPM represents a balance between the need to allow the works to proceed and the need to protect people from the adverse effects of noise. It is defined in Section 72 of the Control of Pollution Act (1974).

11.1.3 BPM will firstly consider control at the source. For instance, the selection of quieter working methods and quieter equipment. Specific measures will also be implemented to control the transmission of sound from the worksites, for example through the use of local enclosures and screening of equipment, and/or perimeter solid hoarding, bunds or dedicated noise barriers.

11.1.4 A noise insulation policy will apply, where, despite the implementation of BPM, the noise exposure exceeds the criteria defined in section 11.3 of the draft CoCP.

11.1.5 The recommendations of BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Noise, and BS 5228-2:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites – Vibration, will be implemented, together with the specific requirements outlined within this draft CoCP.

11.2 **Noise and vibration management**

11.2.1 Heathrow recognises that the management of construction noise will be an important issue for residents and local authorities. Heathrow also recognises that the DCO Project and community will need some level of certainty at the DCO application stage as to how construction noise is managed but that there is also an understood methodology for the management of noise under the Control of Pollution Act (1974).

11.2.2 As such, Heathrow will be proposing, at DCO application stage, a framework for the management, mitigation and monitoring of construction noise and vibration which uses best practice from major infrastructure projects, applied to the circumstances of the Heathrow Expansion Project.
11.2.3 This framework will be implemented through the CoCP and through provisions in the DCO itself which will amend the Control of Pollution Act (1974) to create a suitable regime.

11.2.4 It is currently envisaged that the framework will be based on the principle that the section 61 regime would apply to the DCO Project, but with modifications, as set out below:

1. The decision maker for any section 61 consents that are necessary will be a specifically constituted body provided for by the DCO, referred to as the Joint Planning Committee (JPC). The JPC would be a joint committee of all affected local authorities and would have the role of discharging a number of the DCO’s requirements as well as determining applications for section 61 consents within a set of parameters specified in the DCO.

2. However, the local authority in whose area the activity is to be carried out will be able to make representations to that decision maker to ensure its views are taken into account.

3. The framework will set out set specified timeframes for the determination process of the section 61 consents.

4. In considering the conditions to be applied to any section 61 consent and the application of BPM principles, the decision maker will be required to accord with the working hours proposals which will be put forward in the CoCP at DCO application.

5. The framework is expected to involve, whilst noting point (4), the creation of minimum standards which any application for a section 61 consent by Heathrow/main contractors will have to meet. This will include the need for applications to:
   a) demonstrate how Best Practicable Means (BPM) will be used to control noise and vibration from DCO Project construction activities, including explaining how control at source has been considered – with examples to be given in the framework
   b) demonstrate that measures to control the transmission of sound from worksites have been considered and are being brought forward as appropriate, such as through the use of local enclosures and screening of equipment, perimeter bunds or barriers
   c) demonstrate that the scheduling of activities has considered the needs of potentially affected community facilities, e.g. scheduling construction/demolition activities close to schools outside of exam periods

e) include the measures set out in sections 11.4 and 11.5 below and outline the control (mitigation and compensation) measures that will be implemented if the levels set out in those sections are breached

f) set out the results of noise assessments for the activities and location to which the section 61 consent will relate. For such assessments, noise levels will be predicted in accordance with the methodology established in BS 5228 – 1. Vibration levels will be predicted using the methods provided in BS 5228 – 2

g) include monitoring proposals for pre-construction and during construction— with minimum standards for such proposals to be given in the framework (for example, an audit and reporting standard and the need for remedial actions to be taken) and consideration of instantaneous maximum noise levels.

6. The framework will require Heathrow/ the main contractors to report on a regular basis to the decision maker on the results of its construction noise monitoring, and any remedial actions taken.

7. In addition to the consent process set out above, the framework will also provide for the creation (including the proposed terms of reference and meeting frequency) of a Construction Noise Liaison Group, to deal with day to day noise concerns and complaints and to facilitate engagement between Heathrow/ the main contractors, the local community, local authorities and the section 61 consent decision making body. Heathrow is considering how this can best operate as part of or alongside its existing noise liaison groups.

11.3 **Noise Insulation Policy (including temporary re-housing)**

11.3.1 Additional to the framework described above, Heathrow will also implement a Noise Insulation Policy.

11.3.2 Heathrow is consulting on its draft Noise Insulation Policy as part of the Airport Expansion Consultation (June 2019). Heathrow will take account of responses to the Airport Expansion Consultation and will also work with local authorities to further develop and agree the Noise Insulation Policy prior to submission of the DCO application.
11.3.3 The Policy is intended to address circumstances where it is not reasonably practicable to control noise emanating from the worksites to a level below the noise insulation trigger levels set out in Table 11.1.

11.3.4 Noise insulation and temporary re-housing arrangements apply to dwellings and other buildings lawfully used for residential purposes.

11.3.5 To be eligible the dwelling must be one in which the predicted or actual noise exceeds any of the relevant thresholds in Table 11.1 for:

1. A period of 10 or more days of working in any 15 consecutive days during construction

2. A total of 40 days or more in any 6 consecutive months during construction

11.3.6 The noise thresholds for both construction and noise insulation are set out in Table 11.1.

*DCO Project construction sound only. Trigger levels are defined as 1m in front of the closest façade of a habitable room. Where measurements are used, they will be taken either at the façade or in free-field. A façade correction will be applied to any free-field measurements to establish the façade level.

* Where the current ambient noise level is greater than the noise insulation trigger level:

1. the ambient noise level will be used as the noise insulation trigger level

2. the temporary rehousing trigger level will be the ambient noise level +10dB.

### Table 11.1 Noise thresholds for noise insulation/ temporary re-housing

<table>
<thead>
<tr>
<th>Day</th>
<th>Time (hours)</th>
<th>Averaging Period T</th>
<th>Noise Insulation trigger level Lₐₑq,T (dB) *</th>
<th>Temporary re-housing trigger level Lₐₑq,T (dB) *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday to Friday</td>
<td>0700 – 0800</td>
<td>1 hour</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>0800 – 1800</td>
<td>10 hours</td>
<td>75</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>1800 – 1900</td>
<td>1 hour</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>1900 – 2200</td>
<td>1 hour</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td>Saturday</td>
<td>0700 – 0800</td>
<td>1 hour</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>0800 – 1300</td>
<td>5 hours</td>
<td>75</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>1300 – 1400</td>
<td>1 hour</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>1400 – 2200</td>
<td>1 hour</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td>Sunday &amp; Public Holiday</td>
<td>0700 – 2200</td>
<td>1 hour</td>
<td>65</td>
<td>75</td>
</tr>
<tr>
<td>Any night</td>
<td>2200 – 0700</td>
<td>1 hour</td>
<td>55</td>
<td>65</td>
</tr>
</tbody>
</table>
11.3.7 The Noise Insulation Policy will also include provision for non-residential buildings and special cases.

11.4 **Protection of building occupants from vibration disturbance**

11.4.1 Heathrow/ the main contractors will employ BPM to protect the occupants and users of buildings from vibration disturbance. The vibration levels will be controlled so that the vibration dose values do not exceed the relevant trigger level defined in Table 11.2 at that property as a result of the construction works. The steps that need to be taken to control or mitigate these impacts will be agreed subject to the approach outlined in section 11.2.

*Table 11.2 Vibration trigger levels for protection of occupants of buildings from disturbance*

<table>
<thead>
<tr>
<th>Building type</th>
<th>Period</th>
<th>VDV (ms(^{-1.75}))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible dwellings(^1)</td>
<td>07:00 to 23:00</td>
<td>0.4</td>
</tr>
<tr>
<td></td>
<td>23:00 to 07:00</td>
<td>0.2</td>
</tr>
<tr>
<td>Education buildings, offices and similar(^2)</td>
<td>Over normal period of use</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>(daytime)</td>
<td></td>
</tr>
<tr>
<td>Commercial(^3)</td>
<td>Over normal period of use</td>
<td>1.6</td>
</tr>
<tr>
<td></td>
<td>(daytime)</td>
<td></td>
</tr>
</tbody>
</table>

11.4.2 The vibration thresholds in Table 11.3 will be assessed and weighted in accordance with BS6472-1 Guide to evaluation of human exposure to vibration in buildings – Part 1: Vibration sources other than blasting, 2008.

11.5 **Protection of buildings from domestic damage**

11.5.1 BPM will be employed to minimise the risk of physical cosmetic damage to buildings. Vibration levels will be controlled so that the peak particle velocities (PPV) in Table 11.3 are not exceeded at the building foundation due to the DCO Project construction works. The risk of physical damage will be assessed in accordance with BS 7385-2 Evaluation and measurement for vibration in buildings.

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1 Measured on a normally-loaded floor of any bedroom or living room. For this purpose, eligible dwellings include dwelling houses, residential institutions, hotels, and residential hostels.

2 Measured on a normally-loaded floor of areas where people normally work. This category of receiver will include all areas where clerical work meetings and consultations are regularly carried out (e.g. Doctors’ surgeries, day-care centres) but not shop floors of industrial premises.

3 Measured on a normally-loaded floor of areas where people normally work. Commercial premises include retail and wholesale shops.
Guide to damage levels from ground borne vibration, 1993. Vibration levels will be measured in accordance with BS ISO 4866:2010 Mechanical vibration and shock – Vibration of fixed structures – Guidelines for the management of vibration and evaluation of their effects on structures.

Table 11.3  Vibration trigger levels for building damage

<table>
<thead>
<tr>
<th>Category of building</th>
<th>Impact criteria: (PPV at building foundation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Transient vibration</td>
</tr>
<tr>
<td>Structurally sound buildings</td>
<td>12 mm/s</td>
</tr>
<tr>
<td>Potentially vulnerable buildings</td>
<td>6 mm/s</td>
</tr>
</tbody>
</table>

11.5.2 Listed or other heritage buildings of historical importance which are difficult to repair may require special consideration on a case-by-case basis. Any such buildings that are situated within 50 metres of any construction-related activities which may cause vibration will be identified by the main contractors.

11.5.3 Where the predicted vibration at the foundations of such buildings exceeds 3mm/s PPV, Heathrow/ the main contractors will undertake an initial survey of the building, using powers in the DCO allowing it to undertake protective works. The findings of the survey will be used to establish if regular condition surveys and continuous vibration monitoring are appropriate. The steps to be taken to protect the building from vibration, including any vibration limits, will be agreed in line with the approach set out in section 11.2.

11.6 Protection of particularly vibration-sensitive equipment/ processes

11.6.1 Heathrow/ the main contractors will use BPM to avoid any impacts on particularly vibration-sensitive equipment or processes. Any identified actions required to control or mitigate these impacts will be agreed with the owner/ operator of the sensitive equipment/ process.

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4 BS7385 highlights that the criteria for aged buildings may need to be lower if the buildings are structurally unsound. The standard also notes that criteria should not be set lower simply because a building is important or historic (e.g. listed). Where information about these structures is not currently known, the more onerous criterion on this row of the table will be adopted on a precautionary basis until condition surveys have been undertaken.
12. **RESOURCE EFFICIENCY**

### 12.1 General provisions

12.1.1 Heathrow aims to deliver a DCO Project that is resource efficient and supports a circular economy. This DCO Project will thus seek to align with industry initiatives relevant to addressing resource efficiency throughout all phases of construction.

12.1.2 Heathrow, working with the main contractors, will promote resource efficiency (covering energy, water, materials and waste) throughout all phases of construction works. This may include the following as appropriate:

1. Resource efficiency opportunities assessment for construction-related activities
2. The development of forward-looking partnerships to transfer chain of custody of resources, so that returning value locally is prioritised
3. Encouraging and promoting resource efficient behaviours to value resources and disincentivise waste
4. The careful management of the consumption of construction materials.

12.1.3 Resource efficiency aims to sustainably manage resources, reduce waste at the source, and reduce the quantity of waste sent to landfill. The identified overarching resource efficiency aims will then be translated into the proposed DCO Project through maximising as far as reasonably practicable diversion from landfill by re-use, recycling and recovery.

### 12.2 Resource Management Plan

12.2.1 Resource efficiency measures are also set out in the Resources Management Plan (RMP), including measures for sustainable resource management and waste management. The main contractors will be required to adhere to the RMP.

### 12.3 Material management and supply

12.3.1 Heathrow, working with its main contractors, will aim to effectively manage materials during construction-related activities. A number of measures will be implemented, including, where reasonably practicable, the following:

1. The minimisation of the consumption of natural, and particularly virgin non-renewable resources
2. The use of recycled or secondary materials (with an emphasis on circular economy principles and with due consideration of the carbon impact)
3. A reduction in the use of materials that have the potential to harm human health and/or the environment.

12.3.2 Management of earthworks materials is also addressed through the Materials Management Plan (MMP) described in section 9.3.

12.4 Management of waste and excavated materials

12.4.1 The Waste Hierarchy, as outlined by the Waste (England and Wales) Regulations 2011, as amended, will be used by Heathrow/ the main contractors as the overarching framework for the management of waste from construction-related activities. The Waste Hierarchy aims to prevent and minimise harm to human health, environmental health and amenities.

12.4.2 Heathrow and the main contractors will focus on waste prevention and minimisation. The main contractors have the responsibility to reduce the waste generated from all construction-related activities where reasonably practicable. Measures to reduce waste impacts from construction works include the timely and efficient storage of materials on-site.

12.4.3 The main contractors will also have responsibility for the storage and management of the earthworks material excavated from construction-related activities. This material will be reused on site where reasonably practicable. Owing to the differences in the nature of the excavated materials, each material will be assessed for best-practice reuse and/or recovery.

12.4.4 On/ in proximity to the construction sites, there will be areas specifically dedicated to the handling and storing of excavated material. The main contractors will be responsible for the management of these areas in order to prevent harm to human health, environmental health, and amenities.

12.4.5 Heathrow and the main contractors will prepare a Site Waste Management Plan (SWMP) in line with the Resource Management Plan. The role of the SWMP is to minimise waste arising from construction and to facilitate good practice for waste management. The following factors will be incorporated into the SWMP:

1. The classification of all types of waste
2. The types, quantities and locations of waste materials generated during construction
3. The implementation of measures to minimise waste generation
4. The implementation of measures to maximise recycling and/or re-use of spoil material
5. The adoption of measures for on-site waste management
6. The permitting arrangements for on-site and off-site waste treatment, waste transfer, and waste disposal

7. The details of the waste carriers and off-site treatment and disposal of sites to be used.

12.4.6 At site offices and compounds, waste avoidance and recycling will be promoted including the provision of appropriate segregated waste collection points. The main contractors will arrange for the suitable transfer of materials to recycling and disposal facilities where required.

12.4.7 In addition to this, necessary waste management permits will be obtained for the registration of any relevant exemption from waste permitting that is required during construction works.

12.5 Waste identification and classification

12.5.1 One of the principal aims of the SWMP is to identify the particular types and quantities of waste that is anticipated to arise during the construction works and to classify them in alignment with the appropriate statutory controls. The SWMP will outline the approach to monitoring (see section 12.8).

12.6 Waste segregation and storage

12.6.1 The main contractors will ensure that waste materials are appropriately categorised into separate waste groups. Waste materials produced from any work activities throughout the construction period must be sorted either on-site, off-site, or by an appropriately licensed contractor for recovery. For waste produced as the result of demolition works, waste categorisation will require pre-demolition surveys to be undertaken.

12.6.2 Hazardous excavated materials and waste that are generated on site will be isolated from other materials and removed and managed by the main contractors.

12.7 Duty of care

12.7.1 The main contractors must comply with all legal 'duty of care' requirements, to protect the interests and safety of others from the potential impacts of handling, storing, transporting and depositing excavated materials, and the demolition and construction wastes that arise from the DCO Project.

12.7.2 Any waste leaving construction sites, and those associated sites, must be accompanied by the relevant duty of care documentation in accordance with the relevant statutory requirements for waste transfer and hazardous waste. The
relevant duty of care documentation will be retained by the main contractors in accordance with statutory requirements.

12.7.3 To enhance the environmental and developmental benefits from the use of surplus materials, Heathrow/the main contractors will manage materials across the DCO Project construction sites or the Heathrow estate. This will reduce the adverse environmental impacts and risks associated with off-site disposal.

12.7.4 The SWMP will include coherent and thorough details of the processes for compliance with the waste transfer note requirements, in line with the Waste (England and Wales) Regulations (2011), as amended. The arrangements for auditing the actions of third parties in the waste handling chain will also be included in the SWMP.

12.7.5 The main contractors will follow the arrangements for consigning, handling, and transporting hazardous wastes. This will be adhered to in the context of duty of care and the specific consignment note procedures applicable under the Hazardous Waste (England and Wales) Regulations 2005, as amended or any succeeding appropriate legislation.

12.8 Monitoring

12.8.1 Heathrow/the main contractors will undertake timely and effective audits and inspections of all construction-related waste management activities. The audits and inspections will be carried out in accordance with relevant statutory controls and additional strategies and policies relevant to the management of surplus excavated materials and waste.

12.8.2 The SWMP will also provide a platform for monitoring waste activities throughout the construction process. The plan will identify, measure and record the types, quantities and end-of life processes for all waste generated; reporting and disclosing the information at regular intervals. This will include the review of the types and quantities of waste arising during the construction works against forecasts.

12.8.3 Furthermore, Heathrow/the main contractors will develop and maintain a register of all waste loads departing from construction sites. This will provide a suitable audit trail for compliance and will enable effective monitoring and reporting of waste types, quantities and management processes.

12.9 Energy efficiency

12.9.1 Heathrow/the main contractors will adopt measures to reduce energy consumption and improve efficiency of energy use during construction. Energy is assumed to cover all energy sources for transport, heating and power etc. The
measures will draw on best practice from other construction schemes for major infrastructure projects. Where reasonably practicable, the measures will include the following:

1. Use of energy efficient plant and equipment, serviced in accordance with the manufacturer’s guidelines
2. Efficient use of plant and equipment, including turning off when not in use
3. Deploying appropriately sized plant and construction equipment, specifically reducing the use of over-sized generators
4. Use vehicles, plant and equipment with low carbon emissions, where reasonably practicable, such as hybrid or plug-in electric vehicles
5. Minimising the use of mobile generation through connection of construction sites to mains electricity
6. Use of energy efficient light fittings for temporary and permanent site lighting
7. Avoiding unnecessary lighting by providing lighting only to recommended lux levels together with appropriate controls to ensure lights are off when not required
8. Use of energy efficient site accommodation.

12.9.2 In addition to energy efficiency practices, Heathrow/ the main contractors will be responsible for setting energy use targets and for monitoring and reporting energy use and associated energy efficiency against these targets, across all construction sites.

12.10 Water efficiency

12.10.1 Heathrow/ the main contractors will adopt measures to improve water efficiency during construction, for both potable and non-potable end uses. The measures will draw on best practice from other construction schemes for major infrastructure projects. Where reasonably practicable, the measures will include the following, as appropriate:

1. Embedding water efficiency measures into facilities such as temporary accommodation and welfare facilities. Measures may include low flush or flush stop toilets, aerated taps and waterless urinals
2. Implementing water meters and regularly taking readings
3. Implementing measures to identify, minimise and prevent leakage on construction site water supply system, such as installing leakage monitoring and alert systems
4. Adopting efficient technologies for dust suppression, such as efficient nozzle technology to create a more efficient spray pattern and/or the use of wetting additives to improve water efficiency for bowsers

5. On-site messaging to raise awareness and reinforce water efficient behaviour, such as through briefings and posters, promoting water efficiency measures to reinforce behaviour.

12.10.2 Heathrow/ the main contractors will adopt measures that prioritise use of non-potable water sources, such as rainwater and Heathrow’s existing borehole water supplies, for on-site non-potable purposes, such as:

1. Wheel washes and dust suppression on site roads
2. Lorry wash out
3. Hydro-demolition with high pressure washer
4. Construction water use
5. Site and general cleaning (where appropriate)
6. Specialist high pressure cleaning.

12.10.3 The main contractors will employ water recycling techniques across all construction sites, i.e. rainwater harvesting, greywater reuse, vehicle washing, wheel washes, and hydro-demolition.

12.10.4 Heathrow/ the main contractors will be responsible for setting water use targets and for effectively monitoring, reporting and recording water consumption, and associated water efficiency, against these targets across all construction sites.
13. **TRAFFIC AND TRANSPORT**

13.1 **General provisions**

13.1.1 Heathrow/ the main contractors will implement effective traffic and transport management measures during the construction phases of the Project, on or adjacent to public roads, cycle paths and public rights of way, as appropriate.

13.1.2 A Construction Movement Strategy will set out the key requirements, principles and measures for adoption, which will include an Outline Construction Traffic Management Plan (CTMP) and an Outline Construction Workforce Travel Plan (CWTP), and the establishment of a Traffic Management Working Group (TMWG). Preliminary versions of these plans are included as appendices to this draft CoCP.

13.1.3 A TMWG will be established with key stakeholders (including TfL, Highways England and relevant local highway authorities) to co-ordinate the implementation and monitoring of the CTMP and CWTP. Heathrow/ the main contractors will consult the TMWG on the planning and submission of consent applications for works on the public highway.

13.1.4 An Outline CTMP and CWTP will be submitted by Heathrow with the DCO application.

13.1.5 Heathrow/ main contractors will prepare a detailed CTMP and CWTP prior to commencement of construction associated with the DCO Project, in accordance with their outline equivalents.

13.1.6 It is anticipated that separate CTMPs and CWTPs for the key elements of the construction programme will be developed, for example:

1. Any advance works to move utilities
2. The main Heathrow Expansion construction site
3. The re-alignment of M25 and overpasses to M25
4. Any off-site works for environmental mitigation.

13.2 **Traffic Management Working Group**

13.2.1 A Traffic Management Working Group (TMWG) will be established prior to any construction commencing. The DCO application will include proposals for the membership and terms of reference of this group.

13.2.2 The TMWG will include representatives from Heathrow, main contractors, local highways authorities, TfL, Highways England and the emergency services.
13.2.3 The TMWG will be responsible for monitoring the implementation of the CTMPs and CWTPs.

13.2.4 Heathrow/the main contractors will have overall responsibility for the implementing, monitoring and enforcement of all of the approved CTMPs and CWTPs.

13.2.5 In the event of any disputes relating to the implementation of traffic management and other traffic related measures, the members of the working group will have the responsibility for agreeing a resolution procedure to be followed.

13.3 **Construction Traffic Management Plans**

13.3.1 Heathrow will produce an Outline Construction Traffic Management Plan (CTMP) for the DCO Project to accompany the DCO application, validated by traffic modelling. A preliminary version of the Outline CTMP has been produced as part of Airport Expansion Consultation (June 2019) and is included at Appendix A.

13.3.2 The Outline CTMP and individual detailed CTMPs will be prepared according to Transport for London Construction Logistics Plan guidance, Highways England guidance, Local Authority guidance and other relevant guidance. This will include, the following as appropriate:

1. The construction programme and phasing
2. Construction site locations and temporary and permanent access to the works
3. Permitted access routes for construction traffic
4. Permitted access routes for abnormal loads
5. A list of roads which may be used by construction traffic in the proximity to the site including any restrictions to construction traffic on these routes
6. Measures to support the safety of traffic, the public and construction staff during traffic management works and temporary traffic control measures
7. Procedures for the temporary or permanent closure or diversion of roads or accesses
8. Procedures to obtain consent to work on or over railways
9. Existing pedestrian, equestrian and cyclist routes, including whether the routes are used by one or more of these groups of road users
10. Measures to reduce construction traffic demand through consolidation of loads at source, supply chain management and off-site logistics hubs
11. Measures to reduce construction traffic demand during peak hours through spreading of the construction demand and measures to control access during construction working hours

12. Safety measures at construction site access points

13. The construction of new offline highways to minimise disruption to existing routes

14. Measures to reduce construction traffic demand though the utilisation of rail head facilities

15. Measures to reduce construction traffic impacts or impacts associated with over-parking on residential streets by construction workers

16. Monitoring and reporting requirements in relation to the CTMP

17. A programme of traffic management measures and details of traffic management proposals for the works on or adjacent to public roads, in compliance with the provisions of relevant guidance

18. Details of the timeline of construction works and operations

19. Drawings depicting traffic management layouts, signing and apparatus to be applied, including proposed routes for pedestrians, equestrians and cyclists

20. The name and contact details of the main contractors’ traffic safety and control officers and information and advice for the public regarding ways to raise complaints or request information

21. A register of applications for consents associated with temporary traffic management measures in line with the DCO.

13.3.3 Main contractors will be required to meet the requirements of the CLOCS (Construction Logistics and Community Safety) scheme and their fleet operators will obtain accreditation to FORS (Fleet Operator Recognition Scheme).

13.4 Construction Workforce Travel Plan

13.4.1 Heathrow will prepare an Outline Construction Workforce Travel Plan (CWTP) that will be submitted with the DCO application. A preliminary version of the Outline CWTP has been produced as part of Airport Expansion Consultation (June 2019) and is included at Appendix B. Main contractors will prepare detailed CWTPs that adhere to the requirements of the Outline CWTP.

13.4.2 The objective of the Outline CWTP will be to support and encourage the use of sustainable, active modes of transport, reduce single occupancy car use and to reduce the impacts of workforce travel upon the transport networks.
13.4.3 Heathrow/ main contractor will appoint Travel Plan Coordinator/s (TPC) who will be responsible for coordinating the implementation and monitoring of the Outline CWTP and main contractors’ CWTPs.

13.4.4 The Outline CWTP and main contractors’ CWTPs will include, the following as appropriate:

1. A description of the roles and responsibilities of all parties, including Heathrow, local authorities, contractors, construction staff and other workers
2. The identification of a relevant travel plan coordinator and a description of their responsibilities
3. Relevant context plans including site activities and surrounding transport networks and their users
4. The consideration of key issues for each construction site or collection of sites
5. The methodology for surveying workforce travel patterns
6. Projected workforce trip generation during all phases of construction
7. Travel mitigation measures to reduce the impact of the construction workforce on the existing transport network
8. Limit single occupancy car journeys from the construction workforce
9. Demand management
10. The process for monitoring and reviewing the construction workforce travel patterns and the performance of the travel plan against the specified targets.

13.5 Traffic safety and control

13.5.1 Traffic management schemes will be designed to:

1. accommodate the safe passage of traffic through any road or construction works
2. reduce the likelihood of traffic diversion to alternative routes which may negatively impact upon the local community
3. mitigate against the anticipated effects on the local community
4. minimise delays and disruptions to traffic as far as reasonably achievable.

13.5.2 Where abnormal indivisible loads are required to be transported during the construction works, the main contractors will be required to notify the police, the highway authorities or the owners of the infrastructure.
13.5.3 As noted above, throughout the construction process, Heathrow/ the main contractors will consult with relevant road authorities and Highways England to ensure effective traffic management. Others required for consultation may include the organisers of major or significant local events and visitor attractions in the surrounding areas; and relevant organisations relating to traffic management and control measures to accommodate abnormal traffic or unusually high traffic demands.

13.5.4 As part of the temporary traffic management schemes or as part of other disruption, signposting of alternative routes for currently signposted destinations and points of interest will be undertaken.

13.5.5 Consideration will be given to the management of vehicle movements near schools or routes to school.

13.5.6 Traffic Safety and Control Officers will be appointed and will have a number of responsibilities relating to traffic and transport management. Responsibilities will include the following, as appropriate:

1. Consulting with relevant road authorities and Highways England to ensure effective traffic management

2. Overarching management and implementation of traffic management measures associated with the DCO Project

3. The management of the layout of construction site access points

4. Ensuring that all traffic equipment is in place and operationally effective

5. Liaison with Heathrow/ the main contractors, the appropriate authorities, the traffic safety and control officers on Heathrow construction sites and any adjacent construction sites, and the continual monitoring of the traffic management measures employed

6. Ensuring compliance with all appropriate health and safety directives relating to operations and live traffic, in conjunction with the main contractors’ Health and Safety Manager

7. The arrangement of site inspections at regular intervals and equipment attended to and maintained in the event of accidents/incidents having replacement signs, cones, lights and bollards and the other such equipment erected without delay

8. Ensuring the provision of appropriate traffic and travel information to all construction workers during site inductions

9. Ensuring communication to all construction workers of construction worker code of conduct when travelling to and from the site during site inductions, and
their responsibilities as representing Heathrow in the eyes of local communities.

13.6 **Temporary or permanent closure or diversion**

13.6.1 Pursuant to the powers in the DCO, the main contractors will be able to temporarily stop up, alter or divert, streets and prevent traffic and pedestrians passing along the street if necessary for construction. In so doing they must allow pedestrians access to their properties which abut the affected streets. Consultation will be undertaken with the relevant property owners, highway authorities and other key stakeholders prior to temporary or permanent closure or diversion.

13.7 **Public transport, pedestrian, equestrian or cycle routes**

13.7.1 Heathrow will minimise, where reasonably practicable, the need for and duration of the removal of public transport infrastructure or diversion of services. Alternate facilities will be provided where appropriate to limit disruption to service route and timetable.

13.7.2 Where traffic management schemes are likely to impact upon the flow and mobility of buses, Heathrow/ the main contractors will consult through the TMWG with the relevant local authorities and public transport and bus operators in reference to the identified traffic management schemes. Heathrow/ the main contractors will implement appropriate measures to mitigate disruption to bus services as far as reasonably practicable in developing the CTMPs.

13.7.3 The closure of pedestrian and cyclist routes will be minimised where reasonably practicable and adequate alternate diversion routes will be provided.

13.7.4 Heathrow/ the main contractors will provide alternative routes for pedestrians and non-motorised users that are affected by construction works where reasonably practicable to do so.

13.7.5 The content in the CTMPs relating to traffic management layouts, signing and apparatus will include details of any temporary measures or signing necessary to maintain access to and signing of National Cycle Network routes and other existing routes designated for, or commonly used by, pedestrians, equestrians or cyclists.

13.7.6 Where new routes for pedestrians and other non-motorised users are developed as part of the DCO Project, Heathrow/ the main contractors will ensure the availability and suitability of these routes for use and will signpost them appropriately when they are constructed to a condition and approved as safe for use.
13.8 Measures to reduce impacts from construction traffic

13.8.1 Heathrow will manage construction-related deliveries and collections using a project-wide Delivery Management System (DMS). The DMS will function by scheduling and re-timing deliveries and collections to avoid, where reasonably practicable, the most congested times of the day.

13.8.2 On-site construction traffic routes will be provided across the construction works for use by construction vehicles, where appropriate, to minimise the need to use the public highway. To promote the use of such routes, site access points will be positioned accordingly, accounting for any essential safety considerations in the design and construction of appropriate access points.

13.8.3 Heathrow/ the main contractors will provide mud control measures at key access points and take other measures necessary to ensure that the roads, accesses and similar are not impacted by mud and other loose materials arising from the construction works.

13.8.4 Heathrow/ the main contractors will assist local highways authorities and Highways England Traffic Officers in the event of a local traffic incident providing key points of contact and relaying incident-related information to construction traffic operators where reasonably practicable to do so.

13.9 Access routes for construction traffic

13.9.1 Heathrow will define the access routes that may be used to access the construction sites in the CTMP. These routes will be developed in consultation with the TMWG. Heathrow, through the CTMP, will require the main contractors to adhere to these routes. Signage will be provided by Heathrow/ the main contractors, including seeking any approvals or consents as required.

13.9.2 Access routes for construction traffic will be limited, as far as reasonably achievable, to the strategic road network and A roads. For other local roads, such as town/ village centres and high streets, access will be restricted but may at times be necessary; for instance, to enable transport or delivery of locally sourced materials.

13.9.3 Generally, access along minor roads will be prohibited. In instances where access on lower class local roads and roads within residential areas is required, the Heathrow/ the main contractors will implement measures to manage access.

13.9.4 The design and construction of site access points will be completed to a suitable standard to enable the smooth access and egress of vehicles in a forward direction in order to limit disruption to road users due to use of the access points.
Heathrow will consult with the relevant roads authorities and emergency services on the positioning of site access and egress points.

13.9.5 Heathrow will monitor site accesses and public roads adjacent to access points to enable measures to keep accesses and roads clean and free of obstacles.

13.10 Monitoring

13.10.1 In order to facilitate the safety of traffic, the public and the construction workforce during the construction-related traffic management works, Heathrow will monitor the CTMP and CWTP to maintain their effectiveness.
14. **WATER ENVIRONMENT**

14.1 **General provisions**

14.1.1 Heathrow/ the main contractors will adopt a range of measures during the construction phase to control the potential risks to the water environment, relating to the hydromorphology of waterbodies, flood risk, and the water quantity or quality of surface and groundwater receptors including abstractions and water resources. Specific measures relating to instream ecology and riparian ecology are covered in section 6.

14.1.2 Reference will be made to policy and guidance on good practice measures including the Design Manual for Roads and Bridges, The SuDS Manual (C753) CIRIA (2015), the Pollution Prevention Guidelines (PPGs) where still relevant, and the replacement guidance series NetRegs Guidance for Pollution Prevention Guidelines (GPPs).

14.1.3 A Water Environment Plan will be developed and will detail the measures that will be put in place during construction. The Water Environment Plan is the working title for the document(s) which will contain consideration of construction drainage, flood mitigation and river diversions. The Environment Agency, Local Lead Flood Authorities and other interested stakeholders such as Natural England and Colne Valley Regional Park will be consulted with respect to the different elements of the Water Environment Plan prior to its submission as part of the DCO application.

14.2 **Pollution control**

14.2.1 In addition to complying with the following general good practice for chemical spillage prevention and control, a specific Pollution Incident Control Plan will be prepared and implemented by the main contractors, as described in section 4.14. See also Understanding your environmental responsibilities – good environmental practices (2013), PPG 1, and Pollution incident response planning (2017), GPP 21.

14.2.2 All fuels, chemicals and oils will be stored within bunded areas in accordance with good practice guidance such as Above ground oil storage tanks, GPP 2 (2017), Use and design of oil separators in surface water drainage systems, PPG 3 (2006), and Safe storage – drums and intermediate bulk containers GPP 26, (2018).

14.2.3 Bowsers, valves and trigger guns will be protected from vandalism and kept locked when not in use.
14.2.4 The main contractors will ensure that all stationary plant used will be fitted with measures such as drip trays to retain any leakage of oil or fuel. To prevent overflow, the contractor will empty trays at regular intervals and correctly dispose via a licensed waste disposal operator.

14.2.5 Fuel and chemical storage will be located in Flood Zone 1 and a minimum of ten metres away from a watercourse and 50 m from an abstraction borehole. No chemicals or fuel will be stored in Source Protection Zone 1. No storage or refuelling of mobile plant will take place within these buffers without prior agreement of the Environment Agency. Any storage of chemicals or fuel in Source Protection Zone 2 or 3 will be subject to a detailed risk assessment, appropriate mitigation/ pollution prevention measures and Environment Agency consultation through the Pollution Incident Control Plan and through consultation and compliance with the appropriate permits/ regulation depending on the location and nature of the activity. The Environment Agency will be consulted to develop a site-wide approach to the storage of fuel and chemicals over areas of Principal Aquifer to support individual site risk assessment, and storage in these areas will be minimised where reasonably practicable. See Glossary for zone definitions.

14.2.6 Mobile plant will be maintained in good working order. Larger items of plant such as excavators will undergo daily recorded inspections by a competent person (usually the operator) for any defects. Where defects are evident, the item or plant shall be removed from the site immediately and serviced or replaced as soon as possible.

14.2.7 Leaking or empty oil drums will be removed from site immediately and disposed of via an appropriately licensed waste disposal contractor.

14.2.8 All water runoff from designated refuelling areas will be channelled to an oil separator or an alternative treatment system prior to discharge.

14.2.9 Wheel washing will be undertaken in a designated area in accordance with Vehicle washing and cleaning (2017), GPP 13. Water from wheel washing facilities and wash down areas will be recycled or fully contained and disposed of via tanker or through connection with the foul sewer. Spill kits will be held on site with a variety of absorbent materials to be used in the event of a spill of fuel, oil or chemicals. Staff will be trained in their use, and they will be checked regularly and replaced after an event. Where reasonably practicable, spill kits will also be stored with mobile fuel bowser.

14.2.10 Suitable quantities of pollution control equipment such as sorbent pads, sorbent granules, booms or similar material will be readily available at the temporary construction compounds, and on site.
Oil interceptors, if required by the relevant regulatory body or where relevant the statutory undertaker, will be used at site offices and works compounds in accordance with Working at construction and demolition sites (2012), PPG 6.

Pollution shut-off valves will be used in compounds with an established drainage network.

Any mixing and handling of wet concrete (and cement) that is required on site will be undertaken in designated areas, and the location and configuration of the plant will be agreed with the Environment Agency. These will be provided in Flood Zone 1 and at least 10 metres from any watercourse or surface water drain, and 50 metres from an abstraction borehole (and not within Source Protection Zone 1 if one has been defined) to minimise the risk from pollution from highly alkaline wash water, in accordance with good practice guidance such as Working at construction and demolition sites PPG 6 (2012).

A designated area will also be used for any washing down or equipment cleaning associated with concrete or cementing processes and facilities provided to remove sediment prior to disposal. Measures will be in place to control, store, recirculate and treat concrete wash water prior to discharge to the foul sewer (in agreement with Thames Water) or authorised waste disposal off-site. Wash water from concrete and cement works will not be discharged untreated into the water environment (e.g. rivers, surface water drains and gullies) as this can have a significant impact on water quality.

Suitable measures and best practise guidance for piled foundations on existing landfill sites or within 50m of potential or known areas of land contamination are described in section 9.3, including site-specific environmental risk assessment.

Management of groundwater during any piling activities will be described in the Water Environment Plan.

**Protection of buried infrastructure**

The exact location of buried infrastructure will be established by on-site survey prior to relevant construction works. An appropriate protection system (such as temporary support structure, sheet piles, installation of secant piles etc.) will be implemented to manage any impact to the operation of the public sewer network and other buried infrastructure. The piling methodology will be developed considering such utility services.

Any buried infrastructure damaged during construction will be repaired or replaced as quickly as is reasonably practicable.
14.4 **Stand-off distances from watercourses**

14.4.1 Where works are not taking place within rivers, a stand-off distance will be implemented. Where reasonably practicable, stand off-distances will be eight metres from the bank-top.

14.4.2 Where this is not reasonably practicable, further mitigation will be introduced to mitigate effects. This could include the use of standard sediment control measures to ensure there is no direct pathway between the construction site and the watercourse.

14.5 **Protection of watercourses: river diversions, river and water crossings**

14.5.1 Rivers are planned to be diverted early in the construction programme in order to clear the site, manage flood risk and protect river water quality. Works will be undertaken in accordance with Works and maintenance in or near water (2018), GPP 5. Methods of construction of the transfer to the new diversions from the existing channels will be discussed between Heathrow, the main contractors, the Environment Agency, Natural England, and the relevant Lead Local Flood Authority (LLFA). The Royal Parks Authority will also be consulted in respect of the Longford River.

14.5.2 The phased movement of rivers will take into account ecological constraints, including seasonal constraints and there will be no impact on flood risk either during construction or in the long term.

14.5.3 These measures will also facilitate ecological connectivity during the construction of river diversions.

14.5.4 New river channels and their riparian corridors will be managed to allow the areas to become ecologically bedded in.

14.5.5 Temporary diversions will be minimised as far as reasonably practicable. Diverted channels will be returned to their existing (or moved to new permanent) channels as quickly as reasonably practicable unless there are environmental reasons to the contrary that represent a betterment relative to the baseline environment. Further detail will be provided in the Water Environment Plan, including the design of any channel lining where the new channel flows over landfill or contaminated land.
14.6 **Groundwater control and dewatering**

*Groundwater control*

14.6.1 Control of groundwater will be required in the following situations:

1. To prevent an excavation situated below the water table from flooding, where required, and to ensure stability of the excavation base and side slopes

2. To enable lakes to be infilled

3. To enable the construction of subsurface structures.

14.6.2 Groundwater control techniques may include dewatering from excavations, lakes and tunnels; physical exclusion (e.g. utilising a slurry cut-off wall, ground freezing or grouting); pumping from sumps or wells (including wellpoints) to intercept the groundwater before it reaches the excavation, lake or tunnel (resulting in a drawdown of the water table) or by a combination of these techniques.

14.6.3 Methods of groundwater control and handling, capturing, controlling, treating and/or disposing extracted groundwater during construction will be developed in accordance with the Working at construction and demolition sites (2012), PPG 6 and BS 6031 Code of Practice for earthworks (BSI, 2009c).

14.6.4 Detailed measures for groundwater control and monitoring will be included in the Water Environment Plan and are summarised in the following paragraphs.

14.6.5 Groundwater control techniques will be tailored specifically to each excavation, lake or tunnel and designed to reduce the risk of groundwater flooding upgradient of any cut-off walls, with consideration of the in-combination effects of multiple excavations.

14.6.6 Any materials and methods used for ground treatment techniques such as grouting to control groundwater will be agreed with the Environment Agency before use, including site-specific monitoring proposals that will include groundwater quality monitoring around grouting areas.

14.6.7 Assessment will be made of the surrounding area potentially impacted by groundwater control techniques, and all receptors susceptible to groundwater level changes will be identified. This will include assessment of the potential impacts on the interaction between groundwater and surface water, potential impacts on groundwater dependent sites on abstractions. Dewatering will be minimised where reasonably practicable.

*Dewatering treatment and discharge*

14.6.8 In relation to the dewatering of landfill voids there will be a requirement to treat the leachate pumped from these areas in leachate treatment plants prior to discharge
to the local sewer system. Further work will be undertaken for the DCO application to establish the detail of these measures, including:

1. Identification of the location of leachate treatment plants
2. Design principles for these plants
3. Agreement with Thames Water or the Environment Agency on the rate and quality of discharge to Thames Water sewers or the Colne Brook respectively.

The strategy for discharging dewatered volumes during the construction phase will be developed as part of the application for the DCO Project and the detail agreed with all relevant stakeholders including the Environment Agency and the relevant LLFA. The strategy will ensure no increase in flood risk during the construction phase.

Where there is the potential for existing contamination and silt content, direct discharge of dewatered volumes to watercourses or the groundwater environment will not be permitted. Water abstracted from and/or during excavations will be treated to an appropriate quality. This could include the use or combination of a number of approaches such as pumping and discharge to settlement tanks or siltbusters, petrol/ grease or similar traps to separate out contamination and silt.

Discharge of treated water may be to dedicated soakways, watercourses, foul sewers or authorised waste disposal off-site. Discharges will be suspended if there are naturally occurring high flows in the river or sewer resulting from local rainfall events. Site specific measures will be developed to detail how water will be stored on site during more extreme events.

Water abstracted from and/or during excavations will either be kept entirely separate from surface water run-off arising from outside of excavations (separate systems), or if managed in combined systems, these will be designed specifically to accommodate attenuation storage and treatment facilities from both sources of water (rainfall and dewatering) to ensure neither source would compromise the others effectiveness during either extreme rainfall events, or high water table/periods of high groundwater ingress.

14.7 Surface water management

14.7.1 Surface water run-off from construction sites will be managed to avoid any increase in flood risk downstream and to protect downstream water quality.

14.7.2 Heathrow/ the main contractors will consult with the Environment Agency and LLFAs in relation to measures to contain and manage surface water runoff from the construction sites. Measures to be implemented will include the following, as appropriate:
1. The provision of dedicated temporary construction site surface water drainage systems including sustainable drainage systems (SuDS) with appropriately sized attenuation and treatment facilities such as attenuation basins and/or ponds, settlement or detention basins, and hydrocarbon interceptors, for each construction site as necessary.

2. Implementation of additional measures as necessary to protect the water environment, as set out in the following paragraphs.

   a) The design of the temporary construction site surface water drainage systems will draw on Defra’s Non-statutory technical standards for sustainable drainage systems (with due regard to the short lifetime and limited accessibility of the systems).

   b) Work will comply with BS 6031 Code of Practice for earthworks, BSI (2009c) in relation to the general control of site drainage. Measures to be implemented will also be determined with due regard of good practice guidance, including the Design Manual for Roads and Bridges and The SuDS Manual (C753), CIRIA (2015), in particular Section 3 (designing for quantity), Section 4 (designing for quality) and Section 31 (construction)) and Control of water pollution from construction sites: Guidance for consultants and contractors (C532), CIRIA (2001).

   c) Where site conditions and the construction phasing permits, the temporary construction drainage attenuation and treatment infrastructure will be located outside of the fluvial floodplain. Exceptions will include where the construction site itself was located in the fluvial floodplain whereby site-specific considerations would apply.

   d) The temporary construction site drainage measures will be completed before the commencement of earthwork operations, and will be retained until the drainage system of the completed development is fully operational, or site restoration works are completed.

   e) Water abstracted from and/or during excavations will either be kept entirely separate from surface water run-off arising from outside of excavations (separate systems), or if managed in combined systems, designed specifically to accommodate attenuation storage and treatment facilities from both sources of water (rainfall and dewatering) to ensure neither source would compromise the others effectiveness during either extreme rainfall events, or high water table/periods of high groundwater ingress. Both approaches will be subject to consultation with the Environment Agency and LLFAs.
14.7.3 Specific measures to help to control sediment will be consulted on with the Environment Agency; measures for each construction site will be finalised at the detailed design stage.

14.7.4 The following general measures will be implemented to limit and manage sediment erosion, control sediment mobilisation and entrainment, and manage sediment transport and deposition (either on land or in watercourses):

1. Management of erosion – source control:
   a) Areas of exposed ground and stockpiles will be minimised where reasonably practicable to reduce silty runoff. Geotextiles will be used as necessary to shield stockpiles, and stockpiles to be left for more than three months will be seeded.
   b) Manageable parcels of land only to be cleared at a time (for instance, until stabilised) therefore minimising supply of fine-grained sediment into adjacent watercourses.
   c) Earth movement will be controlled to reduce the risk of silt combining with the site run-off.

2. Minimisation of the movement of entrained sediment:
   a) Mud will be controlled at site entry and exit points using wheel cleaning areas and road sweepers as appropriate.
   b) Tools and plant will be washed out and cleaned in designated areas within the construction compounds where runoff is isolated for treatment before discharge.
   c) Cut-off ditches will be installed around excavations, exposed ground and stockpiles to prevent the uncontrolled release of sediments from the site. Vegetated soakaways will be used where reasonably practicable to encourage infiltration.
   d) Where works are adjacent to watercourses/water bodies, appropriate restrictions and barriers will be installed along their edge to prevent damage to riparian vegetation and to manage/minimise the pathway for untreated silt laden runoff to enter the watercourse. Measures could include the use of straw bale traps, silt fences, gravel and geotextiles as required on a site-specific basis along drains, ditches and watercourses in the vicinity of earthworks.

3. Treatment of sediment entrained run-off: Provision will be made on site for the settlement of sediment; this will include adequate provision for the removal of sediment from site run-off. Treatment could include settlement tanks/ponds,
combined with additional polishing technologies, such as silt busters as required. See also section 14.6.

14.8 Control and management of foul drainage

14.8.1 Foul water and sewage effluents from site facilities will be managed and disposed of by the main contractors. In the event that a discharge to an existing foul sewer is not possible, this will take place in accordance with the guidance outlined in Treatment and disposal of wastewater where there is no connection to the public foul sewer GPP 4 (2017). The following measures may be implemented, where appropriate:

1. Containment of foul water by temporary foul drainage facilities and disposal off-site by a licensed contractor
2. Appropriate treatment and discharge to land via a drainage field or soakaway with prior authorisation from the Environment Agency
3. Appropriate treatment and discharge to a watercourse, drain, or surface water sewer with prior authorisation from the Environment Agency. Prior authorisation will be obtained for treated foul drainage discharge to a surface water sewer from Thames Water, pursuant to the DCO.

14.8.2 Risk assessments and detailed method statements will be approved by the Environment Agency for any non-mains foul arrangements. Non-mains discharge of foul sewage will not be permitted in Source Protection Zone 1.

14.8.3 Heathrow/ the main contractors will comply with any measures specified by the permits that will be sought for any non-mains foul arrangements.

14.9 Flood risk management during construction

Re-provision of lost flood plain

14.9.1 Heathrow/ the main contractors will ensure that flood plains are maintained and/ or compensatory flood storage is provided before any loss of flood plain is incurred as a result of the DCO Project. The site-specific approaches for the provision of lost flood plains will be included within the Water Environment Plan. This will include the detailed design and location of compensatory flood plain storage areas.

14.9.2 Each flood storage site will comprise of an inflow control structure and outflow control structure. These structures will be passive where reasonably practicable. Any hydraulic structures in rivers will be passable by fish to facilitate passage up and downstream. This will either be through the design of the structure itself, or
through the provision of a fish pass. No fish passes will be provided into flood storage areas.

14.9.3 The arrangement of all flood storage sites will continue to be optimised as the design is developed. This will include testing of the operation at a range of flood events and agreement of detailed design with the Environment Agency and LLFA in line with the to the DCO.

**Flood storage areas over landfills**

14.9.4 Where flood storage is proposed on landfill sites, impermeable liners will be provided. The design will consider hydraulic uplift to the liner from local groundwater, and how any pressure relief wells would keep separate landfill water and flood water. Appropriate ground bearing liner design will be carried out based on the findings from site-specific ground investigations.

14.9.5 If the landfills remain in place, the existing infrastructure (cut off walls, gas wells etc.) must be maintained or replaced and not disturbed where reasonably practicable.

14.9.6 The detailed design of any flood storage areas over landfill will be agreed with the Environment Agency in line with the DCO.

**Flood Management Plans**

14.9.7 A part of the planning for severe weather events (section 4.16) will comprise the development of Flood Management Plans (identifying the measures that will be in place and actions to be taken in the event of a flood event during construction). These will outline how to protect staff, hazardous or vulnerable equipment and minimise the risk of pollution. The plans will cover a broad range of topics including all construction sites and areas located within Flood Zone 2 and 3, areas vulnerable to groundwater flooding, and other flood risk sources such as sewer flooding and reservoir flooding. They will be drafted in consultation with the Environment Agency, LLFAs and other relevant stakeholders, which will involve awareness and adoption of copies of the relevant regulatory bodies flood risk management plans, maps and strategies. These will act as a point of reference for the development of specific construction site flood mitigation plans by the main contractors and where reasonably practicable, this will include the provision of evidence that appropriate flood warning and emergency management measures are accounted for, particularly focusing on long-term maintenance and management.

14.9.8 Heathrow/ the main contractors will use an appropriate short-to-medium weather forecasting service and register with the Environment Agency’s Floodline, providing a flood risk warning to flood risk areas within the DCO Project.
The emergency procedures (see section 4.13) and pollution incident and control plan (see section 4.14) will include appropriate responses in the event of a flood event. This will include contact details for further help in the event of flooding and emergency flood plans, considering all sources of flooding, will be developed if required.

**Consideration of flood risk in the approach to storage and works during construction**

14.9.10 Heathrow/ the main contractors will provide mapped locations for the safe storage of hazardous materials within their flood risk plans; these will avoid Flood Zones 2 and 3. For all temporary and permanent works, a risk-based precautionary approach will be adopted, using the concept of the source to pathway to receptor theory.

14.9.11 Where the works phasing or site conditions dictate that stockpiles, accommodation, temporary facilities, machinery and plant are located within Flood Zone 2 or 3 areas or areas at significant risk of flooding from other sources including groundwater, temporary floodplain compensation will be required. Importantly, if soil and materials are to be temporarily stored within Flood Zone 2 they should be positioned to avoid obstructing flow as much as reasonably practicable.

14.9.12 The main contractors will undertake construction activities whilst being mindful of impacts to flood risk. A number of measures may be implemented to avoid significant impacts to flood risk including:

1. Removing obstacles, plant and debris from watercourse pathways
2. Works will not be carried out during flood flows to avoid undue erosion of the river beds and/ or banks, to protect construction personnel and plant, and to ensure that flood conveyance is not reduced
3. Temporary bridges will be designed to ensure an appropriate level of flood conveyance in the construction phase.

**14.10 Management of impact on abstraction points**

14.10.1 Existing abstraction points comprise licensed, deregulated and private water supplies. The risk of pollution of groundwater and surface water and impacts on water resources will be managed by the general good practice measures described in this document and the embedded measures described in the Water Environment Plan.
14.10.2 To limit and manage residual risks that water quality and/or availability may deteriorate at existing abstraction points during the construction works, the following measures will be applied:

1. Existing abstractors will be consulted by Heathrow/the main contractors on the measures in place to avoid or manage loss or interruption of supply, or provision of alternative supplies

2. A targeted risk assessment will be undertaken by the main contractors for each abstraction point and a monitoring plan developed and implemented to include a period of baseline monitoring appropriate to the timing and type of construction nearby, in discussion with the abstractor. Monitoring may include groundwater levels, flow and water quality as appropriate and will have particular emphasis on the risk of impacts to aquifers and water supplies

3. Where monitoring data identifies adverse effects on water quality or availability as a result of the works, the abstractor (licence holder and operator) and the Environment Agency will be contacted as soon as reasonably practicable. Heathrow/the main contractors will put into place appropriate emergency measures and remediation to address the adverse impact, including provision of an alternative water supply by bottle and/or tanker as a temporary measure as appropriate to affected parties. Further monitoring and remediation will be undertaken as appropriate.

14.11 Monitoring

14.11.1 To limit and manage residual risks that dewatering and other construction activities may affect groundwater and surface water quality and quantity, a surface water and groundwater monitoring programme will be implemented to define baseline conditions and trigger levels using a risk-based approach. The monitoring network for the baseline pre-construction period will provide the basis for the framework that will be used to monitor the effectiveness of mitigation in the construction and operation phases of the development.

14.11.2 This monitoring programme will include groundwater levels, water quality and flows in watercourses that are likely to be affected by construction works, and will be developed in consultation with the Environment Agency, Natural England and other stakeholders. Monitoring boreholes will be installed in both the deep Chalk aquifer and the superficial gravel aquifer. Initial proposals for monitoring will be documented in the Water Environment Plan.
# 15. GLOSSARY OF TERMS

<table>
<thead>
<tr>
<th>Term/abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACM</td>
<td>Asbestos Containing Materials</td>
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<tr>
<td>AcoP</td>
<td>Approved Codes of Practice</td>
</tr>
<tr>
<td>AQMA</td>
<td>Air Quality Management Area – An area declared by the relevant local authority which is not likely to meet the UK’s national air quality objectives by the relevant deadlines. Refer to <a href="https://uk-air.defra.gov.uk/agma/">https://uk-air.defra.gov.uk/agma/</a> for further information.</td>
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<tr>
<td>BPM</td>
<td>Best Practicable Means – Defined in the Control of Pollution Act 1974 and Environmental Protection Act 1990 as 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’.</td>
</tr>
<tr>
<td>CCTV</td>
<td>Closed circuit television</td>
</tr>
<tr>
<td>CIRIA</td>
<td>A not-for-profit construction industry research and information association. Refer to <a href="https://www.ciria.org/">https://www.ciria.org/</a> for further information.</td>
</tr>
<tr>
<td>CL:AIRE</td>
<td>Contaminated land: applications in real environments – an organisation committed to raising awareness of practical sustainable remediation technologies</td>
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<tr>
<td>CoCP</td>
<td>Code of Construction Practice</td>
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<tr>
<td>Considerate</td>
<td>A national scheme in the UK that promotes good practice on construction sites through its codes of considerate practice. The codes commit registered sites to be considerate, as well as being respectable neighbourhoods, environmentally conscious, responsible and accountable. Refer to <a href="http://www.ccscheme.org.uk">www.ccscheme.org.uk</a> for further information.</td>
</tr>
<tr>
<td>Constructors Scheme</td>
<td>All construction related activities including enabling works, utilities, demolition, transport and construction</td>
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<tr>
<td>Construction / Construction activities</td>
<td>An area identified for permanent land use where construction activities are being carried out (e.g. construction of a new road)</td>
</tr>
<tr>
<td>Construction support site</td>
<td>An area identified for temporary land use where activities or functions supporting the main construction are being carried out (e.g. concrete production for the construction of a road)</td>
</tr>
<tr>
<td>CTMP</td>
<td>Construction Traffic Management Plan</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>CWTP</td>
<td>Construction Workforce Travel Plan</td>
</tr>
<tr>
<td>DCO</td>
<td>Development Consent Order</td>
</tr>
<tr>
<td>DCO Project</td>
<td>The Heathrow Expansion Project, as defined in section 1</td>
</tr>
<tr>
<td>Defra</td>
<td>Department for Environment, Food and Rural Affairs</td>
</tr>
<tr>
<td>Designated Heritage Assets</td>
<td>Scheduled monuments, listed buildings, registered parks and gardens, protected military remains, and conservation areas.</td>
</tr>
<tr>
<td>Disaster</td>
<td>A natural occurrence leading to serious damage on receptors, either immediate or delayed. Note 1: The 2014/52/EU Directive Para 14 refers to man-made disasters and the European Commission Document A Community Approach on the Prevention of Natural and Man-made Disasters (February 2009). The remainder of the Directive refers only to disasters or natural disasters. Our interpretation is that the concept of man-made disasters is therefore included in the definition of ‘major accidents’ in the 2014/52/EU Directive. Note 2: This either arises from (directly or indirectly), or has potential to impact upon the development. Examples: Hurricane, landslide, extreme seismic activity, malicious act by third party</td>
</tr>
<tr>
<td>DMS</td>
<td>Delivery Management System</td>
</tr>
<tr>
<td>Draft CoCP</td>
<td>Draft Code of Construction Practice</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental Impact Assessment</td>
</tr>
<tr>
<td>EMS</td>
<td>Environmental Management System</td>
</tr>
<tr>
<td>EOC</td>
<td>Explosive ordnance clearance</td>
</tr>
<tr>
<td>ES</td>
<td>Environmental Statement The written output presenting the full findings of the Environmental Impact Assessment for the Heathrow Expansion Development Consent Order Project</td>
</tr>
<tr>
<td>Euro class standards</td>
<td>A standard defining the acceptable limits for exhaust emissions of new vehicles sold in EU and EEA member states.</td>
</tr>
<tr>
<td>Flood Zone 1</td>
<td>A flood zone defined by the Environment Agency within which the land is assessed as having &lt;0.1% chance of flooding from rivers or from the sea in any year</td>
</tr>
<tr>
<td>Flood Zone 2</td>
<td>A flood zone defined by the Environment Agency within which the land is assessed as having a 0.1% - 1% chance of flooding from rivers, or a 0.1% – 0.5% chance of flooding from the sea in any year</td>
</tr>
<tr>
<td>Flood Zone 3</td>
<td>A flood zone defined by the Environment Agency within which the land is assessed as having &gt;1% chance of flooding from rivers or &gt;0.5% chance of flooding from the sea in any year</td>
</tr>
<tr>
<td><strong>FORS</strong></td>
<td>Fleet Operator Recognition Scheme – A voluntary accreditation scheme encompassing safety, fuel efficiency, improved operations and vehicle emissions. Refer to <a href="https://www.fors-online.org.uk/cms/about-fors/">https://www.fors-online.org.uk/cms/about-fors/</a> for further information.</td>
</tr>
<tr>
<td><strong>GLAAS</strong></td>
<td>Greater London Archaeology Advisory Service</td>
</tr>
<tr>
<td><strong>HCEB</strong></td>
<td>The Heathrow Community Engagement Board (HCEB) is an independent body set up to meet the Community Engagement Board requirements of the Airports National Policy Statement (ANPS) June 2018. The purpose of the HCEB is to act as the key focal point for engagement with the local community which includes members of the public, local interest groups, local authorities in the vicinity of the Airport and passengers.</td>
</tr>
<tr>
<td><strong>HDV</strong></td>
<td>Heavy Duty Vehicles</td>
</tr>
<tr>
<td><strong>HGV</strong></td>
<td>Heavy Goods Vehicles</td>
</tr>
<tr>
<td><strong>HSE</strong></td>
<td>Health and Safety Executive</td>
</tr>
<tr>
<td><strong>IAQM</strong></td>
<td>Institute of Air Quality Management – A professional body for air quality professionals, providing timely and useful guidance on matters affecting air quality.</td>
</tr>
<tr>
<td><strong>ISO 14001</strong></td>
<td>A standard that outlines the criteria for an organisation to adhere to a certified environmental management system.</td>
</tr>
<tr>
<td><strong>ITS</strong></td>
<td>Intelligent Transport System</td>
</tr>
<tr>
<td><strong>JPC</strong></td>
<td>Joint Planning Committee</td>
</tr>
<tr>
<td><strong>LLFA</strong></td>
<td>Lead Local Flood Authority</td>
</tr>
<tr>
<td><strong>MAFF</strong></td>
<td>Ministry of Agriculture, Fisheries, and Food</td>
</tr>
<tr>
<td><strong>Main contractors</strong></td>
<td>The main contractors on the construction site who holds responsibility for planning, management and coordinating themselves and/or all other contractors working on the site, the works or any other contractor directly employed by Heathrow to carry out any construction works related with this DCO Project.</td>
</tr>
<tr>
<td><strong>Major Accident</strong></td>
<td>An occurrence resulting from an uncontrolled event caused by a man-made activity or asset leading to serious damage on receptors, either immediate or delayed. Note 1: This either arises from (directly or indirectly), or has potential to impact upon the DCO Project under assessment. This includes the third runway and associated activities and features, during both construction and operation. Note 2: Major accidents include both those sourced at the DCO Project under assessment and those sourced externally but interacting with it. Examples: Structural failure, excavation collapse or crane topple leading to significant injuries / fatalities, or damage to the built environment [e.g. ancient monument], or to sensitive habitat e.g. ancient tree, or release of a substance hazardous to the environment such as diesel, leading to significant and prolonged damage to environment.</td>
</tr>
<tr>
<td>Term</td>
<td>Definition</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Non-designated heritage assets</td>
<td>Archaeological and paleoenvironmental remains such as geological deposits that may contain evidence of our anthropocentric history, monuments, sites, historic landscapes, buildings and the built environment (this also includes locally designated assets).</td>
</tr>
<tr>
<td>NPPF</td>
<td>National Planning Policy Framework</td>
</tr>
<tr>
<td>PEIR</td>
<td>Preliminary Environmental Information Report</td>
</tr>
<tr>
<td>PINS</td>
<td>Planning Inspectorate</td>
</tr>
<tr>
<td>PPV</td>
<td>Peak particle velocity</td>
</tr>
<tr>
<td>RMP</td>
<td>Resource Management Plan</td>
</tr>
<tr>
<td>RPZ</td>
<td>Root Protection Zone</td>
</tr>
<tr>
<td>Section 61</td>
<td>Section 61 of the Control of Pollution Act (1974); establishing procedures for seeing and obtaining local authority consent to measures for the control of noise and vibration of construction sites.</td>
</tr>
<tr>
<td>Source Protection Zone (SPZ)</td>
<td>Source Protection Zones (SPZs) are defined by Environment Agency for groundwater sources used for public drinking water supply. The zones show the risk of contamination from any activities that might cause pollution in the area. They are used to set up pollution prevention measures and to monitor the activities of potential polluters. Three main zones are defined (Inner Zone 1, Outer Zone 2 and Total Catchment Zone 3) and a fourth Zone of Special Interest (Zone 4) is occasionally applied.</td>
</tr>
<tr>
<td>SuDS</td>
<td>Sustainable Drainage Systems</td>
</tr>
<tr>
<td>SoCC</td>
<td>Statement of community consultation</td>
</tr>
<tr>
<td>SSSIs</td>
<td>Sites of Special Scientific Interest</td>
</tr>
<tr>
<td>SWMP</td>
<td>Site waste management plan</td>
</tr>
<tr>
<td>Treasure Act (1996)</td>
<td>An Act of Parliament designed to deal with the finds of treasure in England, Wales and Northern Ireland. The Act ensures that individuals are legally bound to report all treasure to their local coroner within 14 days of discovery.</td>
</tr>
<tr>
<td>TMWG</td>
<td>Transport Management Working Group</td>
</tr>
<tr>
<td>TPC</td>
<td>Travel Plan Coordinator</td>
</tr>
<tr>
<td>UXO</td>
<td>Unexploded ordnance</td>
</tr>
<tr>
<td>WSI</td>
<td>Written scheme of investigation – a programme for archaeological investigation works</td>
</tr>
</tbody>
</table>
APPENDIX A: PRELIMINARY OUTLINE CONSTRUCTION TRAFFIC MANAGEMENT PLAN
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1. INTRODUCTION

1.1 Why develop a Construction Movement Strategy?

1.1.1 The Airports National Policy Statement (NPS) requires that, as part of the assessment of surface access (SA) impacts, the implications of airport expansion on SA network capacity during both the construction and operational project stages should be assessed. It also states that the Secretary of State will consider whether all reasonable steps to mitigate the SA impacts have been taken during both the development and construction phase in addition to the operational phase.

1.1.2 It is therefore a requirement for Heathrow, as part of its Development Consent Order (DCO) application to consider construction impacts on SA capacity. To do this the impacts of construction on the SA network need to be understood, and subsequently methods for mitigating any of these potential impacts need to be identified and considered.

1.1.3 We will prepare a Construction Movement Strategy (CMS) in support of the DCO application for the Heathrow Expansion Project, hereafter referred to as the DCO Project, which is made up of the Outline Construction Traffic Management Plan (OCTMP) and Outline Construction Workforce Travel Plan (OCWTP).

1.1.4 As part of AEC we have produced preliminary versions of these plans comprised of two documents:

- Preliminary Outline Construction Traffic Management Plan (POCTMP); and
- Preliminary Outline Construction Workforce Travel Plan (POCWTP).

1.1.5 The purpose of the OCTMP is to minimise the impact of construction logistics on the road network, including reducing: environmental impact and complying with air quality (AQ) standards; road risk; congestion and cost. The OCWTP is one of the mitigation measures referenced within this POCTMP and is further developed in a separate document.

1.1.6 Construction Traffic Management Plans are required by Transport for London (TfL) for all major development proposals – TfL refers to this documentation as Construction Logistics Plans (CLPs). The TfL CLP guidance standards are recognised by all major stakeholders including Local Authorities in the vicinity of Heathrow. The OCTMP for the DCO Project will follow TfL CLP guidance and equate to an Outline CLP. Whilst a standalone OCWTP is not a necessity to comply with the guidance, it is recommended as best practice for major development proposals and thus we will include it within our CMS and a preliminary version is included for AEC which also follows the TfL guidance as far as possible with the information available at present.
1.1.7 The POCTMP and the POCWTP are produced as appendices to and are informed by the draft CoCP for AEC in June 2019, based on the information which is currently available, to ensure that planned measures will be in place to manage the impacts of construction workforce and traffic. These will be developed in more detail to Outline level documents for the DCO application in 2020 and further developed beyond the DCO by the main contractors to prepare for construction.

1.1.8 The CMS has been produced in accordance with local and national planning requirements. It has been developed alongside the:

- Surface Access Proposals;
- Preliminary Environmental Information Report (PEIR);
- Preliminary Transport Information Report (PTIR);
- Draft Code of Construction Practice; and
- Construction Proposals.

1.1.9 The relationship between this document and the other construction related documents is shown in Figure 1.

1.1.10 The scope and structure of the document and the proposed plan measures reflect the outcome of these discussions.

1.1.11 It should be noted that this POCTMP deals with construction traffic i.e. Heavy Goods Vehicles (HGVs over 7.5 tonnes) and Light Goods Vehicles (LGVs between 3.5 tonnes and 7.5 tonnes) whereas the POCWTP deals with
construction workforce travel, including private car trips, to and from the Expansion Development Area (EDA) – see Section 3.

1.2 **Objectives of the Construction Traffic Management Plan**

1.2.1 The overall objectives of the OCTMP will be to ensure that freight vehicles generated by transporting materials for the construction of the DCO Project are managed to:

- Minimise emission levels as far as reasonably possible;
- Limit noise impacts as far as reasonably possible;
- Reduce safety risks related to construction for residents, users of the airport, and other road traffic users; and
- Reduce congestion due to an increased number of vehicles over and above business as usual traffic and minimise impacts to the local community e.g. other impacts such as wear and tear of the road network and dust from construction traffic.

1.2.2 All of this needs to be undertaken while ensuring that the airport remains operational. The document refers only to construction vehicles related to DCO Project.

1.2.3 To support the above objectives, the OCTMP will strive to outline how we will require that all construction activities support the following aims where reasonably practicable:

- Embrace smarter operations based in international best practice that reduce the need for construction travel or that reduce or eliminate trips in peak periods thus reducing pressure on the surrounding road network.
- Encouraging greater use of sustainable construction transport modes to provide benefits in terms of reduced emissions and congestion to the local community;
- Encouraging the use of greener vehicles, ensuring that Euro 6 engines are used as standard for all HGVs related to construction as well as buses used to transport the construction workforce;
- Managing the on-going development and delivery of the OCTMP to detailed CTMPs with construction contractors;
- Communication of Expansion Development Area (EDA) delivery and servicing facilities to workforce and suppliers to ensure the most efficient use of construction vehicles.
1.3 **Proposed Development (the DCO project)**

1.3.1 The proposed development, will be delivered in phases beginning in 2020. The main phases of development are:

- Anticipated early works;
- DCO grant to runway opening;
- Runway opening to 115 million passengers per annum (mppa);
- From 115 mppa to 130 mppa; and
- From 130 mppa to 142 mppa.

More detail around these phases and what each entail is provided in Section 3 of this document as well as in our Construction Proposals document.

1.4 **Report Structure**

1.4.1 This document is divided into the following sections:

1. Introduction
2. Policy Context
3. Development Proposals
4. Vehicle Routing and access
5. Estimated vehicle movements
6. Strategies to reduce impacts
7. Responsibilities
2. POLICY CONTEXT

2.1.1 The Planning Act 2008 introduced and defined a new category of development, a ‘Nationally Significant Infrastructure Project’ (NSIP), for which the Planning Inspectorate operates the planning process and the relevant Secretary of State is the decision maker. The scale of expansion proposed at Heathrow means that it falls under this definition and, as such, requires Heathrow to make an application for a Development Consent Order (DCO). As part of an application for a DCO, Heathrow must demonstrate that the project, including alterations to the airport and the surrounding transport network, complies with Government policy set out in National Policy Statements (NPSs). There are also a range of other planning policies at a national, regional and local level that are of importance and relevant to expansion. This section outlines these policies, with a more detailed review of relevant policies included in the PEIR and PTIR.

2.2 National Policy

2.2.1 The Heathrow Expansion Project includes the alteration of the airport and changes to the M25 where the proposed new runway and taxiways cross it. This means the DCO will contain more than one NSIP and as such the National Policy Statements for both National Networks and Airports will apply. National Policy Statements take precedence over other national, regional and local planning policy documents.

2.2.2 More information on the relevant national policy is provided in the Surface Access Proposals.

The Airports National Policy Statement (June 2018)

2.2.3 In June 2018, the Secretary of State for Transport designated the Airports National Policy Statement (NPS). The Airports NPS provides the primary basis for decision-making on our DCO application for an expanded airport. It sets out the tests that Heathrow is required to meet in order to deliver additional airport capacity and support economic growth, whilst mitigating the impacts of expansion on local communities and the environment. The designation of the Airports NPS follows the three-year Airports Commission process, publication of two drafts of the Airports NPS for consultation and parliamentary scrutiny by the Transport Select Committee.

2.2.4 The Airports NPS also sets out the Government’s expectation that Heathrow should continue to strive to meet its public pledge to have landside airport-related traffic no greater than today. It should be noted that traffic related to construction, including both freight and workforce vehicles, is outside of this pledge however as
this document sets out, we are actively seeking to put in place measures to reduce the impacts of construction traffic across the expansion programme.

**National Policy Statement for National Networks (December 2014)**

2.2.5 Heathrow’s plans for expansion will impact on the motorway network and the national rail network. Where the changes proposed are NSIPs in their own right, the Secretary of State will consider those aspects by reference to both the Airports NPS and the National Policy Statement for National Networks (NNNPS), which contains policies in respect of nationally significant road and rail schemes. The NNNPS sets out how the Government will deliver transport networks which:

1. have “the capacity and connectivity and resilience to support national and local economic activity and facilitate growth and create jobs”;
2. “support and improve journey quality, reliability and safety”;
3. “support the delivery of environmental goals and the move to a low carbon economy”; and
4. “join up our communities and link effectively to each other.”

**National Planning Policy Framework (July 2018)**

2.2.6 The National Planning Policy Framework (NPPF) was revised in February 2019 and sets out at a national level the policy that local authorities should use in preparing development plans and deciding on planning applications. The NPPF includes a presumption in favour of sustainable development, and states that development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

**2.3 Regional Policy**

**The London Plan and Mayor’s Transport Strategy**

2.3.1 The London Plan, most recently adopted in March 2016, is the strategic development plan for Greater London. A replacement draft New London Plan was most recently published for consultation in August 2018 and it is intended it will be adopted in Autumn 2019.

2.3.2 Both the current London Plan and the draft New London Plan designate the airport and area around Heathrow as an Opportunity Area for growth (Opportunity Areas are defined as major sources of brownfield land which have significant capacity for development).
2.3.3 The current London Plan states that the Mayor of London opposes the expansion of Heathrow, while the draft New London Plan states that The Mayor will oppose expansion unless it can be shown that no additional noise or air quality harm would result, and that the benefits of future regulatory and technology improvements would be fairly shared with affected communities. The draft New London Plan also states that all airport expansion proposals should demonstrate how public transport and other surface access networks would accommodate resulting increases in demand alongside forecast background growth.

2.3.4 The Mayor’s Transport Strategy was adopted in March 2018 and sets out the Mayor’s policies and proposals for transport in London. It states that the Mayor will promote the improvement of surface links to London’s airports with airport operators contributing a fair share of the funding required and that the Mayor will work with industry partners and stakeholders to assess options for surface access to Heathrow.

2.3.5 Proposal 99 in the Mayor's Transport Strategy states that “the Mayor, through Transport for London (TfL) and working with the London Boroughs, road freight operators and other stakeholders will:

- Encourage HGV and van operators in London to be members of FORS;
- Encourage, and where appropriate specify, improved freight movement efficiently through for example, greater consolidation, more off-peak freight movement and greater use of water and rail-based transport;
- Support freight industry land requirements for locally focussed consolidation and/or break-bulk facilities and access to waterways and railways.

2.3.6 Proposal 117 acknowledges the incorporation of Delivery Servicing Plans (DSP), CLPs and the FORS to “improve the efficiency and effectiveness of freight operations” alongside other measures across London.

2.3.7 In addition, the London Plan states in Policy 6.3 that Construction Logistics Plans (CLPs) should be secured in line with the London Freight Plan and should be co-ordinated with Travel Plans. Policy 6.14 stresses the need to promote movement of freight by rail and waterway where appropriate. Development proposals promoting the compliance with the Fleet Operators Recognition Scheme (FORS), CLPs and DSP to consolidate freight will be encouraged.

2.3.8 Whilst this document is referred to as the Preliminary Outline Construction Traffic Management Plan, it equates to an Outline CLP and follows the structure set out in TfL’s CLP guidance (see below).
Mayor of London / Transport for London Delivering a Road Freight Legacy (September 2013)

2.3.9 This document seeks to promote organisations working together for safer, greener and more efficient deliveries in London. It sets out the industry priorities for delivering this as:

- Increasing safety;
- Re-timing deliveries and collections;
- Kerbside access;
- Increasing efficiency, e.g. through consolidation and collaboration;
- Communication and information provision; and
- Journey planning.

Fleet Operator Recognition Scheme (FORS)

2.3.10 FORS is a unique, industry-led membership scheme (membership levels are designated bronze, silver and gold) to help commercial goods vehicle operators become safer, more efficient and more environmentally-friendly. It’s relevance to the OCTMP is via its mention in the Mayor’s Transport Strategy and that its requirements will be relayed to all operators engaged in the construction of the DCO Project.

2.3.11 More information on FORS is provided in Section 6.2.

Transport for London Construction Logistics Plan Guidance (June 2017)

2.3.12 TfL sets out in its document “Construction Logistics Plan Guidance” that the purpose of developing a CLP is to “minimise the impact of construction logistics on the road network.”

2.3.13 It goes on to say that “well planned construction logistics will reduce:

- Environmental impact: lower vehicle emissions and noise levels;
- Road risk: improving the safety of road users;
- Congestion: reduced vehicle trips, particularly in peak periods; and
- Cost: Efficient working practices and reduced deliveries.

2.3.14 This OCTMP will follow the CLP structure as close as possible at outline level to ensure that traffic management during the construction period is well planned and set out in accordance with the latest guidance.
Other Local Policy

2.3.15 Every local planning authority is required to produce its own local plan, guiding development in the authority area in compliance with the NPPF. Although not covered in detail here, the PEIR and PTIR documentation includes a review of local planning policy for the 18 local authority areas surrounding the airport, highlighting policies that may be relevant to the DCO Project and which will be relevant to the OCTMP.
3. DEVELOPMENT PROPOSALS

3.1 Development Location

3.1.1 Heathrow airport is located approximately 14 miles west of central London on the western boundary of Greater London, in London Borough of Hillingdon – shown in Figure 2.

3.1.2 The term Expansion Development Area (EDA) is used to refer collectively to work-sites in this locality related to the DCO Project, across each phase of construction.

3.2 Indicative Schedule

3.2.1 The indicative schedule for the delivery of the DCO Project bFigure 3. Further details can be found in the Construction Proposals document.
3.3 **Construction Support Sites (CSS)**

3.3.1 Development plans for the DCO Project aim to keep construction activities within areas identified for permanent land use as much as reasonably practicable. However, where this is not possible plots of land will be temporarily used during the construction phase. These sites have been identified and are referred to as Construction Support Sites (CSS).

3.3.2 The CSS are located along the main access roads to the EDA and as close as possible to the main construction areas – the current planned locations of these are shown in Figure 4 (at peak requirement).
3.3.3 The CSS are expected to provide space for some or all of the following activities to facilitate construction on the EDA:

- **Construction compounds**: areas allocated to the management of people and resources - including the location of site offices, workforce welfare, plant and maintenance operations, and storage and laydown areas for construction materials.

- **Site entrances and control posts**: areas that provide security checks for vehicles, materials and workforce entering and leaving construction sites.

- **Temporary car parking**: to be used by the workforce in addition to public transport.

- **Lorry parks/holding areas**: areas allocated to manage the flow of HGVs arriving and departing the construction zone and ensure minimal impact to local communities. These areas facilitate Just-In-Time delivery, so the vehicle is called upon when it is required onsite rather than circling the EDA on the surrounding road network.

- **Batching plants**: equipment that combines various ingredients to form concrete and asphalt.
• **Pre-fabrication and pre-assembly facilities:** providing the ability to manufacture pre-cast products and other construction components and to pre-assemble components before moving them to the construction area for erection or assembly in situ.

• **Railhead:** The railhead will be the principal import facility for bulk materials, primarily aggregates, sand and cement for concrete and asphalt production. Other materials and containerised goods for construction purposes may also be delivered by rail.

• **Workforce welfare facilities:** changing rooms, canteens, toilets, etc.

• **Hardstanding for workforce accommodation:** this includes managed areas for workforce who choose to bring their own caravan accommodation.

3.3.4 The land required for CSS will change throughout the construction phases and will peak in Phase 1 during the more land intensive activities during earthworks and infrastructure construction and will reduce in Phase 2 and Phase 3 during the delivery of Terminals and associated infrastructure which require less land take for construction support purposes.

3.3.5 In planning the CSS land use strategy, the following objectives have been considered:

1. Minimise disruption to local communities as much as practically possible.

2. Ensure no impact on airport operations.

3. Select most appropriate activity, whilst remaining flexible, at CSS locations based on construction and logistic requirements.

4. Build facilities only once to avoid relocation during construction

5. Minimise workforce commute times.

6. Minimise internal movement of workforce and material between construction sites.

7. Minimise reinstatement / redevelopment challenges post CSS location use.

8. Support integrated end to end Logistics.¹

3.3.6 A number of CSS adjacent or near to the development area have been identified and one potential use for some of these areas is to create lorry parks/holding areas to act as a buffer for parking and holding HGVs when required. These sites will be located close to the Strategic Road Network (SRN) to ensure efficient

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¹ End to end logistics allows the entire supply chain to be managed by a single entity including procurement, transport and workforce.
management of vehicle movements and reduce potential circulation/parking of HGVs on the local road network as early arrivals wait for their delivery slot. Additionally, these lorry parking areas will offer a security checking facility, so reducing the level of inspection required at the site entrances; as well as dedicated driver welfare areas to discourage drivers from using welfare facilities on the local network which could lead to potential issues such as blocking access points or increased disruption to the local road network.

3.4 Colnbrook Rail Head

3.4.1 A proposed new rail head will be developed for the import of bulk materials and aggregates and containerised goods for construction purposes. The rail head will be located on the Colnbrook branch of the Great Western Main Line (GWML). The proposed location is immediately north of the proposed north-west runway where it crosses the M25 into the Colne Valley (see Figure 5 and Figure 6).

3.4.2 The daily number of freight trains is dictated by the number of train paths available in the national rail network and the capacity of the junction where the national network connects with the Colnbrook branch at West Drayton. Capacity enhancement options to the line at West Drayton to allow access to the Colnbrook branch to/from the west (the branch is currently only accessible from the east) are being assessed. Further work is ongoing to establish capacity, but it is likely that the railhead will operate 24 hours a day in order to utilise available paths during the night time hours, when passenger services are much reduced. The logistics approach proposed seeks to use this capacity to its maximum, thus minimising the dependency on road haulage and the associated impacts of an increase in HGVs on the road network.

3.4.3 It is proposed that every inbound train will be formed of 20 wagons capable of transporting 70t each, thus 1,400t of aggregates per train. This is expected to reduce the volume of HGVs required by a factor of two. Over the course of the DCO Project, this equates to the removal of over 35,000 2-way HGV trips from the road network.
Figure 5 Overview of proposed railhead area

Figure 6 Illustrative layout of Colnbrook Rail Head
3.5 Development Phasing and Activities

3.5.1 The DCO Project will be developed over a number of key phases. Whilst this section provides high level details of the development proposals, it should also be read alongside the Preferred Masterplan document which provides information on the infrastructure referenced here.

3.5.2 The main phases of development are:

- Anticipated early works;
- DCO grant to runway opening;
- Runway opening to 115 million passengers per annum (mppa);
- From 115 mppa to 130 mppa; and
- From 130 mppa to 142 mppa.

3.5.3 The construction land use requirements will change throughout the construction phase and will reduce through the lifecycle of the DCO Project. Construction will evolve from more land intensive activities such as earthworks and infrastructure activities in the phase from DCO grant to runway opening, to the delivery of buildings and associated infrastructure in later phases. The majority of work after runway opening will be contained within the new airport boundary.

3.5.4 The activities expected to be undertaken in the main phases of development proposed are:

3.5.5 Anticipated early works – Prior to main works commencing in late 2021, localised projects are anticipated to commence in 2020, subject to access to land and any necessary consents being obtained (see section 4.1). This is expected to include the undergrounding of SSE 132 kV overhead power lines and some environmental mitigation activities. It is also expected that certain third-party schemes will be constructed during this period, including the proposed replacement Energy from Waste plant being promoted by the operators of the Lakeside Energy from Waste facility, which will be demolished by the Project. The areas where these early works and other third-party construction are expected to take place are shown on Figure 7.
3.5.6 **DCO grant to runway opening** – Main construction is anticipated to commence soon after grant of development consent, expected to be in late 2021. This will involve approximately five years of major construction over a large area, including:

- demolition of existing buildings and structures,
- earthworks,
- re-provision of some commercial and industrial properties,
- construction and improvement of motorways and the surrounding road network,
- re-routing of existing gas, water and electric supplies,
- realignment of rivers,
- construction of the new runway and airfield, and
- creation of green infrastructure

3.5.7 Main earthworks activities are expected to commence in 2022 and continue until 2024, with some localised earthworks extending into 2025 and 2026.

3.5.8 The new runway and taxiways construction is expected to start in 2024 and take approximately 2.5 years to complete including testing and operational readiness.
The new runway and taxiways are therefore expected to be available for aircraft use in December 2026.

3.5.9 The construction areas for this stage are shown for circa 2023, 2025 and runway opening in Figure 8, Figure 9 and Figure 10 respectively.

*Figure 8 Indicative construction area in c. 2023*
From runway opening (anticipated in 2026) to 115 million passengers per annum (mppa) in c.2030 – Following the runway opening (most of construction activities to the north and west of the new runway will be complete. Activities during this phase will include (as shown in Figure 11):
- the ongoing development of Terminal 5X, Terminal 2A and supporting infrastructure,
- the re-alignment of the A3113 and Stanwell Moor Junction,
- the initial phase of the new Southern Parkway,
- the construction of the Southern Road Tunnel connecting the south of the Airport with the Central Terminal Area,
- the creation of new stand in the Northern Apron between the new runway and the central runway, and
- The CSS in the north west of the new runway will be decommissioned during this period with the exception of the railhead, which will continue to be used to support construction activities for subsequent phases.

*Figure 11 Indicative construction area at 115mppa (c. 2030)*

### 3.5.11 From 115 mppa to 130 mppa in c.2035 – Construction activities will be largely located within the Airport and will include (as shown in Figure 12):

- the ongoing development of Terminal 5X,
- development of the Northern Apron and construction of the first phase of Terminal 5XN. This will require the demolition of a section of the A4 and existing facilities.
- development of surface parking and associated changes to the road configuration at the Northern Parkway, and
- continuation of works to expand the new Southern Parkway.

*Figure 12 Indicative construction area at 130mppa (c.2035)*

3.5.12 **From 130 mppa to 142 mppa in c.2040+** - Construction activities will be largely located within the Airport and will include (as shown in Figure 13):

- the completion of the last phase of Terminal 5X,
- the construction of the second phase of Terminal 5XN and associated taxiways,
- the construction of T2C satellite and stands,
- the demolition of T3,
- the construction of T2D satellite and stands, and
- Completion of the Northern parkway.
Figure 13 Indicative construction area in c.2040+ to achieve 142mppa
4. **VEHICLE ROUTING AND ACCESS**

4.1 **Logistics Hubs**

4.1.1 The expansion of Heathrow will involve a large number of concurrent projects requiring an extensive supply chain network and a large labour force.

4.1.2 As set out in Section 2, a driving principle for the delivery of the DCO Project is to provide solutions that maximise the off-site production of materials and products and optimise the flow of freight and workforce to site. This would reduce adverse effects on local communities, the general public, the environment and airport operations.

4.1.3 The Airports NPS refers to “localised sourcing of construction materials” in paragraph 5.40. This has been a key principle in developing our earthworks strategy, and for example, all our fill material is expected to be sourced on site. However, this and other localised sourcing will be supplemented by off-site production of materials and products, as this will help spread the very significant economic benefits of construction of the DCO Project to the rest of the UK.

4.1.4 Heathrow expansion will be supported by four regional Logistics Hubs within which a broad spectrum of off-site activities will take place including prototyping, offsite manufacture, pre-assembly of components, consolidation and configuration of materials, thereby enabling us to minimise the on-site construction activities at Heathrow as far as possible. The regional Logistics Hubs will form the backbone to the logistics network, ensuring efficient Just-in-Time delivery scheduling which will be managed by integrated delivery management systems. This is consistent with paragraph 5.40 of the Airports NPS, which refers to the use of consolidation sites.

4.1.5 Potential regional Logistics Hub locations, operators and supporting transportation specialists are being assessed currently as part of a formal procurement process. The chosen Hubs are anticipated to be announced in early 2020 and the aspiration is to have two regional Logistics Hubs in support by the start of main construction in 2022, with the remaining Logistics Hubs supporting the DCO Project from shortly after the start of construction.

4.1.6 A further purpose of the Logistics Hubs is to maximise the opportunities for organisations across the UK to become key partners in the delivery of an expanded Heathrow, and to open up supply chain opportunities. Not only will this leverage the expertise of external partners, it will also enable businesses local to the Hubs to seize the opportunities that expansion will bring in terms of job creation, economic benefit and innovation solutions.
4.1.7 Heathrow recognises the importance of the regional Logistics Hubs to maximise off-site production solutions and Design for Manufacturing and Assembly (DfMA). These sites will be key to efficiently knitting manufacturing and assembly processes with consolidation, configuration and logistics functions.

4.2 **Regional Routing**

4.2.1 Construction vehicles in the form of HGVs and LGVs will travel to Heathrow from across the country via major motorways on designated routes.

4.2.2 For the purposes of construction vehicle modelling for AEC, it has been assumed that around 76% of the construction vehicles (HGVs and LGVs) will originate to the north-west of Heathrow and will therefore use the M1 and M40 to reach the M25 to get to EDA or travel directly via the M4. The remaining 24% are assumed to originate to the south-east and will utilise routes such as the A1(M), M11, M20 and M3 to reach the M25 before travelling to the EDA. Workforce-related vehicles have a separate distribution with the current assumptions covered in the POCWTP; however ongoing work is taking place to provide more detail.

4.2.3 Figure 14 shows the strategic routes and the anticipated proportions of HGVs using these routes.
4.2.4 A significant proportion of HGVs will be related to deliveries of bulk materials for the production of concrete, however in 2023 when the Colnbrook Railhead begins operation, more of these bulk materials will be delivered by rail, reducing the number of HGVs required by a factor of two as set out in Section 3.3.

4.3 **Local Routing**

4.3.1 The points of access to the site from the public road network will vary throughout the period of construction. Access will be from the road network via the CSS onto temporary construction roads within the EDA, which will be developed on site to facilitate the movement of vehicles carrying excavation and construction materials, as well as buses, around the site. These temporary construction roads facilitate the removal of HGVs off the local road network as soon as practicably possible on arrival at the site.
4.3.2 The temporary roads will vary in location, alignment and specifications according to the construction needs and phasing (please see section 5.5 for more information).

4.3.3 Figure 15 to Figure 20 illustrate the principal access routes for construction traffic during the proposed development stages. Our objective is to minimise the distance travelled on local public roads by utilising the trunk road network and main roads on the local road network (e.g. A4 and A3044) and providing dedicated construction routes off the public highway as quickly as reasonably practicable. For other local roads, such as town/village centres and high streets, access for construction traffic will be restricted but may at times be necessary, for instance to enable transport or delivery of locally sourced materials.

4.3.4 Generally, access along residential roads will be prohibited. In instances where access on lower class local roads and roads within residential areas is unavoidable, Heathrow and the main contractors will implement measures to manage and minimise any negative effects.

4.3.5 The design and construction of site accesses will be completed to a suitable standard to enable the safe access and egress of vehicles in a forward direction in order to limit disruption to other road users.

4.3.6 At the start of main construction activities, construction traffic circulation will be reliant upon the existing road network. The principal east-west corridor will be the A4, whilst the A3044 will provide north-south connectivity. This is shown in Figure 15.
4.3.7 In c. 2023 sections of the planned internal construction road network will be in place to support construction operations including a proposed temporary construction bridge over the M25. This will keep site construction traffic off the public road network. The existing A4 and A3044 will remain open at this stage and will still provide access and connectivity between the various areas of the DCO Project that cannot be connected via the internal construction road network. This is shown in Figure 16.
In c. 2025 the sections of the A4 and A3044 within the construction site will be closed and demolished and all major internal construction roads will be segregated from the public highway network. This is shown in Figure 17.
4.3.9 After runway opening construction traffic will significantly reduce and access to the various construction sites will be via the upgraded public highway network including the new A4 and A3044. This is shown in Figure 18, Figure 19 and Figure 20.
Figure 18 Construction traffic routes - runway opening

Figure 19 Construction traffic routes - 2030
4.3.10 Consideration is being given to the effect that construction traffic could have on local road capacity and a description of the planned measures that are being developed to mitigate these impacts is listed in Section 6.

4.3.11 Key routes include:

- Access from the M4:
  - via J4 and A408/ Holloway Lane
  - via J4, M4 Spur a new link between the M4 Spur and new proposed A4
  - via J4, M4 Spur and the Emirates roundabout
  - via J5 and Langley roundabout
  - via J5 and Axis Park Industrial Estate
  - via a temporary slip road directly from the M4 Westbound carriageway at later stages of the DCO Project

- Access from the M25
  - Junction 14 towards Stanwell Moor Rd Junction and A3044

4.3.12 There may also be opportunities to construct additional temporary infrastructure for sole use by construction vehicles to reduce impacts on junctions such as M4
junctions 4 and 5, as well as the M25 Junction 14. The Construction Proposals document contains further information on the temporary infrastructure that may be required.

4.4 **Site Access Points**

4.4.1 Access to EDA will vary across the period of construction. Access will be via the CSS onto temporary roads which will be developed on site to facilitate the movement of vehicles carrying excavation and construction materials as well as buses around the EDA. The internal roads will vary in location, alignment and specifications according to the construction needs and phasing.

4.4.2 The use of internal roads removes construction traffic from local roads and is an important form of mitigation for the impact of DCO Project construction.

4.5 **Restrictions**

4.5.1 Construction vehicles will be largely confined to the strategic road network of motorways and A-roads to avoid negative impacts on the surrounding communities including traffic congestion and air quality hotspots. Routes for construction vehicles accessing the site via the CSS will be well defined in advance (in the OCTMP) with restricted roads identified and communicated to drivers. Those organisations undertaking the main DCO project will be accountable for ensuring that vehicles related to construction use the defined route network and that it is communicated in advance.
5. **ESTIMATED VEHICLE MOVEMENTS**

5.1 **Overall Vehicle Movements**

5.1.1 The construction related traffic movement profiles for the DCO Project calculate the number of Heavy Goods Vehicle (HGV) movements and assess rail utilisation options based on anticipated quantities of material needed to be delivered to the EDA to enable the preferred masterplan to be built out.

5.1.2 To assess the average number of HGVs within each quarter, the following information was obtained from a variety of sources.

1. Estimated quantities;
2. Desk studies;
3. Construction norms and good practice; and
4. Information collected from other relevant projects such as T2 and T5.

5.1.3 A Construction Freight Traffic Model has been developed which calculates the average daily HGV movements per quarter of construction activity, with figures representing average values (‘typical day’). Fluctuations in traffic during the construction period reflecting peak construction periods are not accounted for as a result.

5.1.4 Light Good Vehicle (LGVs) are assessed to increase from 20% during the initial earthworks stages related to runway opening, up to 60% of the total number of construction vehicles arriving and leaving the EDA, during construction of terminals and satellites during the later phases.

5.1.5 The term ‘Movement’ represents a single construction vehicle completing a full delivery cycle. In other words, a construction vehicle Heavy Goods Vehicle (HGV), or Light Goods Vehicle (LGV) departing from a single start point, delivering or collecting a consignment and returning to its original start point (two-way movement)

5.1.6 The term ‘Freight Movement’ incorporates both HGVs and LGVs related to construction. The assessment considers the use of rail deliveries, assumed to be 60% of concrete components and reinforcement following the new railhead being operational in 2023. All other construction materials are assumed to be delivered to the EDA by HGV’s.

5.1.7 It should be noted that the vehicle volumes presented in this section are only mitigated by the construction of the railhead. The planned measures listed in Section 6 are intended to either offset the impacts of vehicle numbers by altering
daily arrival profiles or reduce the vehicle numbers directly notwithstanding the existence of the railhead.

5.1.8 It is anticipated that the total average daily freight movement (two way) monthly across the construction programme (of HGVs and LGVs related to construction) will peak in 2025 at c.1800 movements across the entire construction site. There will also be a peak prior to the opening of the Railhead in 2023 where the movements will be in the region of c.1700 per day.

5.1.9 It should be noted that this is an indicative estimate that has been used for early planning assessments with further work required which may lead to a shift of peak activity as well as total vehicle numbers. The numbers include bulk material vehicle movements related to the production of concrete and assumes the railhead coming into operation in 2023 and the subsequent effect this has on bulk deliveries.

5.1.10 We are considering measures to restrict peak hour deliveries and ensure that more deliveries arrive in the off-peak period. More information is provided on this in Section 6.
6. **STRATEGIES TO REDUCE IMPACTS**

6.1 **Introduction**

6.1.1 It is important that the traffic-related impacts of construction of the DCO Project are mitigated as far as reasonably possible. The vehicle flows presented in Section 5 are all unmitigated with the exception of the impact of the Colnbrook Rail Head and therefore there are opportunities to reduce construction vehicle flows further through a number of planned measures.

6.1.2 Planned measures have been identified and split into the following categories:
- Measures influencing construction vehicles and deliveries;
- Measures to encourage sustainable freight;
- Material procurement measures; and
- Other measures.

6.1.3 The entire suite of measures covered in this section is set out in Table 1. The current status of each is indicated – the three statuses have been defined as follows:
- Committed: Heathrow is committing to these measures now as part of Airport Expansion Consultation
- Proposed: ideas under consideration which require further development prior to DCO application
- Rejected: measures which have been considered and excluded after a thorough assessment

<table>
<thead>
<tr>
<th>ID</th>
<th>Planned Measure</th>
<th>Committed</th>
<th>Proposed for Consideration</th>
<th>Considered &amp; Rejected</th>
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<td>1</td>
<td>Development of an Outline Construction Traffic Management Plan</td>
<td>x</td>
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<td>2</td>
<td>Commitment to safety and environmental standards and programmes</td>
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<td>3</td>
<td>Adherence to designated routes</td>
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<td>4</td>
<td>Establishment of a Delivery Scheduling and Management System (DMS)</td>
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<td>5</td>
<td>Re-timing for out of peak deliveries</td>
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<td>6</td>
<td>Re-timing for out of hours deliveries</td>
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### Measures influencing construction vehicles and deliveries

6.2.1 These measures are designed to influence the type of construction vehicles used and the way deliveries are made to ensure that their physical impact on local communities is minimised as far as reasonably possible. The measures identified in this case are:

1. Development of an outline construction traffic management plan;
2. Commitment to safety and environmental standards and programmes;
3. Adherence to designated routes;
4. Delivery Scheduling and Management System (DMS);
5. Re-timing for out of peak deliveries;
6. Re-timing for out of hours deliveries;
7. Use of holding areas and vehicle call off areas; and
8. Use of logistics hubs and consolidation centres.

**Development of an outline Construction Traffic Management Plan (OCTMP)**

6.2.2 **This is a committed measure.**

6.2.3 This Preliminary Outline Construction Traffic Management Plan (POCTMP) document sets out some of the information required in an outline CTMP. This
document will be refined over time as the strategies to manage impacts are developed. As the process continues, the construction traffic management strategy will become more developed and an Outline version of the CTMP will be produced to be submitted with the DCO application.

6.2.4 It is envisaged that the DCO will require detailed Construction Traffic Management Plans to be developed in accordance with the phasing of construction, each of which would be required to follow the principles set out in the Outline CTMP and the application Code of Construction Practice.

Commitment to safety and environmental standards and programmes

6.2.5 This is a committed measure.

CLOCS - Construction Logistics and Community Safety

6.2.6 The CLOCS Standard (The Standard for construction logistics: Managing work related road risk) draws together emerging practice from a number of individual standards, policies and codes of practice to form a single road risk standard. This common standard is implemented by developers and can be adhered to in a consistent way by fleet operators. It is a national scheme developed in collaboration between the construction sector and fleet operators.

6.2.7 The Standard aims to ensure that construction companies follow safe practices in the management of their operations, vehicles, drivers and construction sites. It is expected that, as part of all detailed CTMPs on the DCO Project and pursuant to the OCTMP, adoption of and adherence to the CLOCS standard will be mandated.

FORS - Fleet Operator Recognition Scheme

6.2.8 FORS is a voluntary national fleet accreditation scheme designed to help improve fleet operator performance in key areas such as environmental performance, safety and operational efficiency. Its purpose is to raise the level of quality within fleet operations and to recognise those operators that are achieving the environmental, safety and efficiency requirements of the FORS standard.

6.2.9 There are progressive requirements for achieving FORS accreditation at Bronze, Silver, and Gold levels. The FORS logo allows construction clients to readily distinguish FORS operators from other operators - it is a mechanism by which adherence to the CLOCS standard can be assured and monitored. FORS accreditation confirms that a fleet operator can demonstrate that appropriate systems and policies exist to ensure drivers are suitably fit, qualified and licenced to operate vehicles which are properly maintained, equipped and insured.

6.2.10 It is expected that, as part of the OCTMP, achievement of and adherence to the FORS Gold standard will be mandated for all fleet operators engaged to support
the development. Delivery management mechanisms will support the employment of FORS standards across the supply chain, preventing the use of non-accredited vehicles

HGV Direct Vision Standard

6.2.11 HGV blind spots have been shown to contribute to a large proportion of collisions with vulnerable road users. Recent research\(^2\) has shown that increased levels of direct vision - what a driver can see directly through the windows of the cab – can improve reaction times and reduce cognitive demand on the driver.

6.2.12 TfL has developed a Direct Vision Standard (DVS) for HGVs. The DVS is an objective, scientific measure of how much a HGV driver can see from their cab directly through windows, as opposed to indirectly through mirrors or camera monitoring systems. The DVS categorises vehicles using a simple star rating system based on how much of the area of greatest risk to vulnerable road users a driver can see. The higher the star rating, the more a driver can directly see of this area. Three stars equate to a ‘good’ rating, while zero stars will be awarded to those HGVs considered ‘not suitable for use in an urban environment’ because of the significantly higher potential risk of collision they pose.

6.2.13 As part of the OCTMP, it will be required that no vehicles deemed unsuitable for the urban environment are used to support the project and that operators are encouraged to use the highest star rated vehicles practicable.

Operational conditions and site standards for construction supply and waste sites

6.2.14 Many of the HGVs that pose the greatest risk to vulnerable road users are designed to be driven off-road on construction sites as well as on the public highway, with a high chassis designed to cope with uneven or soft surfaces. The majority of construction-related HGVs on London’s streets spend only a small proportion of their time operating in off-road conditions.

6.2.15 TfL has developed an assessment process which will provide a one to five rating based on the ground conditions at a particular site (approach angle, rutting and bumps, water, material type).

6.2.16 The development of detailed CTMPs will require that operators are utilising the most appropriate vehicles for accessing the EDA.

Adherence to designated routes

6.2.17 This is a committed measure.

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6.2.18 Prescribed Designated routes will form a key part of the OCTMP and are defined in advance to be adhered to by all construction vehicles accessing the EDA to reduce traffic impacts on the surrounding areas.

**Construction access routes**

6.2.19 Unless materials are being transported from local suppliers, goods vehicles are expected to travel to the EDA from other locations in London or beyond. Such journeys will be restricted, unless otherwise advised, to the Strategic Road Network (SRN) and Transport for London’s Road Network (TLRN). Both are best suited to this type of heavy traffic. Use of strategic routes will reduce congestion on local roads and will help minimise the impact on local air quality.

6.2.20 The OCTMP will set out the designated routes for construction vehicles and the responsibilities placed upon the main contractors to ensure they are adhered to. The detailed CTMPs prepared by the main contractors will set out how this will be managed.

**Local access routes**

6.2.21 The local routes around the EDA are identified in Section 4.3 with the site access points across period of construction detailed in Section 4.4. Local access roads will need to be used for the last stages of a journey to site. The designated routes will be specified as compulsory as well as their linkages to the strategic road network.

6.2.22 Work is ongoing to define the capacity of the local road network around the EDA and a transport assessment for the construction years will be developed to ensure that any further mitigation measures such as junction improvements for example are identified. This will be covered in the Environmental Statement and the Transport Assessment for DCO and outlined within the OCTMP.

**Community Considerations**

6.2.23 The routes to the EDA will be designed to avoid areas that may increase the traffic risk to vulnerable road users and impact on local communities, by limiting the volume of construction traffic that passes:

- Residential areas
- Schools
- Hospitals
- Health centres
- Community centres
• Sports facilities
• Transport hubs
• Cycle Super Highways

*Delivery Scheduling and Management System (DMS)*

6.2.24 This is a committed measure.

6.2.25 The OCTMP will commit to developing a DMS to manage site deliveries and collections by scheduling and re-timing them in a manner that consciously avoids, where possible, the most congested times of the day. Doing so will reduce congestion, allowing site-related vehicles to operate more efficiently while minimising the risk of collision, particularly with cyclists and pedestrians. Efficient delivery scheduling can also reduce cost and contribute to improved air quality. Additionally, the DMS will also reduce the risk of vehicles queuing on the public highway.

6.2.26 The DMS will be vital to the coordination of a site’s booking and delivery process. Delivery management ensures that the flow of vehicles to and from each construction site is controlled ensuring that deliveries are expected to promote safe and efficient use of loading/unloading areas. This will also ensure the capacities of HGV holding areas and inspection points in the CSS are not breached.

6.2.27 Delivery Management also provides surety of delivery for critical items, which protects the integrity of the build schedule, and allows for accurate, efficient reporting of delivery activity.

*Re-timing for out of peak deliveries*

6.2.28 This measure is under consideration.

6.2.29 Deliveries and collections made outside of peak traffic times reduce traffic impacts and are more likely to arrive on time which may in turn reduce on-site delays. They also have the potential to reduce congestion in the vicinity of the development with all of the associated safety, environmental and efficiency improvements this may entail. Consequently, where possible, off-peak movements will be encouraged and managed through the DMS.

6.2.30 With the right level of support from stakeholders and when carried out responsibly, deliveries can take place at different times selected to suit residents, businesses and operators. The OCTMP will provide more detail on this as our plans are developed.
Re-timing for out of hours deliveries

6.2.31 This measure is under consideration.

6.2.32 Another option for the retiming of deliveries is to make use of the capacity of the local road network when it is at its quietest. This is usually outside of the working day however there are associated noise impacts which may preclude this option.

6.2.33 It is however under consideration should further reductions in construction vehicles be required at peak times at any of the stages of the project.

Use of holding areas and vehicle call off areas

6.2.34 This is a committed measure.

6.2.35 A commitment to use holding and call off areas for construction vehicles will reduce congestion, unacceptable parking and associated penalties. These holding areas will be located in the CSS and a strategy for this will be developed and outlined in the OCTMP.

6.2.36 Holding and call off areas allow vehicles to wait and/or queue at a suitable location near the EDA where they can be called to site when appropriate and at short notice.

6.2.37 The CSS will also contain welfare facilities for HGV drivers to encourage their use.

Use of logistics hubs and consolidation centres

6.2.38 This is a committed measure.

6.2.39 Our construction approach includes the implementation of regional logistics hubs within which a broad spectrum of off-site activities will take place including prototyping, offsite manufacture, pre-assembly of components, consolidation and configuration of materials thereby shifting construction activities away from Heathrow as much as possible. The regional logistics hubs will play an important role in the logistics network for the DCO Project, thereby ensuring efficient Just-in-Time delivery scheduling which will be managed by integrated delivery management systems.

6.2.40 Potential regional logistics hub locations, operators and supporting transportation specialists are being considered currently as part of a formal procurement process. The chosen locations are anticipated to be announced in early 2020 and the aspiration is to have two regional logistics hubs operational by the start of main construction in 2022, with the remaining logistics hubs becoming operational at a later stage.

6.2.41 A further purpose of the logistics hubs is to maximise the opportunities for businesses across the UK to become key partners in the delivery of an expanded
Heathrow. Not only will this leverage the expertise and excellence of British industry, it will also enable businesses of all sizes to benefit from the opportunities that Expansion will bring in terms of job creation, economic benefit and innovation solutions.

6.2.42 We recognise the importance of the regional logistics hubs to maximise off-site solutions as well as key to efficiently knitting manufacturing and assembly processes with consolidation, configuration and logistics functions. The opportunity to use rail as the primary means of transportation will further reinforce efficiencies across the logistics network and provide greater opportunity to share the regional logistics hubs capabilities with other major programmes however this depends on a suitable rail-connected site and the availability of capacity in the form of paths on the rail network.

6.2.43 The benefits of logistics hubs and consolidation centres include:

- Reduced environmental impact through a reduction in road miles operated;
- Improved safety as a result of fewer construction vehicle movements;
- Increased security of supply through provision of a ‘storage buffer’ for long lead items;
- Reduced likelihood of damage or theft to materials as a result of less on-site storage; and
- Reduced construction and delivery costs through reduced fuel costs.

6.2.44 The strategy for logistics hubs and consolidation centres is still being developed and will be defined in more detail at a later stage.

6.3 Measures to encourage sustainable freight

6.3.1 These measures set out how the movement of construction vehicles to and from the EDA could be made more sustainable through the consideration of other modes and types of vehicles for example. The measures include:

1. Freight by water;
2. Freight by rail;
3. The use of low emission construction plant and fleet; and
4. The use of larger vehicles.

Freight by water

6.3.2 This measure has been considered and ruled out.
TfL’s Water Freight Toolkit has been used to consider the option of transporting materials and delivering goods by water via the River Thames and/or the Grand Union Canal. However, due to lack of water connectivity to the EDA and the distance between the EDA and the nearest river/canal, water is no longer being considered as a mode of freight transport for the expansion of Heathrow.

Should a Logistics Hub be positioned at or in close proximity to a sea port however, it may be possible to work with the hub provider to make best use of delivery of goods by sea to an area closer to Heathrow.

**Freight by rail**

6.3.4 This is a committed measure.

6.3.5 A proposed rail head will be the principal import of aggregates such as sand and cement and containerised goods for construction purposes. It will be constructed by 2023 and therefore the early years of construction will rely on the road network for deliveries.

6.3.6 The rail head will be located on the Colnbrook branch of the Great Western Main Line (GWML). The proposed location is immediately north of the north-west runway where it crosses the M25 into the Colne Valley.

6.3.7 The daily capacity of the line is dictated by the number of train paths available to move trains from the railhead on to the GWML. Further work is ongoing to establish capacity, but it is likely that the railhead will operate 24 hours a day to utilise available paths during the night time hours when passenger services are much reduced. The logistics approach seeks to use this capacity to its maximum, thus minimising the dependency on road haulage and the associated impacts of an increase in HGVs on the road network.

6.3.8 The impact of the rail head on construction vehicle numbers can be seen in Section 3.3.

**The use of low emission construction fleet**

6.3.10 This is a committed measure.

6.3.11 Through adherence to environmental standards such as the FORS scheme and the fact that the EDA is located within the TfL Low Emission Zone; Euro VI engines will be expected in all vehicles accessing the EDA, and this is set out in the draft CoCP. This will reduce the air quality impacts of emissions related to construction traffic.

6.3.12 Given the significance of air quality at various locations around the EDA and in relation to the TfL Low Emission Zone (LEZ) and the Air Quality Management Area (AQMA), we are developing a low emission construction traffic strategy that will
reduce the emissions impact of construction traffic, the results of which will be in the OCTMP.

_The use of larger vehicles to reduce number of vehicles to EDA_

6.3.13  **This measure is under consideration.**

6.3.14  TfL has recently conducted a study examining the benefits of using articulated tippers over standard rigid tipper vehicles. These benefits include increased capacities and therefore a reduced number of vehicles.

6.3.15  Maintaining this as a standard across the DCO Project is something that is under consideration and will be further developed as the strategy becomes more defined.

6.4  **Material procurement measures**

6.4.1  These measures relate to promoting the efficient procurement of materials to avoid waste and to ensure that impacts on local communities are minimised. The measures include:

1. Design for Manufacture and Assembly (DfMA) and off-site manufacture;
2. Re-use of material on site; and
3. Smart procurement.

_DfMA and off-site manufacture_

6.4.2  **This is a committed measure.**

6.4.3  Design for Manufacture and Assembly (DfMA) and off-site construction typically entail the application of factory, or factory like, conditions to construction projects. This may mean the assembly of complete structures from prefabricated components or the use of manufactured building components within a traditional build.

6.4.4  DfMA and off-site manufacture reduce the number of construction vehicles arriving at the EDA and can minimise the amount of waste generated, therefore reducing the overall environmental impact of the EDA. Site safety is also improved, and costs may be reduced by increasing the speed of construction through productivity improvements.

6.4.5  DfMA and off-site manufacture will be part of the overall logistics strategy for the DCO Project. See Section 4.1 for further information.

_Re-use of material on site_

6.4.6  **This measure is under consideration.**
6.4.7 The benefits of re-using materials on-site are:

- A reduction in construction vehicle movements delivering new material to the EDA; and
- A reduction in construction vehicle movements removing waste material from the EDA.

6.4.8 A simple example of such re-use is the crushing of demolished structures to create aggregate.

6.4.9 Reusing materials on site can help to reduce costs, vehicles movements and environmental impact by reusing materials that are already owned and on site. This reuse also reduces the need for additional materials with the associated environmental and financial benefits that follow.

6.4.10 A number of measures are being explored to re-use material on site including the use of borrow pits and landfills (see the Construction Proposals document). The earthworks strategy is being developed to ensure that re-use of material on site is fundamental to the construction of the DCO project.

**Smart procurement**

6.4.11 This is a committed measure.

6.4.12 Procurement of suppliers is an often-overlooked means by which the number of vehicle movements associated with a development can be reduced. It is important to select a supplier who can, via their approach to logistics, help minimise the number of construction vehicle movements. Environmental benefit will be derived through their sourcing of materials, location of their freight delivery infrastructure, willingness to collaborate with other suppliers or use of alternative delivery modes.

6.4.13 Smart procurement can also improve safety through specification of the safest and most suitable vehicles, process and equipment.

6.4.14 Finally, smart procurement can reduce cost as consolidation of logistics activity can create economies of scale and the management of fewer suppliers be more efficient.

6.4.15 Other opportunities to source materials from the same supplier(s) as other developers with sites underway in close proximity to the EDA will also be explored as part of the development of the construction strategy for the DCO Project.

**6.5 Other measures**

6.5.1 There are a number of other measures we will explore in order to reduce congestion and associated impacts of construction traffic. These include:
1. Integrated transport command centre;
2. Collaboration with other sites in the area; and
3. Implement a staff travel plan.

**Integrated transport command centre**

6.5.2 This measure is under consideration.

6.5.3 An integrated transport command centre would help manage traffic and people flows around the EDA during the construction period and would include business as usual flows as well as flows relating to construction.

6.5.4 Its primary purpose would be to ensure smooth operation of the local transport network and swift responses to incidents. The centre would have representation from the airport, local infrastructure providers such as Highways England and Network Rail as well as transport organisations such as Train Operating Companies (TOCs), and emergency organisations such as the police.

6.5.5 This was a successful component of controlling and managing traffic during the 2012 London Olympics and ensured that traffic and people continued to flow.

6.5.6 These proposals will be developed through engagement with third parties such as those organisations set out above.

**Collaboration with other sites in the area (HGVs and workforce movements)**

6.5.7 This measure is under consideration.

6.5.8 Working with neighbouring projects such as Crossrail, Western Rail, Grundons, SSE and the M4 Smart Motorway to realise benefits such as consolidation of vehicle movements, common procurement and shared-waste management can help increase efficiency and reduce negative construction impacts. The fact that the DCO Project will be delivered over multiple sites and utilising a project wide DMS will increase collaboration and potential consolidation.

6.5.9 The OCTMP will set out a requirement that the detailed CTMPs will undertake a review of how collaboration with other projects could be achieved to ensure efficiencies can be realised. This review should include an assessment of their cumulative impact and the impact of any collaborative planned measures considered. Planned measures can be more efficient when incorporated by multiple sites. Possible such planned measures include:

- Joint use of consolidation centres
- Shared holding areas
- Shared cleaning and traffic control services
Supplier consolidation
- Driver training programmes
- Regular Communication and community engagement
- Shared facilities (for example messing and welfare facilities)
- Reuse of materials

6.5.10 We have already started to identify such sites and make contact, to understand schedules, resource planning and other important factors.

**Implement a staff travel plan**

6.5.11 **This is a committed measure.**

6.5.12 A Preliminary Outline Construction Workforce Travel Plan (POCWTP) has been prepared alongside this document which outlines how the construction workforce will travel to and from the EDA and some measures to reduce the impacts of this on the local transport networks. This plan will be developed further through the next phases of the masterplan development.

6.5.13 During the construction process the workforce will, necessarily, make a considerable number of journeys to and from the EDA. The workforce will have an impact that varies based on the number of workers, mode they take and the timing of the trips.

6.5.14 Please refer to the POCWTP for further information.
7. **RESPONSIBILITIES**

7.1 **Traffic Management Working Group (TMWG)**

7.1.1 We will establish a Traffic Management Working Group (TMWG) prior to any construction commencing. The TMWG will include representatives from Heathrow, main contractors (including Travel Plan Co-ordinators), local highways authorities, Highways England, TfL and the emergency services. The TMWG may include representatives from public transport service providers, coach operators, taxi associations, local cycling and pedestrian organisations although discussions are still required to define its composition and the responsibilities within it.

7.1.2 The TMWG will have the overall responsibility for coordinating the implementation of the detailed CTMPs and CWTPs. We will have overall responsibility for ensuring that the main contractors implement, monitor and enforce the CTMPs and CWTPs.

7.1.3 Heathrow/ the main contractors will work closely with the TMWG on traffic management and broader traffic related measures. In the event of any disputes relating to the implementation of traffic management and other traffic related measures, the members of the working group will have the responsibility for agreeing a resolution procedure to be followed.

7.2 **Traffic Safety and Control Officers**

7.2.1 We will appoint Traffic Safety and Control Officers who will have a number of responsibilities relating to traffic and transport management. This will be determined in development of the delivery model. Responsibilities will include, but are not limited to, the following:

1. Overarching management and implementation of traffic management measures associated with this Project

2. The management of the layout of construction site access points

3. Ensuring that all traffic equipment is in place and operationally effective

4. Liaison with Heathrow/ the main contractors, the appropriate authorities, the traffic safety and control officers on Heathrow construction sites and any adjacent construction sites, and the continual monitoring of the traffic management measures employed

5. Ensuring compliance with all appropriate health and safety directives relating to operations and live traffic, in conjunction with the main contractors’ Health and Safety Manager
6. Arranging site inspections at regular intervals and equipment attended to and maintained in the event of accidents/incidents having replacement signs, cones, lights and bollards and the other such equipment erected without delay

7. Ensuring the provision of appropriate traffic and travel information to all construction workers during site inductions

8. Ensuring communication to all construction workers of construction workforce code of conduct when travelling to and from the EDA during site inductions, and their responsibilities as representing Heathrow in the eyes of local communities.

7.3 **Implementing, monitoring and updating**

7.3.1 To ensure the safety of traffic, the public and construction staff during the construction-related traffic management works, we will monitor the traffic management schemes that are implemented to maintain their effectiveness and condition.

7.3.2 Heathrow/the main contractors will also monitor site accesses and public roads adjacent to access points to enable measures to be introduced to keep accesses and roads clean and free of obstacles.
APPENDIX B: PRELIMINARY OUTLINE CONSTRUCTION WORKFORCE TRAVEL PLAN
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## GLOSSARY OF TERMS

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<tr>
<td>AEC</td>
<td>Airport Expansion Consultation</td>
</tr>
<tr>
<td>ANPS</td>
<td>Airports National Policy Statement</td>
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<tr>
<td>AQ</td>
<td>Air Quality</td>
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<tr>
<td>BAU</td>
<td>Business as Usual</td>
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<tr>
<td>CLP</td>
<td>Construction Logistics Plan (TfL definition)</td>
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<td>CMS</td>
<td>Construction Movement Strategy</td>
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<td>CoCP</td>
<td>Code of Construction Practice</td>
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<td>CSS</td>
<td>Construction Support Site</td>
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<tr>
<td>CTA</td>
<td>Central Terminal Area</td>
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<tr>
<td>DCO</td>
<td>Development Consent Order</td>
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<td>DSP</td>
<td>Delivery Servicing Plan</td>
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<td>EDA</td>
<td>Expansion Development Area</td>
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<td>FORS</td>
<td>Fleet Operators Recognition Scheme</td>
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<tr>
<td>HGV</td>
<td>Heavy Goods Vehicles – over 7.5 tonnes</td>
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<tr>
<td>LGV</td>
<td>Light Goods Vehicles – between 3.5 tonnes and 7.5 tonnes</td>
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<td>LA</td>
<td>Local Authority</td>
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<tr>
<td>M&amp;E</td>
<td>Mechanical and Electrical engineers</td>
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<tr>
<td>PEIR</td>
<td>Preliminary Environmental Information Report</td>
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<td>POCTMP</td>
<td>Preliminary Outline Construction Traffic Management Plan</td>
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<td>POCWTP</td>
<td>Preliminary Outline Construction Workforce Travel Plan</td>
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<td>PTIR</td>
<td>Preliminary Transport Information Report</td>
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<td>TOC</td>
<td>Train Operating Company</td>
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<td>TMWG</td>
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<td>TPSG</td>
<td>Travel Plan Steering Group</td>
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1. INTRODUCTION

1.1 Background

1.1.1 The Airports National Policy Statement (NPS) requires that, as part of the assessment of surface access (SA) impacts, the implications of airport expansion on SA network capacity during both the construction and operational project stages should be assessed. It also states that the Secretary of State will consider whether all reasonable steps to mitigate the SA impacts during both the development and construction phase in addition to the operational phase have been taken.

1.1.2 It is therefore a requirement for Heathrow, as part of its DCO application, to consider construction impacts on SA capacity. To do this the impacts of construction on the SA network need to be understood, and subsequently methods for mitigating any of these potential impacts need to be identified and considered.

1.1.3 We will prepare a Construction Movement Strategy (CMS) in support of the Development Consent Order (DCO) application for the Heathrow Expansion Programme, hereafter referred to as the DCO Project, which is made up of the Outline Construction Traffic Management Plan (OCTMP) and Outline Construction Workforce Travel Plan (OCWTP).

1.1.4 As part of Airport Expansion Consultation (AEC), in June 2019, we have produced preliminary versions of these plans comprised of two documents:

- Preliminary Outline Construction Traffic Management Plan (POCTMP); and
- Preliminary Outline Construction Workforce Travel Plan (POCWTP).

1.1.5 The purpose of the OCTMP is to minimise the impact of construction logistics on the road network, including reducing: environmental impact and complying with air quality (AQ) standards; road risk; congestion and cost. The OCWTP is one of the mitigation measures referenced within the POCTMP and further developed in this document.

1.1.6 Construction Traffic Management Plans are required by Transport for London (TfL) for all major development proposals – TfL refers to this documentation as Construction Logistics Plans (CLPs). The TfL CLP guidance standards are recognised by all major stakeholders including Local Authorities in the vicinity of Heathrow.

1.1.7 The OCTMP for the DCO Project will follow TfL CLP guidance and equate to an Outline CLP. Whilst a standalone OCWTP is not a necessity to comply with the
guidance, it is recommended as best practice for major development proposals and thus we will include it within our CMS and a preliminary version is included for AEC which also follows the TfL guidance as far as possible with the information available at present.

1.1.8 The POCTMP and the POCWTP are produced as appendices to and are informed by the CoCP for AEC, based on the information which is currently available, to ensure that planned measures will be in place to manage the impacts of construction workforce and traffic. These will be developed in more detail to Outline level documents for the DCO application in 2020 and further developed beyond the DCO by the main contractors to prepare for construction.

1.1.9 The CMS has been produced in accordance with local and national planning requirements. It has been developed alongside the:

- Surface Access Proposals;
- Preliminary Environmental Information Report (PEIR);
- Preliminary Transport Information Report (PTIR);
- Draft Code of Construction Practice; and
- Construction Proposals.

1.1.10 The relationship between this document and the other construction related documents is shown in Figure 1.

*Figure 1 Relationship between key construction documents for AEC*
1.1.11 The scope and structure of the document and the proposed plan measures reflect the outcome of these discussions.

1.1.12 It should be noted that the POCTMP deals with construction traffic i.e. Heavy Goods Vehicles (HGVs over 7.5 tonnes) and Light Goods Vehicles (LGVs between 3.5 tonnes and 7.5 tonnes) whereas this POCWTP deals with construction workforce travel, including private car trips, to and from the Expansion Development Area (EDA) – see Section 3.1.

1.2 **Purpose of this Document**

1.2.1 During the construction process for the DCO Project, the construction workforce will make a considerable number of journeys to, from, in and around the Expansion Development Area (EDA) on a daily basis. The workforce will have an impact that varies based primarily on the number of workers, mode of transport and timing of the trips.

1.2.2 A Travel Plan is a general term for a package of measures, tailored to meet the needs of individual sites, which sets out a strategy to promote and compel more sustainable travel choices. It involves the development of a set of mechanisms, initiatives and targets that together can enable a reduced impact of travel and transport on the environment.

1.2.3 The OCWTP document will focus specifically on how the construction workforce travel to and from the EDA and identifies measures that encourage alternatives to the use of private car, especially single-occupancy journeys. It sets out aspirations to encourage alternative means of travel, particularly as a way to reduce the environmental impact of the development, ensure that the construction workforce have a choice of a range of travel options and ensure that they can access the EDA appropriately during construction.

1.2.4 The ‘Preliminary Outline’ level of the CMS documents reflects the current early stages of planning for construction of this project. There are significant areas for further detailed development which are discussed as they are at present, alongside recommendations for progression to DCO planning. The POCTMP and the POCWTP will be developed to Outline level documents for the DCO application in 2020.

1.2.5 Each contractor appointed by Heathrow to deliver the DCO project will be responsible for developing their own detailed workforce travel plan based on the planned measures set out in the OCWTP.
1.3 **Travel Plan Aims**

1.3.1 The purpose of this Travel Plan is to promote sustainable travel, reduce single occupancy car use, minimise congestion on the highway network external to the EDA and reduce the demand for temporary car parking, during the construction phase of the project. It covers journeys to/from work made by the construction workforce at the EDA and aims to align community wide benefits, minimising impact in the local area, with commercially driven benefits to Heathrow Airport.

1.3.2 In terms of consideration for the local community the aims are as follows:

- Reduce congestion on key routes/junctions, especially during traditional morning and evening peak travel times.
- Prevent unwanted on-street parking on local streets in the vicinity of the EDA.
- Maintain safety for local residents through minimising increases in traffic levels on local routes.
- Minimise noise impacts throughout the DCO Project.
- Minimise impacts on local AQ, especially with regards to local Air Quality Management Areas (AQMA).

1.3.3 In terms of consideration for Heathrow Airport the aims are as follows:

- No impact on Business As Usual (BAU) airport operations from construction requirements and activities.
- No impact on BAU for airport passengers.
- Reduce space allocation required for provision of construction related car parking.
- Optimise public transport services for the workforce.

1.4 **Travel Plan Objectives**

1.4.1 The overall objectives of the Travel Plan are as follows:

- Reduce travel by the private car, particularly single occupancy car journeys.
- Encourage a reduction in car dependency.
- Encourage multi-occupancy car use.
- Increase the workforce awareness of the environmental and health benefits of different travel choices.
• Maximise accessibility for public transport, walking and cycling as sustainable transport modes.
• Achieve the highest possible public transport mode share – minimum 60%.
• Encourage sustainable travel choices.
2. **POLICY CONTEXT**

2.1 **Summary**

2.1.1 National, regional and local level planning polices of relevance to Heathrow are listed as follows:

- The Airports National Policy Statement (June 2018)
- National Policy Statement for National Networks (December 2014)
- National Planning Policy Framework (July 2018)
- The London Plan and Mayor’s Transport Strategy

2.1.2 Further details regarding these polices can be found in the Surface Access Proposals.

2.1.3 In addition, there are a range of planning policies that are of specific importance and relevance to travel planning for the construction workforce. These are discussed in the following section.

2.2 **The London Plan**

2.2.1 The London Plan, most recently adopted in March 2016, is the strategic development plan for Greater London. A replacement draft New London Plan was most recently published for consultation in August 2018 and it is intended it will be adopted in Autumn 2019.

2.2.2 Both the current London Plan and the draft New London Plan designate the airport and area around Heathrow as an Opportunity Area for growth (Opportunity Areas are defined as major sources of brownfield land which have significant capacity for development).

2.2.3 The current London Plan states that the Mayor of London opposes the expansion of Heathrow, while the draft New London Plan states that The Mayor will oppose expansion unless it can be shown that no additional noise or AQ harm would result, and that the benefits of future regulatory and technology improvements would be fairly shared with affected communities. The draft New London Plan also states that all airport expansion proposals should demonstrate how public transport and other surface access networks would accommodate resulting increases in demand alongside forecast background growth.

2.2.4 Policy 6.3 in the London Plan states that CLPs should be secured in line with the London Freight Plan and should be co-ordinated with Travel Plans. In addition, Policy 6.14 stresses the need to promote movement of freight by rail and
waterway where appropriate. Development proposals promoting the compliance with the Fleet Operators Recognition Scheme (FORS), CLPs and Delivery Servicing Plans (DSP) to consolidate freight will be encouraged.

2.3 Mayor’s Transport Strategy

2.3.1 The Mayor’s Transport Strategy was adopted in March 2018 and sets out the Mayor’s policies and proposals for transport in London. It states that the Mayor will promote the improvement of surface links to London’s airports with airport operators contributing a fair share of the funding required and that the Mayor will work with industry partners and stakeholders to assess options for surface access to Heathrow.

2.3.2 Proposal 117 acknowledges the incorporation of DSPs, CLPs and the FORS to “improve the efficiency and effectiveness of freight operations” alongside other measures across London.

2.4 Construction Logistics Plan Guidance

2.4.1 The CLP Guidance was published by TfL in June 2017. It aims to ensure that CLPs of high quality are produced to minimise the impact of construction logistics on the road network. There are two types of CLPs that are required to be submitted, which are:

- An outline CLP – This should give an overview of the expected logistics activity during the construction project and is usually submitted earlier in the planning process during pre-application discussions.

- A detailed CLP – This should provide the planning authority with the detail of the logistics activity expected during the construction project and is submitted at a later date than the outline version.

2.4.2 CLPs are required by TfL for all major development proposals and training in their CLP guidance standards has been undertaken by the majority of London Local Authorities, including all those in the vicinity of Heathrow. Whilst a standalone Workforce Travel Plan is not a necessity to comply with the CLP guidance, it is recommended as best practice for major development proposals.

2.4.3 The OCTMP will follow the CLP structure as close as possible at outline level to ensure that traffic management during the construction period is well planned and set out in accordance with the latest guidance.

2.4.4 As noted in Section 1.1, whilst a standalone OCWTP is not a necessity to comply with the guidance, it is recommended as best practice for major development proposals.
2.5 **FORS Gold Standard**

2.5.1 The Fleet Operator Recognition Scheme (FORS) is a unique, industry-led national accreditation scheme which measures fleet performance and aims to drive up industry standards. The scheme is viewed as best practices within the construction industry, although entirely voluntary, and is open both to firms operating fleets of commercial vehicles and businesses awarding contracts to them.

2.5.2 Membership levels are designated bronze, silver and gold and there are progressive requirements for achieving accreditation. Heathrow are currently recognised at FORS Silver level, looking to raise this to the Gold Standard.

2.5.3 One of the requirements for reaching Gold level is ‘G8 Staff travel’ which has been introduced to “encourage the promotion of sustainable staff travel behaviour in order to minimise the negative impact of staff travel to and from the workplace”.

2.5.4 The ‘G8’ objective requires that a FORS workplace travel plan is aligned with the relevant local authority (LA) guidance and includes:

- A workplace audit and staff survey
- Objectives and staff travel targets
- Incentives and initiatives to reduce reliance on car use
- An action plan and monitoring strategy

2.5.5 There are various FORS objectives which require promotion of FORS and FORS standards, including ensuring these standards are maintained throughout sub-contracted services. As such, this supports the necessity of producing a POCWTP for the construction workforce staff in the EDA.

2.5.6 FORS is also of significance to the POCWTP as it is likely to necessitate use of vehicles with Euro 6 certified engines for dedicated worker buses – see Section 6.5 for detail. FORS accreditation confirms that a fleet operator can demonstrate that appropriate systems and policies exist to ensure drivers are suitably fit, qualified and licenced to operate vehicles which are properly maintained, equipped and insured. Adherence to FORS environmental will reduce the air quality impacts of emissions related to construction traffic.

2.6 **Draft Code of Construction Practice (CoCP)**

2.6.1 The draft CoCP outlines the proposed measures and standards of work that will be implemented by Heathrow and its main contractors throughout the construction period. The aim of the CoCP is to:
• Provide effective planning, management and control during construction in order to manage potential impacts to people, businesses and the natural and historic environment.

• Provide mechanisms to engage with the local community and their representatives throughout the construction period.
3. DEVELOPMENT PROPOSALS

3.1 Development Location

3.1.1 Heathrow airport is located approximately 14 miles west of central London on the western boundary of Greater London, in London Borough of Hillingdon – shown in Figure 2.

Figure 2 Development location in regional context

3.1.2 The term Expansion Development Area (EDA) is used to refer collectively to work-sites in this locality related to the DCO Project, across each phase of construction.

3.2 Indicative Schedule

3.2.1 The indicative schedule for the delivery of the DCO Project by phase is shown Figure 3. Further details can be found in the Construction Proposals document.
3.3 Development Phasing and Activities

3.3.1 The DCO Project will be developed over a number of key phases. Whilst this section provides high level details of the development proposals, it should also be read alongside the Masterplan Document which provides information on the infrastructure referenced here.

3.3.2 The main phases of development are:

- Anticipated early works;
- DCO grant to runway opening;
- Runway opening to 115 million passengers per annum (mppa);
- From 115 mppa to 130 mppa; and
- From 130 mppa to 142 mppa.

3.3.3 The construction land use requirements will change throughout the construction phase and will reduce through the lifecycle of the DCO Project. Construction will evolve from more land intensive activities such as earthworks and infrastructure activities in the phase from DCO grant to runway opening, to the delivery of buildings and associated infrastructure in later phases. The majority of work after runway opening will be contained within the new airport boundary.

3.3.4 The activities expected to be undertaken in the main phases of development proposed are:
3.3.5 **Anticipated early works** – Prior to main works commencing in late 2021, localised projects are anticipated to commence in 2020, subject to access to land and any necessary consents being obtained (see section 4.1). This is expected to include the undergrounding of SSE 132 kV overhead power lines and some environmental mitigation activities. It is also expected that certain third-party schemes will be constructed during this period, including the proposed replacement Energy from Waste plant being promoted by the operators of the Lakeside Energy from Waste facility, which will be demolished by the Project. The areas where these early works and other third-party construction are expected to take place are shown on Figure 4.

*Figure 4 Indicative construction area for the anticipated early works*

3.3.6 **DCO grant to runway opening** – Main construction is anticipated to commence soon after grant of development consent, expected to be in late 2021. This will involve approximately five years of major construction over a large area, including:

- demolition of existing buildings and structures,
- earthworks,
- re-provision of some commercial and industrial properties,
- construction and improvement of motorways and the surrounding road network,
- re-routing of existing gas, water and electric supplies,
• realignment of rivers,
• construction of the new runway and airfield, and
• creation of green infrastructure

3.3.7 Main earthworks activities are expected to commence in 2022 and continue until 2024, with some localised earthworks extending into 2025 and 2026.

3.3.8 The new runway and taxiways construction is expected to start in 2024 and take approximately 2.5 years to complete including testing and operational readiness. The new runway and taxiways are therefore expected to be available for aircraft use in December 2026.

3.3.9 The construction areas for this stage are shown for circa 2023, 2025 and runway opening in Figure 5, Figure 6 and Figure 7 respectively.

Figure 5 Indicative construction area in c. 2023
3.3.10 From runway opening (anticipated in 2026) to 115 million passengers per annum (mppa) in c.2030 – Following the runway opening (approximately 2026-2030) the majority of construction activities to the north and west of the new runway will be complete. Activities during this phase will include (as shown in Figure 8):
• the ongoing development of Terminal 5X, Terminal 2A and supporting infrastructure,

• the re-alignment of the A3113 and Stanwell Moor Junction,

• the initial phase of the new Southern Parkway,

• the construction of the Southern Road Tunnel connecting the south of the Airport with the Central Terminal Area,

• the creation of new stand in the Northern Apron between the new runway and the central runway, and

• The CSS in the north west of the new runway will be decommissioned during this period with the exception of the railhead, which will continue to be used to support construction activities for subsequent phases.

Figure 8 Indicative construction area at 115mppa (c. 2030)

3.3.11 From 115 mppa to 130 mppa in c.2035 – Construction activities will be largely located within the Airport and will include (as shown in Figure 9):

• the ongoing development of Terminal 5X,

• development of the Northern Apron and construction of the first phase of Terminal 5XN. This will require the demolition of a section of the A4 and existing facilities.
• development of surface parking and associated changes to the road configuration at the Northern Parkway, and
• continuation of works to expand the new Southern Parkway.

Figure 9 Indicative construction area at 130mppa (c.2035)

3.3.12 From 130 mppa (c. 2035) to 142 mppa (c.2040+) - Construction activities will be largely located within the Airport (c. 2035) and will include (as shown in Figure 9):

• the completion of the last phase of Terminal 5X,
• the construction of the second phase of Terminal 5XN and associated taxiways,
• the construction of T2C satellite and stands,
• the demolition of T3,
• the construction of T2D satellite and stands, and
• Completion of the Northern parkway.
3.4 **Highway Network Development**

3.4.1 For information regarding the development of the highway network in conjunction with internal construction roads, see Section 4.2 of the POCTMP document.

3.4.2 The remit of this document, the POCWTP, only covers the potential impact of construction workforce travel on public highways, and not site-internal construction routes.

3.5 **Site Access Points**

3.5.1 Access to EDA will vary across the period of construction. Access will be via the CSS onto temporary construction roads which will be developed on site to facilitate the movement of vehicles carrying excavation and construction materials as well as buses around the EDA. The internal roads will vary in location, alignment and specifications according to the construction needs and phasing.

3.5.2 The use of internal roads removes construction traffic from local roads and is an important form of mitigation for the impact of the DCO Project construction.
3.6 **Construction Support Sites (CSS)**

*Figure 11 Indicative plan of Heathrow development area with all proposed CSS locations*

3.6.1 Development plans for the DCO Project aim to keep construction activities within areas identified for permanent land use as much as reasonably practical. However, where this is not possible plots of land that will be temporarily used during the construction phase are being identified and are referred to as Construction Support Sites (CSS).

3.6.2 The CSS are located along the main access roads to the EDA and as close as possible to the main construction areas – the current planned locations of these are shown in Figure 11 (at peak requirement).

3.6.3 The key construction operations to be allocated to CSS are expected to include some or all of the following activities:

- Construction compounds
- Site entrances and control posts
- Temporary car parking
- Lorry parks
- Batching plants
• Pre-fabrication and pre-assembly facilities
• Railhead
• Workforce welfare facilities
• Temporary workforce accommodation

3.6.4 The land required for CSS will change throughout the construction phases and will peak in Phase 1 during the more land intensive activities during earthworks and infrastructure construction and will reduce in Phase 2 and Phase 3 during the delivery of Terminals and associated infrastructure which require less land take for construction support purposes.

3.6.5 In planning the CSS land use strategy, the following configuration objectives have been considered:

1. Minimise disruption to local communities as much as practically possible.
2. Ensure no impact on airport operations.
3. Select most appropriate activity, whilst remaining flexible, at CSS locations based on construction and logistic requirements.
4. Build facilities only once to avoid relocation during construction
5. Minimise workforce commute times.
6. Minimise internal movement of workers and material between construction sites.
7. Minimise reinstatement / redevelopment challenges post CSS location use.
8. Support the Integrated End to End Logistic Framework.

3.6.6 CSS uses of particular importance to the POCWTP includes the following activities:

• **Site entrances and control posts:** areas that provide safety and security checks for vehicles, materials and workforce entering and leaving construction sites.

• **Workforce welfare facilities:** changing rooms, canteens, toilets, etc.

• **Hardstanding for workforce accommodation:** this includes managed areas for workers who choose to bring their own caravan accommodation.

• **Temporary car parking:** to be used by the workforce in addition to public transport.
3.6.7 The use of these sites for welfare facilities and security processes means that CSS locations will play a major role in the arrival/departure routes for all workers, irrespective of their mode of travel to work. The role and processes at the CSS is summarised in Figure 12 below:

*Figure 12 Key role of construction support sites*
4. CURRENT ACCESSIBILITY

4.1 Introduction

4.1.1 This section outlines the different options available at the time of writing for travel to and from Heathrow Airport, including access by private car, public transport including bus, coach, rail and underground, or active travel comprising walking or cycling.

4.1.2 Access is considered at a regional geographic level and is not specific to the vicinity of individual CSS locations at this stage. This will be considered in greater detail in progression to DCO application.

4.1.3 Understanding of accessibility for construction workforce travel is important and needs further consideration beyond the accessibility of areas required by other users, such as airport passengers and colleagues, which are focussed on in the SAS. This is also important in the requirement to ensure workforce travel does not disrupt BAU for passengers and colleagues.

4.1.4 More information on transport provision, now and in the future, is available in the PTIR.

4.2 Public Transport Services

Rail & Underground

4.2.1 Heathrow benefits from several rail and underground links between the airport and central London. These links are shown in Figure 13 and include the Heathrow Express, the Piccadilly line and TfL Rail services. There are currently no direct rail links to areas outside London.
4.2.2 The Heathrow Express offers a dedicated rail service between London Paddington and Heathrow Terminals 2, 3 and 5. The service operates non-stop between the airport and London.

4.2.3 There are four trains per hour throughout the day, with the first train leaving Paddington at 5:10am and the last train leaving Terminals 2 and 3 at 11:48pm. Trains take fifteen minutes between Paddington and Terminals 2 and 3, with the journey to Terminal 5 taking an additional six minutes. Travelling to Terminal 4 requires change onto a shuttle service at Terminals 2 and 3, with the free transfer service in place.

4.2.4 In addition to the Heathrow Express service, there is a TfL Rail stopping service between the airport and London Paddington, having taken over the Heathrow Connect route in May 2018. These services operate twice an hour to Terminals 2, 3 and 4 with trains departing from Paddington between 4:42am and 11:18pm and returning from Terminals 2 and 3 between 05:38am and 00:13am. The journey from Paddington to Terminals 2 and 3 takes thirty-one minutes, with the journey to Terminal 4 taking an additional four minutes.

4.2.5 In due course the TfL Rail service will be incorporated into the Elizabeth line, with trains running through central London onto Shenfield (via Stratford) and Abbey Wood (via Canary Wharf).
4.2.6 The airport is also served by London Underground services, with the Piccadilly line providing a lower cost but slower link from the airport to central, north and west London. Trains leave the airport approximately every five minutes, with the first services leaving Terminal 4 at 5:47am and the last service arriving at Terminals 2 and 3 at 00:26am. However, on Fridays and Saturdays a 24-hour service is provided to Terminals 2, 3 and 5 as part of the Night Tube, with trains running approximately every ten minutes.

**Bus & Coach**

4.2.7 Heathrow Central Bus Station is one of the UK’s busiest bus and coach stations, with around 850 bus and 450 scheduled coach departures each day to over 1,000 destinations. It is located between Terminals 2 and 3 and is open 24 hours a day. In addition, bus and coach stops are also provided outside Terminals 4 and 5.

4.2.8 There are currently 26 bus routes (including night buses) that serve the airport, five of which operate 24 hours a day. The majority of these services are operated under contract by TfL, with a number of other operators running services to non-London destinations. In total, there are around 50 daytime bus departures in the peak hour from the Central Bus Station.

4.2.9 Approximately a quarter of the services which arrive at Heathrow each day go on to terminate at London Victoria Coach Station, whilst a similar proportion go on to terminate at Gatwick or Brighton. The most frequently used coach links are from medium-sized towns and cities, particularly those with large student populations, including Oxford, Bournemouth, Southampton, Bristol and Cardiff.

4.2.10 A number of ‘RailAir’ services operate from Reading, Watford Junction, Woking and Feltham to Heathrow terminals. These are bus and coach services that offer integrated ticketing with the national rail network, allowing passengers to buy a single ticket to cover both rail and bus/coach travel to and from the airport.

4.2.11 There are currently 24 bus routes (including night buses) that serve the airport, five of which operate 24 hours a day. Around two-thirds of these services are run by TfL, with a number of other operators running services to non-London destinations.
4.2.12 Figure 14 shows 15, 30, 60 and 90-minute accessibility catchment isochrones, traveling to the EDA for 7am arrival at a point approximating Heathrow Central Bus Station (within the CTA), by multi-modal public transport journeys (bus, rail and underground).

4.2.13 The isochrones indicate that the accessibility by public transport is much greater towards the east, and Central London, than it is to the north, south or west of the EDA. Travelling in this eastward direction, it is possible to travel approximately 5 miles from the EDA in 60 minutes and approximately 15 miles in 90 minutes.

4.2.14 Exceptions to this which are accessible within 60 minutes include Paddington, approximately 10 miles from the EDA, and stations to the west on the Great Western Railway as far as Maidenhead – Burnham and Taplow. Isolated locations to the west, such Oxford (approximately 35 miles from the EDA) and Reading (approximately 20 miles from the EDA), are accessible within a 90-minute journey by public transport.
Accessibility within 30 minutes is very limited to the immediate vicinity of the EDA including residential locations such as Colnbrook, West Drayton and Hayes. It is not possible to travel any distance to the south of the EDA, by public transport, within this time.

For further detail regarding modelling of workforce distribution and potential key home locations see Section 5.4.

It is important to acknowledge that workforce arriving at a public transport hub location, such as the CTA, is not the end of their commute. They will then need to take a shuttle-bus to a CSS location and onward transportation to their specific construction site. This will make total commute time substantially longer so, for example, a worker requiring arrival at their construction site for 7am may need to arrive at a shuttle-bus pick up point at 6:30am. This requires further development to streamline and reduce total journey time as much as possible.

Accessibility catchment analysis will be refined in further work, for DCO application, to consider centring on specific points for proposed transport “hub” locations (see Section 6.5.8), in addition to analysis of specific service patterns at these locations. Travel at different times of day covering the different shift patterns and 24/7 working where required will also be considered, as requirement for construction workforce to arrive at Heathrow between midnight and 6am when public transport provision can be negligible or non-existent will impact on accessibility levels and mode choice.

4.3 Highway Network

Strategic Highway Network

Heathrow has access to the national strategic road network as shown in Figure 15 with direct connections from Terminal 5 to Junctions 14 and 14a of the M25, and from Terminals 2 and 3 to Junction 4 of the M4 via the M4 Spur. From here the wider motorway network can be accessed, with both the M3 (South West) and M40 (Birmingham) nearby. Heathrow also has direct access from strategic local roads including the A4 and A30.
4.3.2 Figure 16 below shows the routes managed by Highways England, TfL and Heathrow, within the vicinity of the airport.
4.3.3 At present, Heathrow has an internal road network, connected by a perimeter road running around the full extent of the airport and providing connections to all the roads mentioned above.

4.3.4 Terminals 4 and 5 are accessed via the Southern Perimeter Road and Western Perimeter Road respectively due to their location on the edge of the airport. Access into the CTA (Terminals 2 and 3) is only possible via a tunnel beneath the northern runway. The tunnel is accessed from the Emirates roundabout junction, which connects the Northern Perimeter Road to the M4 Spur.

Local Highway Network

4.3.5 Access routes for the construction workforce specific to individual CSS locations will need to be considered in detail in progression to DCO application, including identification of links and junctions which are key to the DCO Project construction operations and which will be covered in the OCTMP.
4.3.6 Figure 17 shows 15, 30, 60 and 90 minute accessibility catchment isochrones, traveling to the EDA for 7am arrival at a point approximating Heathrow Central Bus Station (within the CTA), by car on the highway network.

4.3.7 The isochrones indicate that the accessibility by car is significantly reduced towards the east, and Central London, than compared to the north, south or west of the EDA. Accessibility is greatest to the north and south where it is possible to reach approximately 10-12 miles in 30 minutes and 25 miles in 60 minutes.

4.3.8 Locations accessible by car within the various isochrones include:

- 15 minutes: M25 (Junction 16), M40 (Junction 1), Datchet, Hythe End, Staines, Harlington, Cranford, West Drayton, Hillingdon Heath
- 30 minutes: High Wycombe, Chorleywood, Richmansworth, Maidenhead, Camberley, Woking, Cobham, M25 (Junction 10), Weybridge, Hounslow
• 60 minutes: Aylesbury, Dunstable, Stevenage, Welwyn Garden City, St. Albans, Redhill, Guildford, Sutton, Basingstoke, Reading, east Oxford
• 90 minutes: Banbury, Milton Keynes, Letchworth, Harlow, central London, Stratford, Leyton, Dartford, Maidstone, Winchester, north Southampton, Horsham, Crawley, Tonbridge, Tunbridge Wells

4.3.9 For further detail regarding modelling of workforce distribution and potential key home locations see Section 5.4.

4.3.10 It is important to acknowledge that workforce arriving by car at a CSS location may still require onward transportation to their specific construction site, adding time to their total commute. Further work is required for DCO application to understand which parking locations at CSS sites will be used by workforce arriving on different approach routes and traffic modelling work done to date assumes the workforce are assigned to the car park closest to their ‘home’ origin.

4.3.11 Accessibility catchment analysis must be refined in further work to consider centring on more accurate points, as for proposed CSS parking locations (see Section 5.6), and for travel at different times of day covering the different shift patterns for the workforce.

4.4 Active Travel Accessibility

Walking
4.4.1 Footways are currently provided on the majority of roads in the area around the airport campus. It is therefore possible to access the outer areas of the airport campus on foot, such as the businesses and offices between the Northern Perimeter Road and the Bath Road to the north of the airport. Due to the lack of dedicated pedestrian infrastructure, access to the airport terminals on foot is not currently possible, but this is of little significance for workforce travel.

Cycling
4.4.2 There are currently no formal cycle networks (i.e. with dedicated infrastructure and signage) within the Heathrow Campus, but cyclists can cycle on-carriageway with traffic. The exception to this is the access tunnel into the CTA from the north, where cycling is currently prohibited.

4.4.3 Outside of the campus, cycle routes are predominantly shared use routes, for example along Bath Road and the Southern Perimeter Road, rather than those with dedicated cycle infrastructure.

4.4.4 The PTIR includes an assessment of the quality of walking and cycling routes around the airport.
4.4.5 Cycle parking is provided at Terminals 4 and 5, at the Compass Centre in the north-west of the airport, and in some airport colleague car parks. In 2011 Heathrow opened an on-site bike shop and cycle hub on the northern perimeter of the airport. This forms part of Heathrow’s airport wide cycle scheme. The cycle hub acts as a one-stop shop for cyclists, offering discounted cycles and equipment as well as free maintenance, training and specialist advice for members. It also provides 174 cycle parking spaces, from which cyclists can use airport shuttle buses to access Terminals 2 and 3. In total, there are 742 cycle parking spaces provided across the airport.

4.4.6 Current facilities for pedestrians and cyclists around the airport are primarily focused on colleagues, as the distance that passengers travel to the airport and the likelihood that they are travelling with luggage makes their potential for walking and cycling limited. In response to Heathrow’s most recent survey, just under 2% of colleagues (around 1,400 people) indicated they walked or cycled to the airport.
5. **TRAVEL PLAN METHODOLOGY**

5.1 **Introduction**

5.1.1 Figure 18 introduces the methodology which is being used for development of the Workforce Travel Plan for the DCO Project.

*Figure 18 Summary of travel plan methodology*
5.2 Estimate of Total Construction Workforce

5.2.1 Projections for numbers of total workforce over time are dependent on factors such as masterplan options, construction methodology and phasing decisions which are still in development.

5.2.2 The construction workforce is projected to reach a peak of approximately 14,000 people in 2024-2025. This compares with previous projects where 8,000 people worked on Terminal 5 and 5,000 people on Terminal 2.

5.2.3 The workforce will then drop following the completion of the runway and will vary between approximately 2,000 and 5,000 from runway opening to end state. During this period the workforce will be largely confined to the construction areas of the new terminals/satellites and/or within other new airport supporting facilities and related developments.

5.2.4 There are opportunities to reduce the on-site workforce requirement by increasing off site manufacturing and prefabrication through the Logistics Hubs initiative, and this has not yet been factored into the assessment at this time.

5.3 Accommodation

5.3.1 The majority of the construction workforce is expected to be drawn from the existing construction labour market residing within a commutable distance from the EDA and so would not require temporary living accommodation to be provided.

5.3.2 Analysing the levels of workforce mobility within the UK construction sector provides an indication of the extent to which the workforce is adaptable, flexible and willing to travel. Research into mobility carried out in 2015 showed that the average travel to work distance for a UK construction worker was 22 miles, a figure that reduced from an average of 28 miles in 2012. Most workers (62%) travel under 20 miles and a further 31% travel 20-49 miles from their current permanent residence.

Home-based / Non-home-based Split

5.3.3 An integral component of the POCWTP is recognising the split between the home-based and non home-based workforce as this will particularly influence the provision of car parking, busing and temporary workforce accommodation. At this stage, based on previous experience with T2 and T5 construction and Construction Industry Training Board (CITB) research, a high-level 80:20 split between home-based and non home-based workforce is adopted.
5.3.4 Non home-based temporary workforce have two main options: either finding accommodation through the private sector in the local area (rental or hotels) or seeking project sponsored accommodation.

5.3.5 There is an established ‘Central Booking System’ to use room availability within the current hotel capacity in the local vicinity of Heathrow for temporary workforce accommodation which has the potential to also be used for the DCO Project.

5.3.6 In addition to the existing Heathrow network of temporary accommodation options, and where reasonably practicable, the DCO Project may also utilise accommodation that comes into the ownership of Heathrow as a result of the DCO Project proposals in the areas around the EDA for accommodating construction workers.

5.3.7 Heathrow’s location in London benefits from a well-developed housing market and public transport links, so the requirement for construction accommodation facilities is less than for more remote infrastructure construction projects. However, as evidenced on other major construction projects some sections of the workforce are known to have a propensity to live in their own mobile homes.

5.3.8 In order to prevent the use of unlicensed caravan sites, dedicated areas of hard standing for caravans will be located within some of the CSS and managed by Heathrow. By establishing this capability, the demand and management of these locations can be carefully monitored. Heathrow will ensure these facilities are appropriately secured and welfare is provided to ensure the locations are self-contained.

5.3.9 Based on a peak workforce of 14,000, the following is generated:

- 80% are home-based – 11,200 workers
- 20% are non-home-based – 2,800 workers
- Provision of 500 hardstanding pitches for members of the workforce to reside in their own caravans, with dual occupancy, accommodates 1000 non-home-based workers
- The remaining 1,800 non-home-based workers will find accommodation through the private sector – private rental property or hotels in the local area

**Temporary Workforce Accommodation CSS Use**

5.3.10 The framework for CSS land use strategy and initial proposals are currently being developed. Selected CSS locations will be used to provide temporary workforce accommodation in the form of hardstanding pitches for members of the workforce to reside in their own caravans.
5.3.11 Current assumptions regarding the numbers of pitches required assume dual occupancy of caravans.

5.3.12 Based on previous experiences of construction at T2 and T5, it is estimated that provision of 500 hardstanding pitches across the CSS locations will be sufficient given the current estimates for peak workforce.

5.4 **Workforce Distribution**

5.4.1 A two parameter Tanner gravity model has been developed to gain an understanding of how the residences of the home-based construction workforce could be distributed in the South East England region. This is key to informing modelling of their future travel patterns and, as such, identifying critical network pinch points and optimising mitigation plan measures.

5.4.2 The model provides an estimate of the number of constructions workers needed to work on the DCO Project at census ward level, taking into account both the number of construction workers that reside in a given ward and the ward’s distance from the EDA. The model was calibrated through maximising the coincidence ratio between the trip length distribution produced by the model and observed trip length distributions.

5.4.3 A second gravity model, using the same methodology, is currently being developed for the non-home-based workforce in private sector accommodation. At present, the completed gravity model outputs have been applied to this workforce group for initial traffic modelling.

5.4.4 The model outputs are shown in the map in Figure 19, illustrating the relative density of workforce distribution as ‘number of workers per unit area’, within approximately 25 miles of Heathrow Airport.

5.4.5 This indicates that the distribution of the workforce is significantly weighted to the east of the EDA, in Greater London.

5.4.6 60% of the total workforce (48% of the home-based workforce) is expected to live within 15 miles of the EDA.

5.4.7 Key locations indicated by areas of strong density on the distribution map include:

- 5 miles: Slough, Langley, West Drayton, Hayes, Uxbridge, Northolt, Greenford, West Ealing, Hounslow, Ashford, Feltham, Stanwell
- 15 miles: Bracknell, Maidenhead, High Wycombe, Watford, Harrow, Wembley, Harlesden, South Acton, Mitcham, Morden, Sutton, Woking
- 25 miles: Hemel Hempstead, Tottenham, Walthamstow, Wanstead, Croydon
5.5 Travel Mode

Mode Share

5.5.1 The majority of the construction workforce will travel to the EDA each day either by public transport or by car.

5.5.2 Current AQ modelling demonstrates that a minimum of 60% of the construction workforce are needed to travel to the EDA by public transport in order to make necessary reductions to the number of car movements on the network to satisfy AQ and congestion limitations, especially in the particularly sensitive AQMAs.

5.5.3 As such, we have set a 60:40 split between public transport and car mode share in the traffic modelling to date as the current assumption. Further modelling is required to refine our assumptions therefore this mode share split may change. This will be developed as part of the OCWTP for DCO.

5.5.4 Active travel mode share, comprising walking and cycling, for the construction workforce is anticipated to be extremely low based on prior evidence from T5 and T2 developments. These modes have not been accounted for within current traffic modelling work which has been undertaken however measures will be put in place to encourage active travel where appropriate.
Public Transport Access & Numbers

5.5.5 Based on a peak of workforce of 14,000, 60% public transport mode share is 7,720 workers (60% of 12,600 total home-based workforce and non-home-based ‘private sector’ workforce).

5.5.6 Further work needs to be done to establish the likely distribution of these workers and analyse the best public transport nodes for them to connect with for their route to a CSS location.

5.5.7 Rail and bus public transport routes terminate at the CTA, Hatton Cross or at Terminal 5 and, as such, the workforce require a method of travelling the final leg of their journey to CSS locations.

5.5.8 Due to the levels of public transport accessibility, it is thought that a higher proportion of the workforce from the areas east of the EDA, towards central London, will travel by rail and bus modes. Inversely, a higher proportion of the workforce from the areas west of the EDA, particularly further away than Slough, will be dependent on the car for their journey (for at least part of the route – see Section 6.5. for potential plan measures to address this).

5.5.9 It is also anticipated that people working evening and night shifts will be more likely to drive due to the reduced public transport offer at night.

5.5.10 Figure 20 shows how the public transport accessibility levels, as discussed above, have been incorporated within traffic modelling which has been undertaken. This makes adjustments to the percentage of the workforce in each census zone who travel by public transport, while the overall mode share across all zones in aggregate remains 60%.
5.5.11 This section details the methodology by which the construction workforce has been assigned to the highway network in traffic modelling work undertaken so far.

5.5.12 Demand has been defined using the gravity model outputs using a zonal system. Each zone centroid was pinpointed as a trip origin/destination to/from Heathrow and software was used to determine routing options. Routing options were refined to remove unlikely route options, but no consideration has been given to if they have spare capacity or the threat they may pose to AQ constraints at this stage in the modelling process.

5.5.13 This identifies key routes which the construction workforce are likely to use to access the EDA. Approximately half of the total vehicles are expected to arrive at the EDA via three key routes: 18% originating to the north of Heathrow using the M25; 17% originating to the south of Heathrow using the M25; and 18% expected to arrive via the M4 from the east. A further 13% use the A312 the M4 from the west and the remaining 34% are distributed on local routes around the airport.

5.5.14 Figure 21 shows the strategic routes for the workforce travelling by car and the estimated proportions using each route.
5.5.15 A car share factor of 1.5 has been assumed in traffic modelling undertaken to date. This is based on single occupancy and car share variables considered from T5 and Heathrow Colleague Travel Mode Split data.

Active Travel

5.5.16 Some of the construction workforce may walk or cycle direct to CSS locations or bus pick-up points. It will be a requirement of the OCWTP that Heathrow will ensure that suitable provision is made at the parking facilities and bus pick-up points to cater for active travel modes of transport, such as ensuring pavements for walking routes and space for cycle parking stands.

5.5.17 The workforce living at CSS locations in their own caravans will require safe walking routes to other areas on the CSS such as welfare facilities and security posts.

5.6 CSS Arrival and Departure

Shuttle Bus Services

5.6.1 As previously stated, rail and bus public transport routes terminate at the CTA, Hatton Cross or at Terminal 5 and, as such, the workforce require a method of travelling the final leg of their journey to CSS locations. The plan measure of bus services dedicated for the construction workforce is discussed in Section 6.5.
Car Parking

5.6.2 The approach to car parking for the construction workforce is to use selected CSS located near the major access routes to the airport to provide temporary parking facilities controlled by Heathrow. Project bus services will then transport the workforce from the car parks to their site offices or workplaces.

5.6.3 The OCWTP will develop the parking strategy further based on refined modelling of the workforce profile.

5.6.4 The number of temporary parking spaces required has been assessed qualitatively based on the workforce profile. Critical assumptions in the modelling which has been undertaken include:

1. Peak workforce of 14,000;
2. The proportion of management, civils, construction and M&E workforce within that profile and their likelihood of driving to the EDA;
3. An assumed level of car sharing (as previously stated, a factor of 1.5 has been used in traffic modelling to date);
4. The maximum parking demand will occur at shift changeover, where parking is required for the workforce arriving while the workforce of the previous shift have not yet left. An uplift of 20% has been assumed to account for this, but more detailed consideration of the effect of shift patterns is required.
5. The cumulative demand by zone across temporary car parking locations dictated by regional peak, not the overall workforce peak.
6. Planning figure of 350 parking spaces per ha. is assumed.

5.6.5 Based on these factors, the current working assumption is a total requirement for temporary workforce parking in the range of 4,000-6,000 spaces.

5.6.6 While the framework for CSS land use strategy and initial proposals are still being developed, the parking provision between specific locations is still to be determined.

5.6.7 As previously stated, traffic modelling work done to date assumes the workforce are assigned to the car park closest to their ‘home’ origin.

Working Patterns

5.6.8 Twenty-four-hour day, seven days a week working, including Bank Holiday working, will be required for activities directly related to ensuring that the new runway can be operational as soon as possible. However, shift start and finish times will be staggered to reduce pressure on local transport services, roads and construction site infrastructure.
5.6.9 Heathrow will consider locations and activities where 24-hour day, seven days a week working may cause unacceptable effects, and will propose reduced working hours/activity restrictions in the CoCP submitted with the DCO.

5.6.10 For further information regarding working patterns, see draft CoCP Section 4.
5.7 Summary

5.7.1 Based on a peak workforce of 14,000, Figure 22 shows the initial outline for daily number of construction workers for each mode of travel which is generated using the assumptions previously detailed.

*Although a zero value for cycling is not realistic, as there will be some local workforce who will travel by this mode, this is presented here to align with the assumption used in current traffic modelling.*
6. **TRAVEL PLAN MEASURES**

6.1 **Introduction**

6.1.1 This section introduces the plan measures (outlined in Table 1) and the current status of these at the early stages of travel plan development. The three statuses have been defined as follows:

- **Committed**: Heathrow is committing to these measures now as part of Airport Expansion Consultation
- **Proposed**: ideas under consideration which require further development prior to DCO application
- **Rejected**: measures which have been considered and excluded

6.1.2 These statuses follow the framework set out in the TfL ‘CLP Guidance’ documentation.

6.1.3 It should be noted that, at this stage of early development, no plan measures have yet been ‘Considered & Rejected’ for the POCWTP.

**Plan Measures Summary Table**

<table>
<thead>
<tr>
<th>ID</th>
<th>Plan Measure</th>
<th>Committed</th>
<th>Proposed (idea to develop)</th>
<th>Considered &amp; Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Encouragement of the use of public transport for workforce - communication and promotion of information regarding existing services</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Encouragement of the use of public transport for workforce - possible subsidised travel ticketing fund</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Extension of &quot;Zipcar Flex&quot; programme</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>4</td>
<td>Personalised travel planning advice service</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>5</td>
<td>Encouragement of car sharing through &quot;Liftshare&quot; tool, creating travel community</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Initiatives to support walking &amp; cycling</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>7</td>
<td>Construction workforce shuttle bus service</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>8</td>
<td>Establishment of workforce travel hubs away from Heathrow rail terminii to allow workers to transfer between rail and bus services to site compounds</td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>9</td>
<td>Provision of construction workforce buses from</td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>
(some) residential locations with reduced accessibility to Heathrow to CSS locations

| 10 | Staggered shift start and end times for construction workforce to reduce peak pressure | x |
| 11 | Use of low emission vehicles for bus fleet | x |
| 12 | Car park management system such as permits | x |
| 13 | Car park availability management system | x |
| 14 | Integrated transport command centre including incident response communication to workforce | x |
| 15 | Collaboration with other sites in the area (HGVs and workforce movements) | x |

6.2 **Initiatives to Support Public Transport Use**

Table 2 Plan measures to support public transport use

<table>
<thead>
<tr>
<th>ID</th>
<th>Plan Measure</th>
<th>Committed</th>
<th>Proposed (idea to develop)</th>
<th>Considered &amp; Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td></td>
<td></td>
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<td>2</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Personalised travel planning advice service</td>
<td>x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.2.1 We are committed to the following initiative to support public transport for the workforce mode of travel to CSS location:

- **Marketing**: communication and promotion of information regarding existing services can be provided to the construction workforce as part of their induction process when they first join.

6.2.2 The following initiatives are being considered to support public transport for the workforce mode of travel to CSS location:

- **Subsidised ticketing**: setting up a public transport ticketing fund would need to be agreed with necessary service providers.
- **"Zipcar Flex"**: a one-way car hire scheme which is currently being piloted for Heathrow passengers could be made available to the construction workforce.
The potential flexible access to a vehicle if they required may encourage some of the workforce to travel by public transport more.

- **Personalised advice service**: this can encourage people to switch mode by clearly displaying different available options, presenting time or financial savings and giving people confidence in the travel choices they are making.

### 6.3 Initiatives to Support Car Sharing

**Table 3 Plan measures to support car sharing**

<table>
<thead>
<tr>
<th>ID</th>
<th>Plan Measure</th>
<th>Committed</th>
<th>Proposed (idea to develop)</th>
<th>Considered &amp; Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Encouragement of car sharing through &quot;Liftshare&quot; tool, creating travel community</td>
<td>x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.3.1 A key objective of the Travel Plan is to reduce single occupancy car use and a car share factor of 1.5 has been used for modelling purposes. In particular, the Travel Plan aims to incentivise car sharing as a means of achieving this objective.

6.3.2 This could be achieved through:

- Extension of Heathrow’s well-established colleague car share scheme to include the construction workforce.
- Adoption of a car share platform such as *Liftshare* which can help to create a closed car share community and connect people with others making similar journeys.
- Offering preferential car parking to car sharers through dedicated spaces within the workforce car parks.
- Providing promotional information as part of a Workforce Induction process when they first join.

6.3.3 Issuing car parking permits to a “car share group” on a preferential basis (see also further discussion of parking management in Section 6.6.2)
6.4 Initiatives to Support Active Travel

Table 4 Plan measures to support active travel

<table>
<thead>
<tr>
<th>ID</th>
<th>Plan Measure</th>
<th>Committed</th>
<th>Proposed (idea to develop)</th>
<th>Considered &amp; Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Initiatives to support walking &amp; cycling</td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

6.4.1 The following initiatives are being considered to support walking and cycling for the workforce mode of travel to CSS locations, where they live within a suitably close distance of the EDA:

- **Safe routes**: design consideration is being given to safe access routes for walking and cycling as part of the development of the Masterplan.

- **Cycle stands**: secure cycle parking to be provided in a convenient location relative to the desired arrival route and the welfare facilities.

- **Showering and locker facilities**: provided in the welfare facilities, access to these may encourage mode shift.

- **Worker recruitment**: recruiting workers from the local area as much as possible.

6.5 Dedicated Workforce Bus Services

Table 5 Plan measures relating to dedicated workforce bus services

<table>
<thead>
<tr>
<th>ID</th>
<th>Plan Measure</th>
<th>Committed</th>
<th>Proposed (idea to develop)</th>
<th>Considered &amp; Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Construction workforce shuttle bus service</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Establishment of workforce travel hubs away from Heathrow rail terminii to allow workers to transfer between rail and bus services to site compounds</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Provision of construction workforce buses from (some) residential locations with reduced accessibility to Heathrow to CSS locations</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Use of low emission vehicles for bus fleet</td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

6.5.1 As previously stated, rail and bus public transport routes terminate at the CTA, Hatton Cross or at Terminal 5 and, as such, the workforce require a method of travelling the final leg of their journey to CSS locations. This is potentially a major
undertaking which requires bus service planning, procurement of a supplier and space for operation at stations to pick-up and drop-off workers.

6.5.2 Ideally the CTA and T5 locations would be avoided to maintain BAU for passengers and to not impact negatively on their experience of accessing the airport.

6.5.3 Further development of a system for dedicated worker buses is underway and will be further defined within the OCWTP. This will use the workforce distribution output from the gravity model and the public transport accessibility catchment analysis to identify service gaps and consider what could be done to fill these as required.

6.5.4 We are committed to implementing a construction compound bus service which will help connect people using public transport as their main mode of travel with the necessary CSS location.

6.5.5 Development of the shuttle bus system currently considers the following items:

- Working hours and shift pattern of workforce
- several different routes (shown in the schematic diagram Figure 23, below)
- a number of primary bus stops at CSS locations
- Secondary bus stops yet to be determined
- Number of workers to be bused at shift change times

6.5.6 These will be used to establish factors including operating times, frequency and numbers of buses.
Shuttle Bus Network Schematics

6.5.7 Figure 24 and Figure 25 below show possible schematics developing a shuttle bus service connecting T5, CTA and Hatton Cross with selected CSS locations. These are preliminary schematics and a more detailed shuttle bus network will be considered as part of the OCWTP which takes account of hub stations (described below).
Hub Stations

6.5.8 The possibility of developing one or more hub stations outside of the airport and creating a dedicated workforce bus connection from these to selected CSS
locations is being considered. This would support maintaining BAU for passengers and reduce the potential impact of construction workers using T5 and CTA.

6.5.9 Options for further review, and discussion with the relevant LPAs and National Rail, include:

- West Drayton;
- Iver;
- Hayes & Harlington;
- Feltham;
- Ashford;
- Staines;
- West Hounslow; and
- Slough.

*Figure 26 Potential "Hub" Stations*

**Direct Bus Services**

6.5.10 In areas which may be underserved by a public transport connection, but which are highly accessible to a significant proportion of the workforce, it may be an option for Heathrow to run a direct bus service which is dedicated for the
construction workforce from those areas. Locations for options are still to be considered, and it will be necessary to engage with key stakeholders but are likely to include home locations to the west of the EDA including Slough.

**Low Emission Bus Fleet Vehicles**

6.5.11 Use of FORS standard vehicles will be required for bus fleet vehicles. Through adherence to environmental standards required for accreditation under the FORS scheme, Euro 6 engines will be expected in all vehicles accessing the EDA. This will reduce the air quality impacts of emissions related to construction traffic.

6.5.12 Given the significance of air quality at various locations around the EDA and in relation to the TfL Ultra Low Emission Zone (ULEZ) and the Air Quality Management Areas (AQMA), this measure is intended to help reduce the emissions impact of construction traffic.

### 6.6 Other Measures

*Table 6 Other plan measures*

<table>
<thead>
<tr>
<th>ID</th>
<th>Plan Measure</th>
<th>Committed</th>
<th>Proposed (Idea to develop)</th>
<th>Considered &amp; Rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Staggered shift start and end times for construction workforce to reduce peak pressure</td>
<td>x</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Car park management system such as permits</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Car park availability management system</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Integrated transport command centre including incident response communication to workforce</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Collaboration with other sites in the area (HGVs and workforce movements)</td>
<td></td>
<td>x</td>
<td></td>
</tr>
</tbody>
</table>

6.6.1 Heathrow are committed to the following travel plan initiative:

- **Staggered shift start and end times**: this initiative will help to reduce peak pressure on local transport services, the highway network and construction site infrastructure to help avoid potential congestion at critical links or junctions.

6.6.2 The following initiatives are also being considered:

- **Car park permit system**: there are several options which are being considered. This includes allocating workers to a specific car park location which they are required to use (e.g. nearest to their home location) and “car share groups” preferential parking permits.
• **Car park availability management system:** such a system means that people don’t spend so long driving around a network looking for a space and thereby helps to alleviate unnecessary congestion.

• **Integrated transport command centre:** this would help manage traffic and people flows around the EDA and would include BAU flows as well as flows relating to construction.

  Its primary purpose would be to ensure smooth operation of the local transport network and enable swift responses to incidents by aiding communication and aligning response. The centre would have representation from the airport, local infrastructure providers such as Highways England and Network Rail as well as transport organisations such as Train Operating Companies (TOCs), and emergency organisations such as the police. For further details, see the POCTMP document.

• **Collaboration with other sites in the area (HGVs and workforce movements):** Working with neighbouring developers to realise benefits such as consolidation of vehicle movements, common procurement and shared-waste management can help increase efficiency and reduce negative construction impacts. For further details, see the POCTMP document.
7. DELIVERING THE TRAVEL PLAN

7.1 Roles & Responsibilities

7.1.1 To be successful, the Travel Plan requires a management system which allows it to involve everyone at the development. To encourage the construction workforce to think about, and change their travel behaviour, the earlier everyone is involved in it, the more successful it is likely to be.

7.1.2 Selected plan measures may need to be mandated and become the responsibility of the main contractors to ensure that the impacts of workforce travel are kept to a minimum. Requirements for this are currently being developed.

Construction Travel Plan Coordinators

7.1.3 Prior to the start of the first construction workers arriving on site, Travel Plan Co-ordinators will be appointed by HAL/main contractors. The Travel Plan Co-ordinators will be responsible for the implementation and day-to-day running of the Travel Plan and will need to demonstrate full commitment and enthusiasm towards it.

7.1.4 The responsibilities of the Travel Plan Co-ordinators will be as follows:

- Communicate the travel plan across the site, including promotion of the benefits of travel planning, acting as a point of contact for the workforce requiring information, and updating the website as required.

- Undertake monitoring consistent with the agreed framework and ensure that the results are communicated. This will include evaluation of the monitoring against the targets, review of targets where appropriate (for instance, if the targets are consistently achieved) and agreeing appropriate mitigation measures where necessary.

- Periodically review the Travel Plan, updating the documents as necessary. For example, this would include updating the document in response to local transport initiatives and campaigns and possible changes to the site audit when necessary.

- Work closely with contractors on site to ensure that all the construction workforce receive information regarding sustainable travel.

- Organise meetings of the Steering Group and Working Group (discussed in further detail below).

7.1.5 The Travel Plan Co-ordinator role will be in place prior to the first construction workers starting on site, ensuring that sustainable travel information is available...
from the outset, and will remain in place throughout the construction of the development. The role may be undertaken as part of a wider management function. Alternatively, the role could be contracted to an appropriate external body such as a consultancy or other organisation.

**Traffic Management Working Group (TMWG)**

7.1.6 We will establish a Traffic Management Working Group (TMWG) prior to any construction commencing. The TMWG will include representatives from Heathrow, main contractors (including Travel Plan Co-ordinators), local highways authorities, Highways England, TfL and the emergency services. The TMWG may include representatives from public transport service providers, coach operators, taxi associations, local cycling and pedestrian organisations although discussions are still required to define its composition and the responsibilities within it.

7.1.7 The TMWG will have the overall responsibility for coordinating the implementation of the detailed CTMPs and CWTPs. We will have overall responsibility for ensuring that the main contractors implement, monitor and enforce the CTMPs and CWTPs.

7.1.8 Heathrow/ the main contractors will work closely with the TMWG on traffic management and broader traffic related measures. In the event of any disputes relating to the implementation of traffic management and other traffic related measures, the members of the working group will have the responsibility for agreeing a resolution procedure to be followed.

7.1.9 Additionally and with reference to Construction Workforce Travel Plans, the TMWG will also have responsibilities in relation to the following:

- To agree a monitoring framework for use in determining the extent to which the Travel Plan targets have been met;
- To monitor the effectiveness of the existing measures in relation to achieving the Travel Plan targets;
- To agree on the production of action plans, further mitigation measures and the timescales for implementation such that the Travel Plan targets are achieved, should monitoring identify that this is necessary.

**Travel Plan Steering Groups**

7.1.10 The construction workforce will be encouraged, through the provision of incentives, to join a working group by the Travel Plan Co-ordinator providing an opportunity to engage with the Travel Plan process. The groups should include a cross section of the workforce. In addition, mode groups or ‘location’ groups may be appropriate. Working groups will be chaired by an appropriate person and outcomes reported back to the Travel Plan Co-ordinator.
7.2 Communication Strategy

7.2.1 Effective communication of the Travel Plan, including the promotion and marketing of Travel Plan measures, will be a key element to the success of the plan. This section sets out how the Travel Plan will be communicated to the construction workforce.

Travel Plan Website

7.2.2 A Travel Plan Website will be set up for the DCO Project. This will be an interactive tool available to the workforce at all times to provide up-to-date information. All survey results, initiatives, local transport information and proposed meetings will be made available with the option for workers to share their travel experiences and comments to improve the current Travel Plan.

7.2.3 For members of the workforce that do not have internet access, similar information will be available through the Travel Plan Information Boards and through the other measures set out below.

Travel Plan Information Boards

7.2.4 Located in public areas, the information boards will provide up-to-date information for the workforce on the following:

- Information about the Travel Plan, highlighting its aims and objectives;
- Public transport links, including bus timetables, service destinations, and details of safe pedestrian routes between the development and bus stops and the rail station;
- Telephone numbers for local taxi firms;
- Contact details of the Travel Plan Co-ordinator;
- Information regarding any Travel Plan measures or initiatives;
- Details of Travel Plan meetings, events or workshops and information from previous events;
- A message board – somewhere for the workforce to place notices such as possible car sharing schemes.

7.2.5 This information will be compiled by the Travel Plan Coordinator.
Travel Plan Events

7.2.6 Regular events will help maintain a high-profile for the Travel Plan. These events will take a number of forms and will tie in with national and regional events as appropriate. Measures proposed include:

- Travel Plan days/weeks (e.g. In Town Without My Car Day, Team Green Britain Bike Week);

- Seminars promoting the Travel Plan; and

- Exhibitions promoting individual elements and measures from the Travel Plan (e.g. cycle information).

Workforce Welcome Pack

7.2.7 A ‘welcome pack’ for new members of the workforce will be produced prior to the beginning of construction work on site. The welcome pack will be introduced as part of the induction process for each worker. The welcome pack will draw attention to the travel plan measures and include up-to-date travel information, including public transport timetables, maps of walking and cycling routes and details of car share schemes.

Personalised Travel Planning

7.2.8 New members of the workforce will be provided with information on how to access personalised Travel Plan information for their individual journeys to work to encourage the use of other modes rather than the private car.

7.3 Monitoring Framework

7.3.1 Monitoring of the Travel Plan will indicate how well it is performing at meeting the target mode shares and any other targets that are set throughout the life of the plan. Monitoring will also assist in refining Travel Plan measures and establishing new targets, as appropriate.

7.3.2 The Travel Plan is a continuous and on-going process of monitoring and review, rather than a one-off event. The Travel Plan Co-ordinator will be responsible for encouraging participation of the workforce in the monitoring process, as well as co-ordinating the monitoring strategy and reporting the results. The Monitoring Framework for the Travel Plan will be set out the OCWTP and will include the mechanisms set out in the following sections.
Initial Workforce Travel Survey

7.3.3 Prior to the production of the first ‘working’ Travel Plan, it is necessary for an initial travel survey to be undertaken. Travel surveys should be kept relatively straightforward and aim to identify where the workforce is travelling to, how and when they are travelling and what alternative sustainable modes of transport they would consider. Obtaining the base information is fundamental for setting and reviewing targets, so the response rate of surveys undertaken will be of particular importance.

Snap-shot Survey

7.3.4 A full Travel Survey is a valuable tool but can be resource intensive – a quicker, less resource intensive monitoring mechanism to use annually thereafter may be to carry out snapshot surveys, which simply asks workers how they travel on a particular day. The snapshot will enable the Travel Plan to be monitored as it develops, against the baseline information collected from the initial travel survey.

Annual Monitoring Report

7.3.5 An Annual Monitoring Report will be prepared by the Travel Plan Co-ordinator and provided to the TMWG. The Annual Monitoring Report will present monitoring information and will compare this against the targets set out in the Travel Plan when they are defined.

7.3.6 If the Annual Monitoring Report indicates that the Travel Plan targets are not being met, it would be the responsibility of the Travel Plan Co-ordinator to identify an Action Plan for the following 12 months. The Action Plan would contain a programme of measures and tasks such that the travel plan targets are achieved, alongside the person(s) responsible and timescale for delivery.

7.4 Mitigation

7.4.1 The mode share associated with the construction workforce at the EDA will be monitored through travel surveys. This data will be compared with the targets as part of the Annual Monitoring Report. In the event of the targets being exceeded, the Action Plan submitted with the Annual Monitoring Report will identify the additional measures to be provided to ensure that the targets are met at the next instance of monitoring. The additional measures required should be determined based on a consideration of the travel plan surveys to identify the most appropriate means of achieving the targets.
7.5 Travel Plan Review

7.5.1 The Travel Plan is a dynamic working document that will develop with time and in accordance with the changing circumstances of the development. As such, it will be regularly reviewed by the Travel Plan Co-ordinator in liaison with the TMWG as may be appropriate.