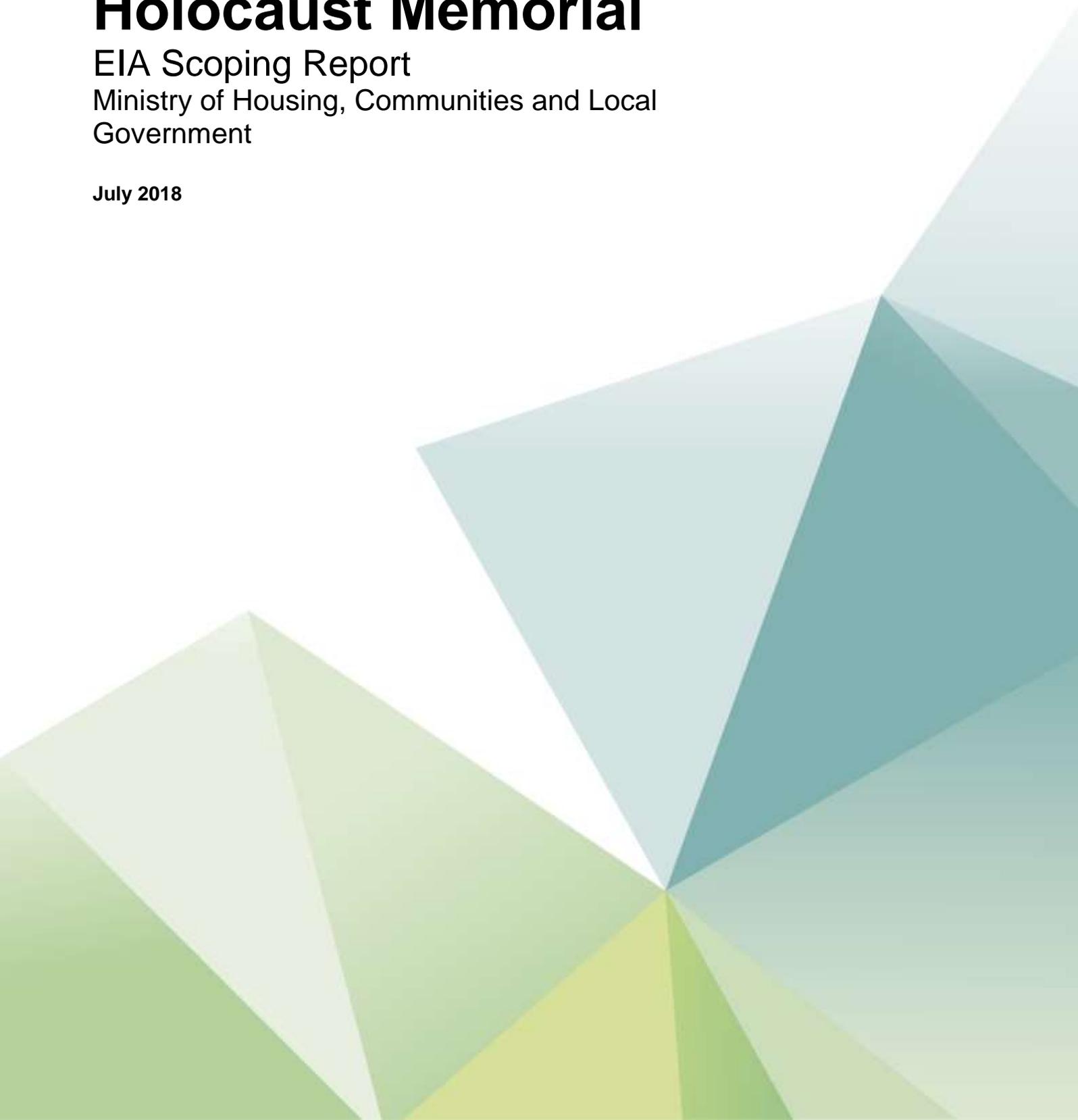


United Kingdom Holocaust Memorial

EIA Scoping Report

Ministry of Housing, Communities and Local
Government

July 2018



Notice

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List of Abbreviations Used

Acronym	Meaning
APA	Archaeological Priority Area
AQMA	Air Quality Management Area
BREEAM	Building Research Establishment Environmental Assessment Method
CCTV	Closed Circuit Television
DCLG	Department for Communities and Local Government
EA	Environment Agency
EIA	Environmental Impact Assessment
EU	European Union
GLAAS	Greater London Archaeological Advisory Service
HER	Historic Environment Record
MHCLG	Ministry of Housing, Communities and Local Government
NIEA	Northern Ireland Environment Agency
PPG	Pollution Prevention Guidelines
SEPA	Scottish Environmental Protection Agency
SuDS	Sustainable Drainage Systems
UKCIP	UK Climate Impacts Programme
UKHMF	UK Holocaust Memorial Foundation
WHS	World Heritage Site

Executive Summary

This Scoping Report has been produced to inform the Government's proposal to develop a new National Holocaust Memorial and Learning Centre in Victoria Tower Gardens in the City of Westminster." This report has considered the details of the proposal against the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The total area allocated for the proposed development is above the size threshold for discretionary EIA development of 'urban development projects', and the location of the development is within a 'sensitive' area. It is the intention of the UKHMF to support the planning application for the Memorial with an Environmental Impact Assessment (EIA). This report has been produced to set out the scope and level of detail of information to be included in the forthcoming Environmental Statement (ES), and to inform discussions with Westminster City Council and statutory and non-statutory consultees about the scheme.

This report identifies the potential environmental effects that are considered likely to be 'significant', and should be assessed in more detail in the ES for the Scheme. It also identifies issues that are not considered to be significant, and can be scoped out of further assessment. A number of preliminary supporting studies have been undertaken in connection with the proposals, including an ecological appraisal, archaeological desk based assessment, arboricultural survey, pedestrian movement surveys and a Level 1 flood risk assessment. These have been used to inform the conclusions of this Scoping Report.

The environmental issues which could potentially result in significant environmental effects, and should be assessed in more detail in the ES include:

- Potential impacts on air quality from dust emissions and vehicle movements from construction activities and traffic and vehicle movements to and from the site during operation;
- Potential impacts on cultural and architectural heritage and archaeology specifically relating to:
 - Removal of nationally significant archaeology that may be found on the site;
 - The likely impacts upon the Gardens and the Grade I, II* and II assets within the Gardens; and
 - Impacts on heritage assets nearby, which given the high significance of these assets, there are likely to be a range of effects on multiple assets.
- Potential impacts on population and human health from loss of, and alterations to, the gardens and air quality and noise effects from construction;
- Potential impacts on the townscape/landscape and visual environment from the installation of a new Memorial; and
- Potential impacts on soils, geology and hydrogeology notably soil-water interaction, contaminated land and waste soils.

The Scheme is unlikely to result in any significant effects in respect to: biodiversity; material assets and climate change; noise; water quality and flood risk. These environmental aspects have therefore been scoped out of further assessment. Stand-alone Flood Risk Assessment, Transport Assessment and Ecological Impact Assessment reports will be prepared to support the planning application, it is proposed that all relevant flood risk, transport and biodiversity issues are documented within these reports. It is recommended that noise surveys are undertaken to inform monitoring of construction activity and inform the construction environmental management plan.

1. Introduction

1.1. Background to the scheme

In 2014, the Prime Minister's cross-party Holocaust Commission set out to establish what should be done to ensure that the memory of the Holocaust is preserved and that the lessons it teaches are never forgotten. In January 2015, a report titled Britain's Promise to Remember was subsequently produced by the Commission, outlining four key recommendations; including:

- A striking and prominent new National Memorial;
- A World-Class Learning Centre at the heart of a campus driving a network of national educational activity (to be co-located with the new National Memorial);
- An endowment fund to secure the long-term future of Holocaust Education – including the new Learning Centre and projects across the country; and
- An urgent programme to record and preserve the testimony of British Holocaust survivors and liberators.

Following the publication of the report, the UK Holocaust Memorial Foundation (UKHMF) was set up to take forward the recommendations made. An international design competition was launched in September 2016, inviting designers, architects and artists from all over the world to enter their designs for the new National Memorial. The site allocated for the new Memorial and Learning Centre was selected on the recommendation of the UKHMF as the Victoria Tower Gardens, adjacent to the Palace of Westminster in London (the Site).

The competition winners were announced in September 2017, with Adjaye Associates, Ron Arad Architects and Gustafson Porter + Bowman selected as the winning design team to take the development of the Memorial and Learning Centre forward. The concept design submitted for the competition is now undergoing further development by the design team, in consultation with key stakeholders, to finalise the proposals for the Memorial and Learning Centre.

This Scoping Report has been prepared to help inform the forthcoming Environmental Impact Assessment (EIA) of the proposed Memorial and Learning Centre (the Scheme), which will be submitted to support an application for planning permission.

1.2. Purpose of the Scoping Report

The Scoping Report considers and describes the aspects of the environment that are relevant to the proposals, and sets out where the Scheme could result in significant effects, (both adverse and beneficial) associated with its construction and operation, on these environmental receptors. The scoping exercise takes account of the design features of the proposed development, and the potential mitigation measures that could be used to avoid or reduce any potentially significant environmental effects. The Scoping Report will provide Westminster City Council with the information required to determine the scope of an EIA to accompany a planning application.

1.3. Legislative background to EIA

The basis for EIA legislation in England and Wales is European Union (EU) Directive 85/337/EEC, superseded by EU Directive 97/11/EC, and amended by EU Directive 2014/52/EU, which came into effect in May 2014. For projects that fall under the town planning regime, this Directive is implemented in England by Statutory Instrument 2017 No. 571, The Town and Country Planning (EIA) Regulations 2017 (herein referred to as 'the Regulations').

The proposal to develop the Memorial falls within the classification of Schedule 2, Part 10(b) of the Regulations: 'Infrastructure projects – urban development projects'. Projects listed within Schedule 2 of the Regulations may require EIA if they exceed certain thresholds stated within the legislation, and if *'any part of that development is to be carried out in a sensitive area'*.

One of the stated thresholds for this type of development is *'The development includes more than 1 hectare of urban development which is not dwellinghouse development'*. The total area of the Victoria Tower Gardens is approximately 2.8 hectares (ha), with the final built area covering approximately 1.2ha. The proposals therefore exceed the Schedule 2 threshold for non-dwellinghouse urban development.

The Scheme location can be considered a 'sensitive area', primarily due to the cultural heritage importance of the site and its surrounds within the City of Westminster. Regulation 6(2) of the EIA Regulations makes provision for developers to request that a planning authority adopts a formal opinion as to the need for EIA, known as a 'screening opinion'. A formal screening opinion has not been requested from Westminster City Council, but due to the sensitivity of the site it is the intention of the MHCLG to include an Environmental Statement (ES) in support of the planning application for the Scheme.

Regulation 15(1) makes provision for a developer to request that the planning authority gives a written opinion on the scope and level of detail of information to be included in an ES (a 'scoping opinion'). A formal scoping opinion informs the scope of the supporting assessments that are carried out during the EIA process, and helps to ensure that the relevant significant environmental effects of the Scheme are identified at an early stage and addressed at an appropriate level of detail. This Scoping Report sets out the information required by the Regulations and forms the basis of a formal request to the Westminster City Council for a scoping opinion.

2. Site and Project Description

2.1. The Site

Victoria Tower Gardens is located on the north bank of the River Thames and bordered by the Palace of Westminster to the north of the site. To the east of the Gardens is Millbank, which is flanked by a large number of buildings, some of which are listed buildings. The south the Gardens are bounded by Horseferry Road/Lambeth Bridge.

The Gardens are open daily from dawn to dusk, and currently comprise amenity grassland crossed by several formal tarmac paths that link directly to the Thames riverside. There are no trees in the central part of the Gardens, but mature trees almost completely line the perimeter of the site. There are public toilets, a play area and a seasonal kiosk that serves refreshments at the southern end of the Gardens. The Victoria Tower Gardens is already home to three different memorials, which all broadly commemorate themes of democracy and freedom. These are:

- The Buxton Memorial, a fountain in the centre of the site;
- The Emmeline Pankhurst Memorial, a statue in the north west of the gardens; and
- The Burghers of Calais, a statue in the north of the gardens.

Victoria Tower Gardens is a Grade II Registered Park and Garden (1000845).

A plan of the Gardens and the key features described above is shown in Figure 2-1.

2.2. The Scheme

The design of the Memorial and Learning Centre is at an early stage, and the conceptual design submitted for the design competition is now undergoing further development. The details presented here are therefore subject to further design development and are likely to change before the final design is submitted as part of a planning application.

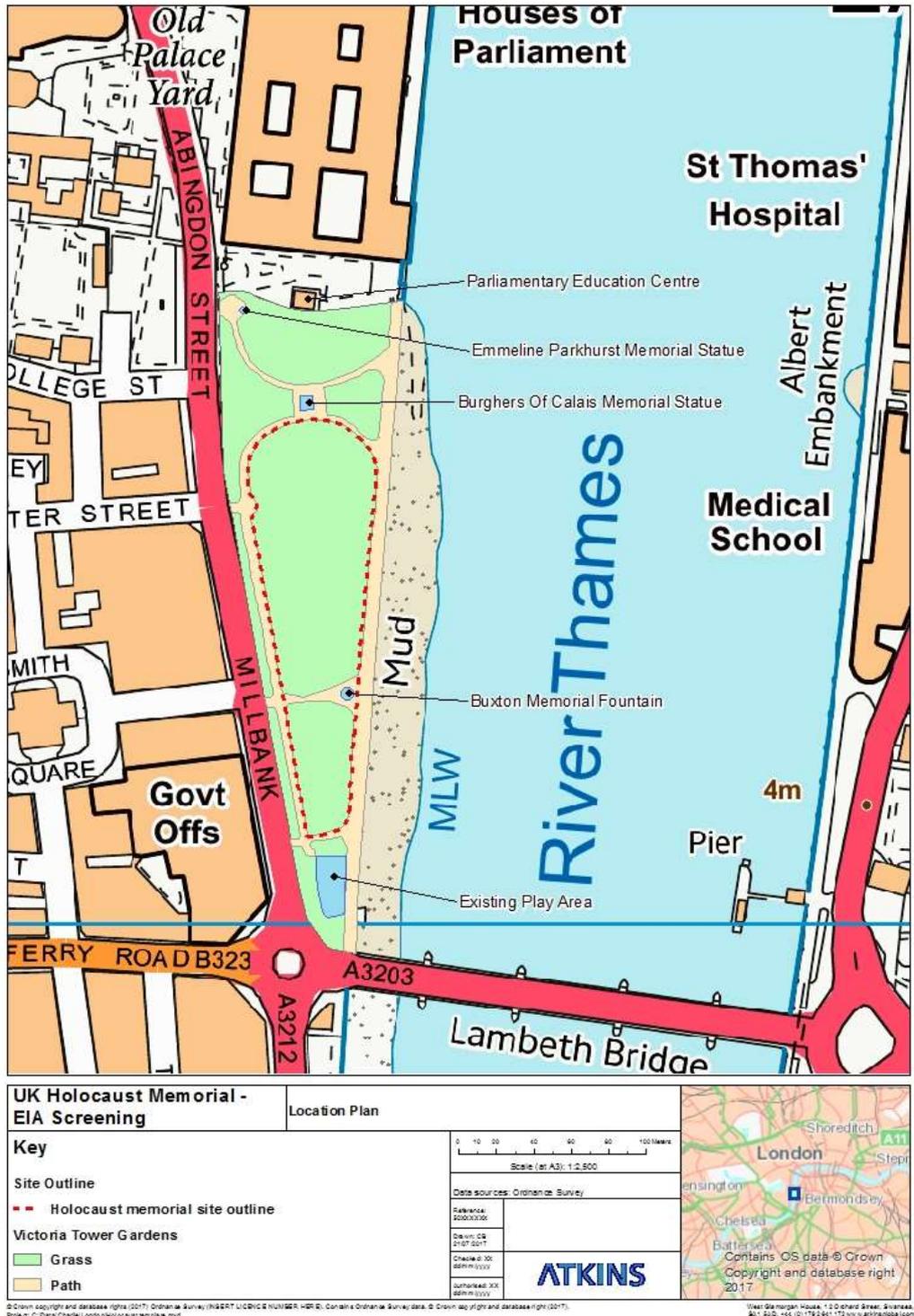
The concept design of the new Memorial and Learning Centre locates the key elements of the Scheme in the southernmost portion of Victoria Tower Gardens. The Memorial will be approached from the north of the Gardens by a new, curved path that sweeps diagonally across the parkland, taking in the three existing memorials already present in the Gardens. A cast glass light shaft will be set into the side of the path, which will allow natural light into the underground Learning Centre beneath it.

The Memorial itself will comprise twenty-three bronze-clad concrete 'fins', set vertically into the ground on a curving alignment. The highest point of the Memorial will be approximately 7m above the existing ground level. Within the area encompassed by the curvature of the fins, the flat parkland will be re-landscaped to form a grassed slope that gradually rises from north to south, so that only the tips of the fins are visible from the northern portion of the Gardens. The spaces between the fins of the Memorial will form the entrance to the Learning Centre, which will be located entirely underground over two levels; a mezzanine level and a basement. This will require excavation of the site to a depth of approximately 8m and the internal floor area will be approximately 3250m².

The Memorial is currently proposed to have an internal footprint of 2645m², however, options are being explored to determine whether more floor space is available to ensure the proposed narrative for the centre can be presented in sufficient detail whilst providing a fully engaging experience.

To the south of the bronze-clad Memorial structure, a sunken (outdoor) courtyard will form the main entrance plaza, with associated landscaping and planting works in the southern portion of the site. This will also contain ticketing and security facilities. The precise details of access to the entrance plaza are still under discussion and development. To effectively manage visitor queues and security, a security gatehouse area will be required at the southernmost point of the entrance plaza.

Figure 2-1 Proposed Holocaust Memorial Site Plan (do not scale)



2.2.1. Construction

Construction of the Scheme is currently planned to commence in late 2019 and is estimated to last up to 36 months.

Only general details regarding possible methods of construction of the new Memorial and Learning Centre are available at this stage. As the site is located within a public park with no existing buildings, only limited demolition would be required to construct the Memorial and Learning Centre. The existing Buxton Memorial would be temporarily removed for the duration of the construction period in order to safeguard it, and will be reinstated in the Gardens on completion of the Scheme.

Once the initial enabling works are complete, the construction site will be established, including site access, services diversions, setup of offices and welfare facilities, and installation of tree protection to safeguard retained trees in the Gardens. Topsoil will be stripped from the working area and removed for storage off-site. This will be used in the post-construction reinstatement of the Gardens.

The first stage of construction following site establishment will be the completion of piling works to form a deep, supporting steel sheet piled wall in the ground around the perimeter of the footprint of the Learning Centre. Excavation of the space for the new Learning Centre will take place within this pile line.

The construction of the Learning Centre as a new subterranean space over two sub-levels will require substantial excavation works to construct the new building. Some of the excavated spoil may be re-used in any new landscaping works, but considering the likely volume of material that will need to be excavated, it is unlikely that all the excavated material could be reused within the site and most will need to be removed to an appropriate disposal facility.

The method to be used to transport surplus excavated material from the site has not been confirmed at this stage. It has been assumed that it will be loaded into trucks and removed to an appropriate disposal facility by road, but alternative transport methods (including by river to reduce vehicle movements on the local road network) will be investigated during the design process.

Once the excavations are complete, the underground space will be formed by pouring concrete to create a reinforced base slab and walls, with the internal construction completed once the foundation and walls are complete.

2.2.2. Operation

Specific details about the operation of the new Memorial and Learning Centre are limited at this stage, however, the intention is to form a Non-Departmental Government Body (NDPD) overseen by MHCLG who will be responsible for fund-raising, construction staffing and operation of the Memorial and Learning Centre. It is assumed that access to the Memorial will be available whenever the Victoria Tower Gardens are open (currently dawn to dusk). Provision for out of hours access may also be required if special events or functions are held at the Learning Centre.

3. Environmental Assessment Methodology

3.1. The Scoping Process

The ES is required to focus on the impacts which are likely to lead to significant environmental effects. Scoping is the process by which the impacts likely to result in significant environmental effects are identified. Scoping also sets out the framework for the EIA.

The scoping process requires a good understanding of the existing environment and the scheme. A gap analysis is undertaken to identify what further studies are required to gain a detailed understanding of the receiving environment. This could involve consultation with stakeholders to acquire existing data or where this does not exist, surveys can be undertaken.

Teams of experts that specialise in specific environmental topics consider the Scheme and what impacts are likely to arise. This exercise is completed using professional judgement and experience from similar projects and through consultation with statutory stakeholders who have detailed knowledge of the types of impacts that can arise from projects.

For each environmental topic, a list of the impacts that can arise during both construction and operation of the Scheme is produced and a commentary is provided setting out the justification as to why resulting environmental effects are likely to be significant or not. This forms the basis of the proposed scope of the EIA which is confirmed or added to through the issue of a Scoping Opinion.

3.2. Environmental topics considered

The environmental topics considered in detail during this scoping exercise are as follows:

- Air quality;
- Biodiversity, flora and fauna;
- Built Heritage Townscape and Visual;
- Material assets (infrastructure) and climate change;
- Noise;
- Population and human health;
- Soils, geology and hydrology;
- Archaeology;
- Traffic and transport; and
- Water quality and flood risk.

Each of these topics is considered in individual chapters following the same format and structure. For each topic, the methods used in scoping and the current knowledge of the existing environment is summarised and any knowledge gaps are identified. The likely significant effects and mitigation measure are then described for both the construction and operational phases of the Scheme.

3.3. General approach to the EIA

The EIA will be undertaken in line with best practice and the Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment (2004). The general approach of the EIA is described below:

- Establish the baseline:
 - The first stage is to establish the baseline environment. This is undertaken through a combination of desk studies supplemented with surveys where necessary. The baseline is a projection and takes account of other developments which may not exist at the time of assessment but will exist when the impact is realised.
- Impact assessment:
 - The next stage is to determine what impacts would arise from the construction and operation of the Scheme, and whether any direct or indirect environmental effects from these impacts would be significant. The effect significance is determined by considering the sensitivity of the receptor, the magnitude of impact, the duration of the effect, and any mitigation that could be implemented.
- Develop mitigation measures:
 - Once the environmental effects have been identified, mitigation measures are developed which would seek to minimise significant effects. This is done through either changing aspects of the proposed development design, or construction process, or by compensating for the loss of certain environmental receptors. The preference for mitigation is as follows:
 - Preferably avoid the impact; or if not possible
 - Reduce the magnitude or scale of the impact; or if not possible
 - Compensate for any loss of environmental resources.
- Predict residual environmental effects:
 - The environmental effects that would remain after the mitigation measures have been applied, are called the residual effects. The predicted environmental effects that are reported in the Environmental Statement are the residual effects having taken into account the mitigation measures.

3.4. Draft structure of the Environmental Statement

The draft structure of the ES is provided below. A Non-Technical Summary will also be produced.

Volume 1: Non-Technical Summary

Volume 2: Environmental Statement

Section 1 – Introduction

Section 2 – Project Description

Section 3 – Alternatives Considered

Section 4 – EIA Process, Approach and Methodology

Section 5 – Consultation

Section 6 – Topic Chapter (Sections 6 to 16 Topic Chapters)

- Section 6.1 Introduction
- Section 6.2 Regulatory and Policy Framework
- Section 6.3 Study Area
- Section 6.4 Assessment Methodology
- Section 6.5 Assumptions, Limitations
- Section 6.6 Baseline Conditions
- Section 6.7 Impact Assessment and Mitigation
- Section 6.8 Cumulative Effects
- Section 6.9 Summary

Section 17 – Cumulative Effects

Section 18 – Conclusion

Section 19 – References

Section 20 - Glossary

Volume 3: Drawings

Volume 4: Appendices

4. Air Quality

4.1. Methods used in Scoping

The air quality scoping study has comprised a desk based assessment, examining existing air quality conditions, relevant planning guidance and the potential for air quality effects associated with the construction and operation of the Scheme.

Data sources

Information on existing ambient air quality i.e. baseline conditions, has been collated from the following sources:

- Information on Air Quality Management Areas (AQMA) (Defra, 2018a);
- DEFRA's Pollution Climate Mapping (PCM) model data for 2015 (the most recent reference year) (Defra, 2018b);
- Local Authority Local Air Quality Management Reports (WWC, 2017);
- London Air Quality Network (Kings College London, 2018);
- DEFRA's Air Quality Data Archive (Defra, 2018c);
- Ordnance Survey base mapping to identify locations of sensitive receptors (residential properties, schools, hospitals and elderly care homes); and
- Natural England Multi-Agency Geographic Information for the Countryside (MAGIC) website to identify boundaries of designated ecological sites.

Relevant Guidance Documents

The Mayor of London (2014) has published Supplementary Planning Guidance (SPG) on the Control of Dust and Emissions. It recognises that air quality effects during construction will vary according to the scale and location of the development proposals, and therefore some aspects of the guidance apply only to major developments, as defined by Schedule 1 and 2 of the EIA Regulations (2017). The Scheme has been identified as a Schedule 2 development, in a sensitive area, and as such the SPG requires that the planning application for the development should be accompanied by an Air Quality Assessment, including a dust risk assessment. Furthermore, Westminster City Council (WCC) has published a Code of Construction Practice (WWC, 2016), according to which the Scheme would comprise a Level 1 project, requiring submission of a Site Environmental Management Plan.

Additional relevant guidance is found within the London Local Air Quality Management (LLAQM) Framework (2018). This include LLAQM Technical Guidance 2016.

The Institute of Air Quality Management (IAQM) Planning Guidance (Moorcroft et al, 2017) includes indicative criteria for the requirements of assessment of vehicle emissions associated with proposed developments.

4.2. Baseline conditions

Local authorities are required by legislation to periodically monitor and assess the air quality as part of the Local Air Quality Management (LAQM) Regime. AQMAs are declared where air pollutants have exceeded or are likely to exceed the Government's national Air Quality Strategy (AQS) objectives. An AQMA was declared in 1999 covering the whole of the Borough of Westminster due to elevated levels of nitrogen dioxide (NO₂) and fine particulate matter PM₁₀, which are mainly sourced from traffic within the borough. These pollutants are therefore of concern within this study, as well as a finer fraction of particulate matter (PM_{2.5}) which is more closely associated with health effects.

WCC operates four continuous monitoring stations (CMS) across the borough, measuring a suite of air pollutants. The nearest CMS to Victoria Tower Gardens is approximately 500m west of the site, on Horseferry Road, identified on Figures 4.1 and 4.2. This urban background site measures concentrations of NO₂, PM₁₀ and PM_{2.5}. Recent data (2015 and 2016) indicates that annual mean concentrations of NO₂ and PM₁₀ at this location were not in exceedance of the AQS objectives (both set at 40 µg/m³, as an annual mean). There were no recorded exceedances of the permitted hourly (NO₂) or daily (PM₁₀) means at this location for 2015 or 2016. Annual mean concentrations of PM_{2.5} were also below the AQS objective of 25 µg/m³ (10 µg/m³ in both 2015 and 2016) (Defra, 2018c).

The Department for Environment, Food and Rural Affairs (DEFRA)'s Pollution Climate Mapping (PCM) model outputs are used in annual reporting to the EU regarding compliance with the air quality limit values. This model provides estimates of roadside concentrations of pollutants, including annual mean NO₂ and PM₁₀. The modelled roadside concentration comprises a background component together with a roadside increment. The most recent PCM data available is for the reference year 2015. This indicates that NO₂ concentrations on local roads, including Millbank and Lambeth Bridge, are in exceedance of the EU limit value of 40 µg/m³, as illustrated on Figure 4.1. Annual mean PM₁₀ concentrations on roads in the vicinity of the Scheme are all below the EU limit value of 40 µg/m³, as illustrated on Figure 4.2.

Figure 4-1 2015 Annual Mean Roadside NO₂ concentrations (µg/m³)

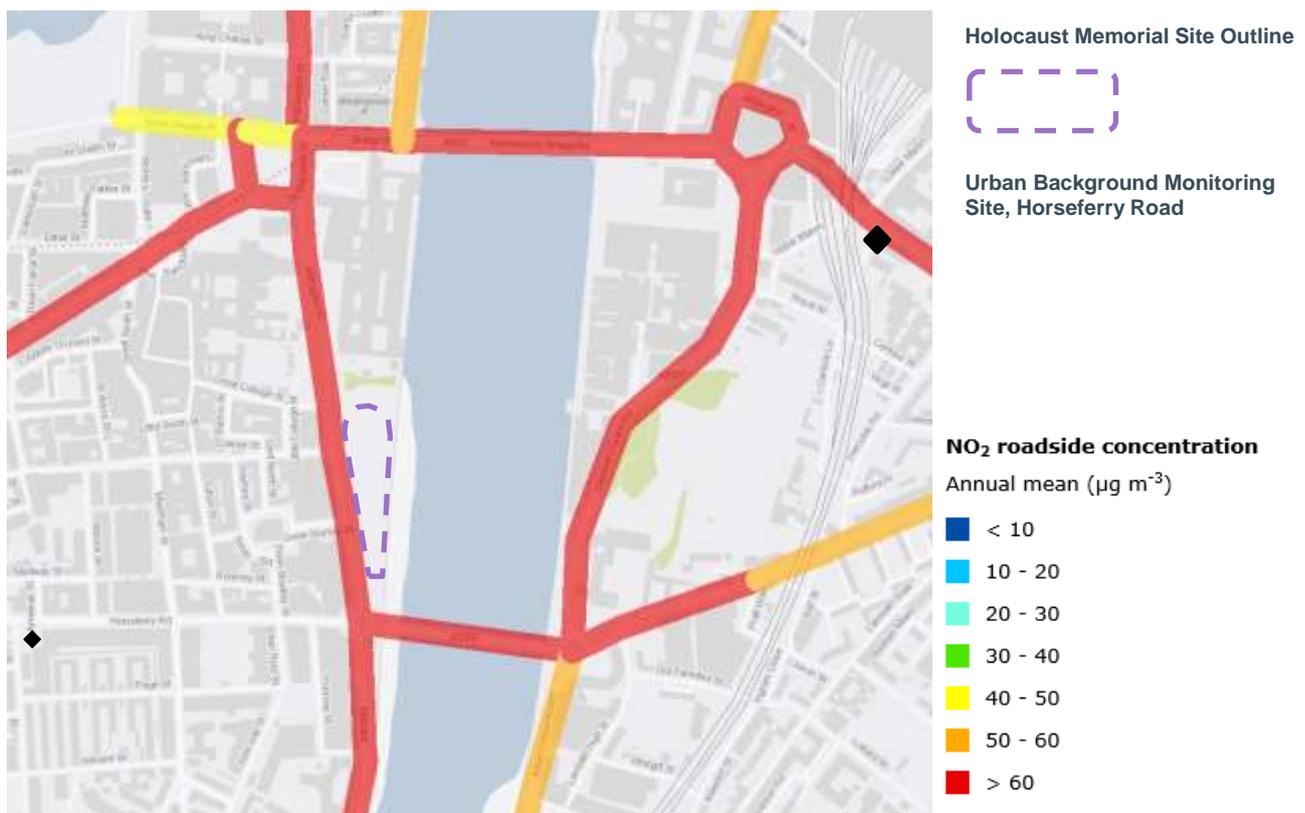
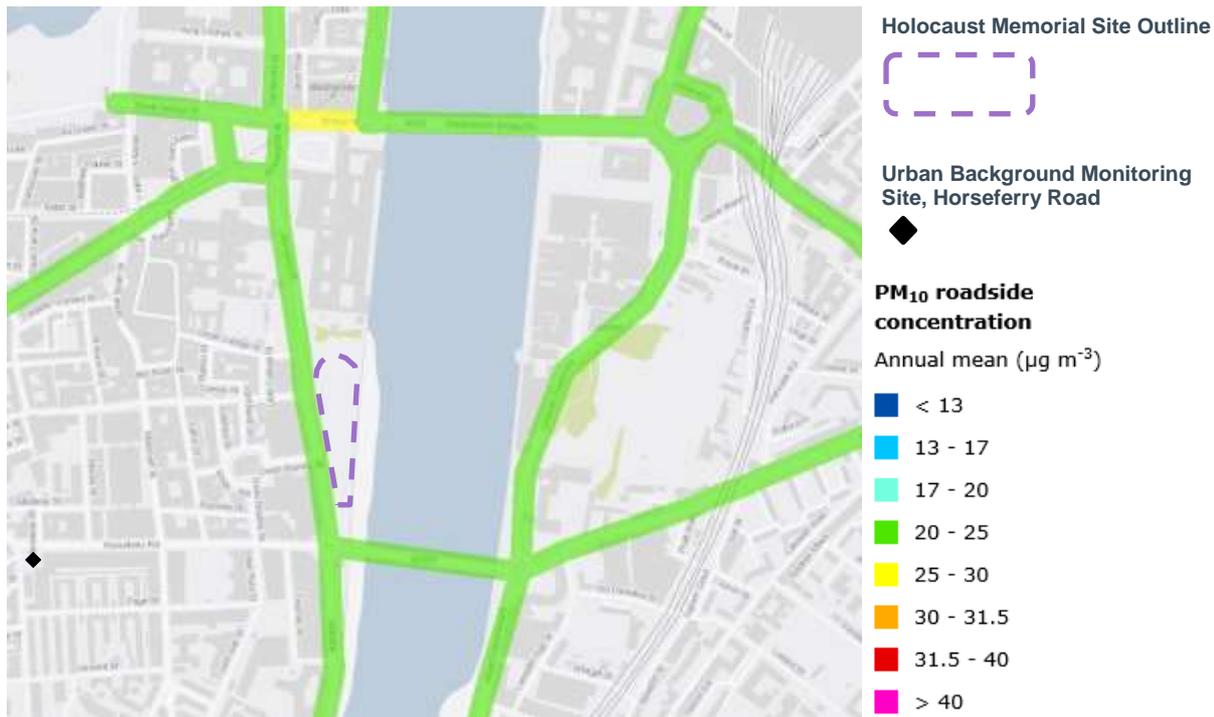


Figure 4-2 2015 Annual Mean Roadside PM₁₀ concentrations (µg/m³)



Receptors

The Mayor's SPG provides screening criteria whereby a detailed dust risk assessment will normally be required where either human or ecological receptors are located within 50m of the site boundary, or within 50m of the routes used by construction vehicles on the public highway, up to 500m from the site entrance(s).

The Scheme is located approximately 80m south of the Palace of Westminster. Buildings on Millbank are located within 50m of the site, and although predominantly occupied by commercial and office accommodation, residential units may be present. There are no statutory ecological designations within 50m of the Scheme. The non-statutory River Thames and Tidal Tributaries Site of Metropolitan Importance (SMI) lies immediately east of Victoria Tower Gardens, but is not considered sensitive to the effects of dust soiling.

In terms of air quality effects associated with vehicle emissions during construction and operation, relevant receptors would include human health receptors or statutory designated ecological sites, within 200m of roads determined as affected by the Scheme, as defined by IAQM criteria (Mayor of London, 2016).

4.3. Data gaps

Additional information as outlined below will be required to inform the air quality assessment.

- Information on adjacent land uses to assist in identification of potential air quality receptors in the vicinity of the Scheme and routes used by construction traffic;
- Information on construction traffic; equivalent annual average daily traffic flows, including the anticipated number of daily heavy-duty vehicle¹ (HDV) movements, to inform an assessment of potential emissions during construction;
- Information on the likely routes that would be used by construction traffic; and

¹ HDV: Vehicles with a gross vehicle weight above 3.5 tonnes, including buses and coaches.

- Information on the likely changes in traffic once the Scheme is complete. Although it is assumed that changes in traffic would be below any criteria for assessment and unlikely to have a significant effect on air quality, they cannot currently be scoped out from further assessment until details are available.

4.4. Potential significant effects and mitigation measures

4.4.1. Construction

During construction, the development of the new Memorial and Learning Centre has the potential to cause adverse effects on local air quality by the following means:

- Emissions of dust from construction activities on site including (but not limited to) during excavation, spoil removal activities and reinstatement works; and
- Vehicle movements to and from the site, particularly associated with the removal of generated spoil from the excavation works, material deliveries, and the operation of plant and machinery on the site during construction.

It is recommended that construction works should be undertaken in accordance with best practice methods to reduce dust emissions from the construction site. These may include, but are not limited to, covering vehicle loads and damping down working areas and site compounds. Good practice measures can also be used on the construction site to reduce emissions from plant and machinery, including switching off plant that is not in use, and ensuring that emission controls are fitted to vehicles.

The appointed contractor would be expected to operate in accordance with the Mayor's SPG (Mayor of London, 2018), and WCC's Code of Construction Practice (WCC, 2016). The Mayoral Guidance includes recommendations for appropriate mitigation measures, in line with those recommended by the IAQM (Holman et al, 2016). The Mayor's guidance further includes emission standards for non-road mobile machinery (NRMM), applicable to all construction sites.

The scale of the proposed development warrants formal assessment of construction air quality effects, in line with the requirements of the Mayor's SPG and WCC guidance, including submission of relevant checklists. However, any effect on air quality would be of a temporary nature and, provided appropriate mitigation measures are implemented through a Construction Environmental Management Plan, any residual effect would be unlikely to be significant. In addition, air quality at receptors near to the routes used by vehicles during construction may be affected, as a result of any additional vehicles travelling to and from the site. The expected numbers of additional vehicles will be reviewed against assessment criteria contained within the IAQM Planning Guidance (Mayor of London, 2016) to inform any requirement for quantitative assessment of construction traffic effects on air quality. Any effect would only be temporary, however, and unlikely to be significant.

4.4.2. Operation

Once construction of the proposed Memorial and Learning Centre is complete, it is reasonable to assume that the majority of visitors will arrive by public transport or on foot, but there is potential for some traffic to visit the site via road (see Chapter 12, Transport, for more detail). A Transport Assessment of the Scheme is proposed and will examine current use and the provision of coach parking on Millbank and around the Palace of Westminster. The findings of the Transport Assessment will be reviewed against assessment criteria contained within the IAQM Planning Guidance (Mayor of London, 2016) to inform any requirement for quantitative assessment of operational traffic effects on air quality. It is considered unlikely that operational design of the Memorial and Learning Centre itself will include any potential emissions sources, although this would be confirmed at a later stage.

4.4.3. Next Steps

The potential for air quality effects during construction **cannot be scoped out** at this stage. As information on nearby land uses, construction methods and construction traffic data becomes available, these will inform the preparation of a formal air quality and dust risk assessment for submission with the planning application, as required by the Mayor's SPG and WCC's Code of Construction Practice. This should also include recommendations for appropriate mitigation for inclusion within a Construction Environmental Management Plan (CEMP) for the site.

Operational air quality effects **cannot be scoped out** at this stage. Information on detailed design will confirm if there are any significant emissions sources within the Learning Centre. The Transport Assessment will provide further information on anticipated changes in local traffic flows due to the Scheme, and thus inform any requirement for quantitative assessment of operational transport emissions.

5. Biodiversity, Flora and Fauna

5.1. Methods used in Scoping

5.1.1. Desk study

In April 2017 a desk study was carried out to obtain existing ecological data from readily accessible sources. The Greenspace Information for Greater London (GiGL) Data Portal website was reviewed for records of non-statutory designated sites (Sites of Importance for Nature Conservation) within 1 km of the site boundary. The Multi-Agency Geographic Information for the Countryside (MAGIC) website was also reviewed for information about designated sites of nature conservation importance (statutory sites only) within 1km of the site, and notable habitats within 500m of the site. These sites are:

- Areas of ancient woodland and 'Habitats of Principal Importance for the Conservation of Biodiversity' included in the England Biodiversity List,
- Habitats listed for action in the Westminster Biodiversity Action Plan; and
- Hedgerows identified as being 'important' under the wildlife criteria of the Hedgerow Regulations 1997.

Ordnance Survey maps were used to initially identify the presence of water bodies within 500m of the site boundary, in order to establish if the land within and immediately surrounding the site could be used as terrestrial habitat for great crested newts.

5.1.2. Walkover survey

A walkover survey was undertaken on 26th April 2017 by Atkins, broadly following the Phase 1 habitat survey methodology as set out in Joint Nature Conservation Committee (JNCC, 2010) and Chartered Institute for Ecology and Environmental Management (CIEEM, 2017) guidance. This survey method records information on broad habitat types together with any evidence of and potential for legally protected and notable fauna.

All land within and adjacent to the site, including land up to 50m from the site boundary where access was allowed (the survey area), was surveyed.

5.1.3. Bat survey

The assessment of potential roosting sites for bats detailed below was undertaken in accordance with good practice guidance (Collins, 2016) and CIEEM competencies for undertaking bat surveys. The survey was undertaken by Atkins during the walkover survey.

5.2. Baseline conditions

An Ecological Constraints and Opportunities Assessment Report contains full details of the baseline data collected by the desktop study and walkover assessment. In summary, the following designated sites were identified in and around Victoria Tower Gardens by the ecological desk study:

- River Thames and Tidal Tributaries Site of Metropolitan Importance (SMI) (adjacent to Victoria Tower Gardens);
- Westminster Abbey, Great Cloister and College Garden Site of Borough Importance (SBI), Grade 1 (0.2km away); and
- St James' Park SMI (0.5km away).

Notable habitats recorded in the vicinity of the site during the walkover survey in April 2017 included the intertidal sediment and gravel/shingle exposed at low-tide on the River Thames foreshore (below the embankment wall immediately adjacent to the site), woodland in Lambeth Palace (on the opposite bank of the River Thames), the parkland/green space of the Gardens themselves and the buildings and built environment surrounding the site.

During the walkover survey, it was noted that the surrounding buildings around Victoria Tower Gardens have varying degrees of potential to support bat roosts and nesting peregrine falcons. Red foxes may utilise the Gardens and may create resting places or earths beneath existing hedgerows, shrubs or buildings. No evidence or potential for protected species was identified within the site itself, and further specific protected species surveys are not considered to be required.

5.2.1. Data gaps

The ecological walkover completed in 2017 covered Victoria Tower Gardens and the immediate surrounding area. The park area to the south of Lambeth Bridge proposed for the relocation of the children's play area was not surveyed. This area should also be surveyed and the ecological constraints and opportunities assessment updated accordingly.

A full report of historical species records, as produced by GiGL, was not considered necessary for the initial ecological constraints and opportunities assessment, due to the highly urbanised nature of the site. However, if an ecological impact assessment is required for the planning application, it is recommended that a full species records report should be requested from GiGL prior to the submission of the application.

5.3. Potential significant effects and mitigation measures

5.3.1. Construction

The only potentially 'significant' ecological effect on a notable habitat identified by the initial ecological appraisal, is the risk of pollution to the River Thames and Tidal Tributaries SMI (incorporating the foreshore and intertidal habitats, a Habitat of Principal Importance). The risk of water pollution arising from the construction works has been considered in more detail in Chapter 13, this is also relevant to the adjacent SMI and foreshore/intertidal habitats. It is considered that, with appropriate pollution planning and response plans in place, and if the construction is carried out in accordance with the most up to date pollution prevention guidelines, the risk of a significant pollution event occurring is likely to be minimal.

To minimise the risk of construction causing disturbance or harm to bats and birds that may be using the areas around the Victoria Tower Gardens, it is recommended that buffer zones are incorporated between the construction works and important buildings. The use of buffer zones should avoid any potential disturbance impacts to notable species.

There are no significant ecological features at the Site and within the surrounding area and standard construction mitigation measures will address any potential risks. It is therefore, proposed that ecological issues during construction are **scoped out** of any further assessment in the Environmental Statement.

5.3.2. Operation

No ecological constraints that could result in a potentially 'significant' effects on ecological features during operation have been identified. It is recommended that permanent site lighting incorporates directional lighting and is designed to avoid light spill that could affect bat foraging activity.

It is also recommended that potential biodiversity enhancements could offset any losses of parkland/green space habitat however the ability to incorporate these measures will depend on the final design of the Scheme. Potential enhancements include:

- Landscape planting including shrubs and trees that include flowering and berry species that provide foraging opportunities for birds and pollinating insects;
- A wildflower 'meadow' to attract pollinating insects;
- A green roof or green walls within the design of the scheme, with climbing species to cover walls and fences;
- Bat roosting boxes, bird nesting boxes, and invertebrate habitat features; and
- A biodiversity management plan included as part of the landscape and ecology design for the Scheme.

No potentially significant effects on ecological features during construction and operation have been identified. It is therefore recommended that ecological issues during operation are **scoped out** of any further assessment in the Environmental Statement.

5.3.3. Next steps

The scoping of issues relating to biodiversity, flora and fauna has concluded that, with the incorporation of appropriate mitigation measures, the Scheme is unlikely to result in any significant ecological effects and can be scoped out of the EIA for both the construction and operational stages of the Scheme. However, to ensure that ecological risks are appropriately managed during design development, several recommendations relating to ecology are proposed:

- Production of an updated Ecological and Opportunities Constraints Report (with recommendations) to be included as a supporting document in the planning application;
- A review of the construction methodology by an ecologist if river based transport for deliveries or removal of waste from the site is required to ensure any potential impacts to the River Thames and Tidal Tributaries SMI are considered;
- Measures to control pollution of surface waters during construction included in a Construction Environmental Management Plan (CEMP) for the Scheme; and
- Biodiversity enhancements considered for incorporation in the landscape design of the Scheme.

6. Built Heritage, Townscape and Visual Assessment

6.1. Methods used in Scoping

The scoping has been informed by site observations; a manual desk based review of relevant planning legislation, policy and guidance, characterisation studies and OS maps; a desk based review of relevant heritage receptors, including the Westminster World Heritage Site and Victoria Tower Gardens; and an understanding of the concept design.

The existing townscape evolution, character and visual quality of the Site and the surrounding area, and selection of viewpoints are scoped through desk-based analysis, field study and professional knowledge of the Site, following relevant guidance and best practice.

6.1.1. Assessment criteria

The assessment of impact upon the setting of the Westminster World Heritage Site will be carried out in accordance with ICOMOS 'Guidance on Heritage Impact Assessments for Cultural World Heritage Properties' (2011), which is relevant to evaluating the impact of the proposals on the Outstanding Universal Value (OUV) of the Westminster World Heritage Site. In accordance with the guidance, the assessment will show a comprehensive understanding of the World Heritage Site property and its OUV, and of the impacts arising from the proposals.

It will also be in accordance with relevant guidance, including:

- Historic England's Managing Significance in Decision-Taking in the Historic Environment (GPA2) (2015); and
- The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 Second Edition (2017).

Following the identification of baseline conditions, the impact of the Scheme on each of the identified Heritage, Townscape and Visual receptors is then assessed and a judgment formed as to the duration, extent and magnitude of impact.

The sensitivity of a receptor to the Scheme is judged by calibrating the baseline value of the receptor and its susceptibility to change (i.e. the impact). Susceptibility is the ability of the receptor to accommodate change without undue consequences for the maintenance of the baseline situation and / or the achievement of planning policies and strategies. With regard to the World Heritage Site, the approach identified in the ICOMOS Guidance requires an understanding of the contribution made by (a Site) to the OUV of a World Heritage Site, to understand how change may affect its OUV, or the appreciation thereof.

The Built Heritage, Townscape and Visual Impact Assessment (HTVIA) will provide an assessment of the likely effects of the Scheme on heritage, townscape and visual receptors, and the significance of those identified effects.

6.1.1.1. Heritage

The assessment will have regard to statutory considerations applying to the setting of listed buildings- Sections 16 (2), 66 (1) of the Planning (Listed Buildings and Conservation Areas) Act 1990, as well as recent case law establishing the great importance and weight which attaches to the avoidance of harm.

The assessment of heritage receptors will be prepared in accordance with the National Planning Policy Framework (NPPF) (2012).

Where the development being proposed may impact the surroundings in which a receptor is experienced, a qualitative assessment will be made of whether, how and to what degree the setting contributes to the significance of the receptor. The assessment will proceed on the basis of published best practice guidance and the staged approach advised therein.

This advice is set out in the Historic England GPA series, on the definition of significance and the assessment of development in the setting of assets of significance. Significance will be defined according to the NPPF, mindful of other relevant best practice notes.

Setting is defined in the NPPF as “the surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral.”

Within the HTVIA, when referring to “significance” in heritage terms (as set out in Annex 2 of the NPPF), the term ‘heritage or cultural value’ will be adopted to avoid confusion with the term ‘significance’ as used in a conventional EIA sense.

This policy and guidance provides an up-to-date basis for addressing setting impacts, and the balancing of any harmful impact against wider benefits.

6.1.1.2. Townscape

The assessment would consider the Scheme within its urban and parkland setting, including the buildings, the relationships between them, the different types of urban open spaces, including green spaces and the River Thames and the relationship between buildings and open spaces.

Assessment of the impact of the Scheme on a receptor is made on the basis of professional judgment which takes into account relevant planning policies and guidance. It is based on the methodology set out in the Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA) (2013) supplemented by advice contained in the LVMF.

The assessment will consider how potential impacts would vary with seasonal changes in atmospheric conditions where applicable. The sensitivity of the receptor as existing will be assessed as high, medium or low depending on the importance, value and quality of the receptor. The assessment considers the contribution to the townscape or view of any World Heritage Sites, listed buildings or conservation areas, and other areas, and the amenity value of the viewing location and the area in which it is located. The assessment of the sensitivity of the receptor under consideration is moderated to take into account a judgment about its quality.

6.1.1.3. Views

To assess the full range of potential impacts of the Scheme, three separate verified images will be prepared from each viewing location selected:

- Existing: the view as it exists currently;
- Proposed: with the Scheme inserted in wireline or render form;
- Cumulative: with the Scheme inserted in wireline or render form with cumulative developments in wireline form.

Images as proposed will take the form of ‘Accurate Visual Representations’ (‘AVRs’) produced by accurately inserting images of the Scheme, based on a three-dimensional computer model of the

Scheme, into a surveyed existing photograph. The method by which AVRs are produced will be described in the assessment document.

For each of the identified views, a description of the view as existing will be given, providing an account of its character, quality and sensitivity to change. A description of the view as proposed will then be given with a narrative assessment, based on the method outlined above, of the effect of the Scheme on the composition, character and quality of the view.

Where other committed developments in the wider area would be visible to a significant extent in the view, a further image showing these together with the Scheme will be produced and a further assessment of the cumulative effects, if any, will be provided for each view.

Viewpoint locations are to be informed by architectural and historic accounts of the area, an appraisal of the existing site and surroundings, and relevant policy designations. The viewpoint locations will be sought to be agreed with City of Westminster, London Borough of Lambeth and Historic England through pre-application consultation.

6.1.2. Proposed scope

Site observations, a manual desk-based review of OS maps, characterisation studies including conservation area appraisals, the Palace of Westminster and Westminster Abbey including St Margaret's Church World Heritage Site Management Plan (2007) and relevant heritage receptors have been used to determine the study area for the HTVIA.

The study area has been informed by the visual envelope of the Site, building locations and heights, topography and townscape features, and an understanding of the scale of the Scheme.

Following their identification, effects will be classified on the basis of their nature and duration as follows:

- **Temporary:** Effects that persist for a limited period only (due, for example, to particular activities taking place for a short period of time). These necessarily attract less weight in impact terms, in relation to heritage, whose values persist over a very long period;
- **Permanent:** Effects that arise from an irreversible change to the baseline environment (e.g. alterations to built fabric) or which will persist for the foreseeable future (e.g. noise from regular or continuous operations or activities);
- **Direct:** Effects that arise from the effect of activities that form an integral part of the scheme (e.g. construction of a new building);
- **Indirect:** Effects that arise from the effect of activities that do not explicitly form part of the scheme;
- **Secondary:** Effects that arise as a consequence of an initial effect of the scheme (e.g. induced employment elsewhere);
- **Cumulative:** Effects that can arise from a combination of different effects at a specific location or the interaction of different effects over different periods of time.

6.1.2.1. Heritage

First, the heritage value of each built heritage receptor, including its setting, is assessed as part of the baseline assessment.

Secondly, the magnitude of impact is assessed using professional judgment related to the duration, extent and type of impact. Considerable importance and weight has been given to the impact of the Scheme on identified built heritage receptors in undertaking this assessment.

The assessment then combines the two measures of magnitude of impact and heritage value to provide a measure of the significance of effect. The effects range from negligible to major and may be beneficial or adverse, and then, on this basis, consideration is given to potential mitigation of any residual harmful effects.

6.1.2.2. Townscape and Visual

The magnitude of change to the composition and character of the area as a result of the Scheme takes account of factors including its proximity, scale and contribution to the composition of the area. The magnitude of the change resulting from the Scheme will be assessed as major, moderate, minor or negligible.

The final assessment of the significance of effect is based on an assessment of the nature of the existing townscape or view and its sensitivity to change combined with an assessment of the nature and magnitude of proposed change, made through relevant guidance and policy and based on professional judgment and experience.

For effects which are judged to be minor, moderate or major, the effect has been further categorised as beneficial, neutral or adverse. Adverse effects are those that detract from the value of the townscape or view. This may be through a removal of valuable characterising elements or addition of new intrusive or discordant features.

Beneficial effects are those that contribute to the value of the area. This may be through the introduction of new positive attributes; for example, through improved legibility or setting. A neutral effect would be one where the composition of a view or townscape character may change but its overall quality does not, or where the balance of positive and negative effects is finely balanced; effects can be significant and neutral in quality terms, i.e. noticeably different but not better or worse in terms of quality. Where the effect is minor, moderate or major, good design can reduce or remove potential harm or provide enhancement, and design quality may be the main consideration in determining the balance of harm and benefit.

An overall assessment of cumulative effects (i.e. the effect of the Scheme taking into account other committed developments) will also be provided. The approach to cumulative assessment will consider the effects of the Scheme in combination with the Cumulative Developments.

6.1.3. Establishing the baseline

Site observations, characterisation studies and the Palace of Westminster and Westminster Abbey including St Margaret's Church World Heritage Site Management Plan (2007) will inform the identification of potential receptors for assessment. The study area has been informed by the visual envelope of the Site, building locations and heights, topography and townscape features, and an understanding of the scale of the Scheme. Site observations, a manual desk-based review of OS Maps, characterisation studies and relevant heritage assets were used to determine the study area.

The study area for HTVIA will comprise:

- All heritage receptors within a 500m radius from the centre of the Site, including listed buildings, conservation areas, registered parks and gardens and locally listed buildings;
- Townscape receptors within a 500m radius from the centre of the Site; and
- Visual receptors with identified viewpoint locations will be identified following an appraisal of the site, a review of 3d modelling of the proposals within the existing townscape and the agreement of viewpoint locations with City of Westminster, London Borough of Lambeth and Historic England through pre-application consultation.

The study area and method for its identification is considered to be reasonable and proportionate to the scale, nature and context of the Scheme, and its likely direct and indirect effects.

6.2. Baseline conditions

6.2.1. Location and constituent heritage assets

The Site lies within the Victoria Tower Gardens, a Grade II Registered Park and Garden within the City of Westminster. It also falls within the area designated as the Westminster Abbey and Parliament Square Conservation Area, and is to the immediate south of the Westminster World Heritage Site, the closest portion of which comprises the Houses of Parliament and The Palace of Westminster (grade I). A Statement of Outstanding Universal Value prepared by UNESCO describes its significance in full, a brief summary of which states that:

“The Palace of Westminster, Westminster Abbey and St Margaret’s Church lie next to the River Thames in the heart of London. With their intricate silhouettes, they have symbolised monarchy, religion and power since Edward the Confessor built his palace and church on Thorney Island in the 11th century AD. Changing through the centuries together, they represent the journey from a feudal society to a modern democracy and show the intertwined history of church, monarchy and state.”

A number of designated heritage assets lie within the Victoria Tower Gardens, including:

- Statuary Group of the Burguers of Calais (1066150), Grade I;
- Buxton Memorial Fountain (1066151), Grade II*;
- River Embankment from the Houses of Parliament to Lambeth Bridge (1357335), Grade II; and
- Statue of Mrs. Emmeline Pankhurst (1357336), Grade II.

In addition, the Site falls within the setting of a number of other designated heritage receptors in the wider area, which will be identified within the HTVIA, and assessed in a manner proportionate to their significance and the potential impact on their heritage value.

Victoria Tower Gardens is a riverside open space with mature London Planes framing an open series of green lawns criss-crossed by footpaths. Designations relevant to the townscape of Westminster include the designation of Victoria Tower Gardens as a Registered Park and Garden (Grade II), the Westminster Abbey & Parliament Square Conservation Area that covers the site and its surrounds, the presence of the adjacent Westminster World Heritage Site and Smith Square Conservation Area and numerous listed structures; meaning that there is a sensitivity associated with any potential visual changes and appearance of landscape elements within the Victoria Tower Gardens.

Accordingly, the London View Management Framework (LVMF) Supplementary Planning Guidance (2016), and local planning policy have identified a number of River Prospects and Protected Views that are relevant to the Site and its surrounds.

The Site is visible from Westminster Bridge, Lambeth Bridge and the Albert Embankment between the two bridges, therefore the following LVMF views are considered relevant:

- River Prospect 18A.1, 18A.2 and 18A.3 Westminster Bridge: upstream;
- River Prospect 19A.1, 19A.2 Lambeth Bridge: downstream; and
- River Prospect 22A.1, 22A.2 and 22A.3 Albert Embankment between Westminster and Lambeth Bridges.

Although the Site area is technically in the following LVMF protected vistas and / or their backdrop, the combination of existing foreground and low height of the Scheme means it will not be seen in the view. These views are therefore scoped out of the assessment:

- Protected Vista 23A.1 Bridge over the Serpentine (vista and backdrop);
- Protected Vista 2A.2 from: Parliament Hill (backdrop);
- Protected Vista 2B.1 from: Parliament Hill (backdrop); and
- Protected Vista 4.2A from: Primrose Hill (backdrop).

There is visual relationship to the WHS associated with the Palace of Westminster to the north. Metropolitan and Local Views (set out in policy DES15, the Westminster Abbey & Parliament Square Conservation Area Appraisal and the WHS management Plan) which aim to protect and enhance views which contribute to Westminster's townscape and historic character are relevant.

6.3. Potential significant effects and mitigation measures

6.3.1. Construction

6.3.1.1. Effects on heritage

Direct and/or indirect effects to receptors may arise from the Scheme during the construction stage. Potential effects are likely to relate to construction hoarding materials and machinery (including cranes) and include potential increases in activity affecting the local road network, and the potential for noise, dust and vibration associated with site preparation works required to facilitate construction.

Views to, from and through the Site would potentially be altered as a result of the construction phase and have the potential to appear in views of the World Heritage Site.

Measures proposed to prevent, reduce or where possible offset any significant negative effects will be identified and developed as part of the design process and will be identified in the ES.

6.3.1.2. Effects on townscape and visual

In terms of townscape effects, the main element of construction will relate to the underground visitor facility which will sit within the main space of the Gardens within the existing trees. The impacts of construction will be temporary in nature and due to the sensitivity of the location and its national significance, effects are likely to be considered as significant but only for the duration of the works.

The visual effects during construction will be temporary and would relate to construction and the presence of plant and deliveries to from the site within its fairly confined and sensitive location. Mitigating the effects could be achieved by creating an imaginative approach to the site hoardings. The degree of the temporary visual effects is likely to vary depending on proximity to the Scheme but overall is considered to be significant given the sensitivity of the site relative to the international WHS and national recognised landmarks within very close proximity.

6.3.2. Operation

6.3.2.1. Effects on heritage

The Site is located within the Victoria Tower Gardens, which are designated as a Grade II Registered Park and Garden, and contains within its boundaries three listed monuments which may require relocation under the current proposals. The Site is also located on the border of a WHS of international importance, and although the WHS does not contain a buffer zone at present,

Victoria Tower Gardens would almost certainly form part of a buffer zone should one be designated; at present, the Gardens are within the boundaries of a Conservation Area incorporating the Palace of Westminster and Houses of Parliament. Any new above-ground structure is likely to affect views from the Gardens to the Victoria Tower and to the Palace of Westminster and Houses of Parliament. A new Memorial and Learning Centre will also change the character of the Gardens, both in terms of visual aspects, and in terms of experience, including noise, movement and tranquillity. Given the sensitivity of the Gardens, the proximity of the WHS and the inclusion of Grade I, II* and II assets within the Gardens, the assessment will consider the impacts of the proposals upon these assets.

In addition, views to, from and through the Site would potentially be altered as a result of the Scheme. As such, the EIA will address the following potential townscape and visual impacts and likely effects:

- Changes to the character, context and quality of the Site and the local townscape; and
- Changes to selected key views, illustrated on the Viewpoint Location Plan which accompanies this Scoping Report.

The setting of heritage assets outside the Gardens are likely to be affected by the Scheme. The Houses of Parliament and Palace of Westminster, as well as the Victoria Tower Lodge and Gates, are immediately adjacent to the Gardens. It is estimated that the built heritage assets within 500m of the Gardens include: one WHS, two Scheduled Monuments, 23 Grade I listed buildings, 50 Grade II* listed buildings, four Registered Parks and Gardens and two Conservation Areas. Construction of the new Memorial and Learning Centre may impact views of and from these assets that contribute to their significance, depending upon the height and other aspects of the proposed memorial. The experience of these assets outside the Gardens may also change, depending on the nature of the proposed structures within the gardens. The assessment will consider the impacts of the proposals upon these assets.

6.3.2.2. Effects on townscape and visual

The project presents an opportunity to create a new use and increased footfall through and around the Gardens. The experience of the space in townscape character will be enhanced and mitigation measures could be put in place to improve the infrastructure and historic fabric of the Gardens, as well as considering the long-term management of the existing trees.

The Scheme will give rise to a new built form and appearance to the Site, which would likely influence local and mid-distance views and provide an opportunity to improve the townscape quality and context within, and surrounding, the site. In terms of townscape impacts there will be a significant change to the character of the Gardens which may affect the sense of openness within the park and how the townscape is experienced. The design intentions will be a significant change in the existing context of the wider townscape which includes WHS, CA's and the setting to various listed buildings and structures within the vicinity.

Visual impact will be inevitable; the Memorial is intended to be a visible new element and will be framed by the existing trees, a contemporary design within the existing historic Registered Park and Garden. This will influence views to/from the WHS and for those views within the vicinity, including from the other side of the river.

Measures to mitigate effects on views and the character of townscape will be considered during the design process and be incorporated into the final design.

6.3.3. Next steps

The Built Heritage, Townscape and Visual Impact Assessment will be scoped in to the EIA.

Next steps:

- Appraise heritage receptors identified within the study area through further desk-based analysis and field study;
- Appraise the existing townscape evolution, character and visual quality of the Site and surrounding area through desk-based analysis and field study, and identify representative viewing positions;
- Assess the likely effects of the Scheme on representative views;
- Assess the likely effects of the Scheme on the character and appearance of Townscape Character Areas; and
- Assess the likely effects of the Scheme on heritage assets and their settings.

Assessment viewpoints will be agreed in consultation with the Greater London Authority, Historic England, Westminster City Council and the London Borough of Lambeth.

6.3.3.1. Mitigation measures and further investigation required

Mitigation measures for built heritage, townscape and visual receptors during the operation of the development should include the following:

- The high-quality design of the proposed buildings. This is especially important with regard to the impact upon the settings of designated heritage assets.
- Visually appropriate design materials to mitigate the change to the immediate environment.
- The provision of public benefits as appropriate.

7. Material assets (infrastructure) and climate change

7.1. Methods used in Scoping

This Chapter considers the potential impacts of the Scheme on material assets and climate change during construction and operation. For the purposes of this report, 'material assets' are deemed to be important built infrastructure assets, for example utilities or other critical infrastructure. Key natural land resources such as minerals sites are specifically considered within Chapter 10, and are not included here.

The consideration of the Scheme in relation to climate change covers firstly the potential contribution of the Scheme construction and operation to climate change (primarily through emissions and energy consumption) and secondly the vulnerability of the Scheme to climate change, including climate-related natural hazards. In terms of climate vulnerability and natural hazards, flooding is considered to be the key climate-related and natural hazard risk to the Scheme. Flood risk is covered specifically in Chapter 3, and reference is made to the relevant information in this Chapter.

The scoping of issues for this Chapter has been undertaken primarily using desktop review. The desktop review has involved examination of maps and aerial photography of the study area. The locations of material assets have been identified from a review of maps and relevant websites. The study area has been defined as the immediate footprint of the Scheme, and any material assets that lie within the footprint have been identified.

No consultation has been undertaken to date in relation to this aspect of the Scheme. It is anticipated that future consultation will be required with Thames Water and the Environment Agency with regard to some of the infrastructure assets in the study area.

7.2. Baseline Conditions

7.2.1. Material assets

It is assumed the Site is currently served by a private surface water system in the form of gullies and some surface water flows may also run-off in to the soft landscape areas. A site investigation of the existing drainage will need to be conducted to prove this assumption. A drainage survey using closed circuit television (CCTV) will be required to find the extent of the private drainage system, condition and to determine if it is feasible to be utilised for the Scheme.

Thames Water plans show a 2362mm Combined Water Sewer running parallel to the west side of the Site. An existing sewer runs into the Site which is assumed to be a combined sewer overflow, this is bisecting the Burghers of Calais and the Buxton Memorial. The depth of this assumed combined sewer overflow is approximately 4.1m below ground level and within approximately 3m of the proposed basement.

There is currently no known foul water drainage from the Gardens. At this stage, it is assumed that all surface and foul water flows from the Scheme will be connected directly into the Thames Water combined sewer.

No other important or critical infrastructure assets (e.g. pumping stations, electrical substations, other utility networks) have been identified within the Site, or close enough to be affected by the Scheme.

7.2.2. Climate change

The UK Climate Projections for the UK (2014) note the following observations of recent climate trends:

- Average global temperature and sea level have risen since the late 19th century, and at an increased rate over the past few decades; and
- Average UK temperature has risen since the mid-20th century, as have average sea level and sea surface temperature around the UK coast.

Climate change is likely to result in warmer temperatures, wetter winters and drier summers. The UK Climate Projections 2009 (UKCIP09) medium emissions scenario predicts that for South East England and London, summer and winter temperatures, and winter precipitation, will increase over the next 65 years. There is less certainty about changes in summer precipitation, although it is expected to decrease (UKCP, 2014). The Environment Agency predicts that, alongside an increase in overall winter rainfall, there will also be a future increase in peak rainfall intensity, and correspondingly in future peak river flows. These predicted changes are considered when determining future requirements for flood risk management and drainage.

7.2.3. Data gaps

At present the main data gap relates to detailed design, the materials required and the methods of construction and waste management. However, this is not unexpected given the early stage of the design process, and is not considered to be a major constraint to the scoping of significant issues.

7.3. Potential significant effects and mitigation measures

7.3.1. Construction

7.3.1.1. Material assets

The limited presence of existing material assets and infrastructure across the Site means that the likelihood of significant impacts occurring during construction is low. It is assumed that all existing site utility infrastructure will be dealt with appropriately through the design process, and subsequently either fully protected during construction, or suitably diverted or relocated in advance of the works. This issue is not considered to be significant, and it is recommended that it is **scoped out** of further assessment in the EIA.

7.3.1.2. Climate

The key climate issue during construction is likely to be related to potential emissions from construction and delivery vehicles, and the potential need for disposal of waste to landfill if excavated material cannot be re-used on site. A Site Waste Management Plan could be developed prior to construction, and a Materials Management Plan may be required for the Scheme if material is to be re-used on site. These documents will set out how waste and materials will be managed on site during the construction process, with the aim of reducing the volume of waste generated as far as possible and re-using and recycling materials where feasible. A Traffic Management Plan prepared by the contractor could also contribute to reducing potential emissions from construction vehicles, by managing construction traffic and deliveries to avoid peak times and potential traffic congestion.

On the basis of the proposed mitigation, issues relating to climate change during construction are not considered to be significant and it is recommended that these are **scoped out** of further assessment.

7.3.2. Operation

7.3.2.1. Material assets

Once constructed, the new Learning Centre will need to be served by either the existing or improved or new drainage systems. This is likely to include foul drainage for toilets, and surface water drainage for roofs, footpaths and other areas of new hard standing.

A new pumping station may be required for foul flows due to the Thames Water sewer being too shallow to connect via gravity. If the ground water level is found to affect the underground Learning Centre, a surface water pumping station may also be required. This will be confirmed by forthcoming intrusive ground investigation information. A drainage strategy plan will be designed alongside the detail of the Memorial and Learning Centre.

It is assumed that any additional surface water flows that arise from increased hardstanding areas will run off in to the soft landscape areas and the existing gullies, and will be incorporated into the design of the Scheme. If hardstanding areas are significantly increased, an additional surface water drainage system may be required. This can be confirmed alongside the Scheme detailed design, as well as a site investigation and CCTV survey of any drainage networks on site.

On the assumption that the design of the works will include provision for new foul and surface water drainage, issues relating to material assets in operation of the Scheme are not considered to be significant, and it is recommended that these are **scoped out** of further assessment.

7.3.2.2. Climate

The design of the new Learning Centre will need to take account of the potential impacts of future climate change, including potential for greater extremes of weather and increased exposure to climate-related hazards such as floods and heatwaves. The conversion of currently grassed areas to built features and hard standing will also need to be considered in relation to the potential to increase surface water runoff and surface water flooding, which could be exacerbated by climate change in the future. These issues could be mitigated through the design by the following means:

- Making provision for appropriate ventilation, cooling, insulation and heating within the building designs, including the use of passive design measures to regulate internal temperatures and reduce the need for energy consumption;
- Application of BREEAM standards, with the aim of achieving 'Outstanding' certification;
- The use of Sustainable Drainage Systems (SuDS) to mitigate any increases in runoff (if required), with an allowance for climate change; and
- The need for flood resilience measures to be incorporated to the design of the Learning Centre if necessary.

With these measures in place, no further assessment of the impacts of the Scheme on climate change is considered necessary, and it is proposed that they are **scoped out** of the EIA.

7.3.3. Next steps

The Scoping of issues relating to material assets and climate change has concluded that, with appropriate mitigation where required, the Scheme is unlikely to result in any significant effects on these aspects of the environment, and as such, can be scoped out of the EIA for both the construction and operational stages of the Scheme.

The following steps and recommendations will need to be taken forward by the design team and the Contractor (as specified) outside of any formal EIA process:

- Development of drainage strategy and drainage design as part of the detailed design of the Scheme (design team);
- Consultation with Thames Water regarding changes required to adopted sewers (design team);
- Development of Site Waste Management Plan and Traffic Management Plan for construction (Contractor);
- Incorporation of energy efficiency measures and design standards to reduce the operational energy requirements of the Learning Centre (design team); and
- Incorporation of flood resilience measures into the design of the Scheme (design team).

8. Noise

8.1. Methods used in Scoping

The scoping of issues for this Chapter has been undertaken using a desktop review. The review considered the potential impacts from noise and vibration associated with the project on the local amenity, and involved the following:

- Determination of baseline noise conditions in the Westminster area, based on available published noise survey results;
- Determination of the potential noise receptors in the area, based on the project information and maps of the area;
- Determination of the key construction activities with the potential of significant short-term impacts, based on the expected source noise/vibration levels and the location of the nearest receptors;
- Determination of the key operational activities with the potential of adverse impacts, based on the proposed site use, expected source noise levels and the location of the nearest receptors; and
- Determination of the relevant assessment methodology, based on the review of current standards, local policy and guidance, and industry practice.

No baseline noise surveys have been undertaken for the purposes of this review. It is anticipated that such surveys will be required to inform future assessments of noise and vibration impacts from the Scheme.

8.2. Baseline conditions

The Westminster Noise Strategy (2010-2015) (City of Westminster, 2010) provides a useful overview of the key noise issues within the Borough. Although much of the baseline data identifying key noise issues dates from the preparation of the Strategy in 2008, it is still considered to be relevant. A borough-wide noise survey undertaken in 2008 recorded ambient noise levels of 55.7 dB $L_{Aeq,8hrs}$ and 61.6 dB $L_{Aeq,16hrs}$ during the night (2300-0700 hours) and day (0700-2300 hours) respectively (average values calculated from measurements at the front of 20 sites in different areas of Westminster). The levels were higher than the average compared to levels across England and Wales generally. In 2008, residents of Westminster surveyed reported road traffic noise, building and construction works and road works as the three most prevalent sources of noise disturbance.

There is limited residential property in the immediate vicinity of Victoria Tower Gardens, with the River Thames and Palace of Westminster to the immediate north and east, and Lambeth Bridge to the south. The buildings adjacent to the Gardens on Millbank and extending back towards Smith Square are predominantly commercial and office space, although there are also some residential buildings. Guy's and St Thomas' Hospital is located on the opposite bank of the river.

8.2.1. Data gaps

A more detailed study of the area may be required, in consultation with the Local Authority, to verify and agree the locations of the nearest noise sensitive receptors to the Scheme.

Noise surveys should be undertaken to establish the ambient and background noise levels at the nearest receptors, which will form the basis for assessments of noise impacts from the construction and operational phases of the development.

8.3. Potential significant effects and mitigation measures

8.3.1. Construction

The site works and construction traffic activity during the project's construction phase are the key areas to consider in terms of the potential noise and vibration impact on the local amenity.

Construction noise and vibration could have an adverse effect on local residents and businesses, and could indirectly affect tourism activity and informal recreation in and around the Gardens which, in part, are proposed to remain open for public during construction. These impacts would be temporary and limited to the duration of the construction period, but could potentially be significant in the short term. There are also potential health and safety risks to the public associated with construction noise and vibration, given that the Site is to be established within an area of public open space.

Major construction activities such as piling, ground excavation, and pouring concrete, are expected to be the most likely sources of potential adverse impact from the site. Considering the requirement for removal of large amounts of soil from the site, another activity with the potential for causing adverse impact from noise is the operation and road traffic of vehicles serving the site. Given the limited scope for demolition activities, impact of noise and vibration from these works is not expected to be significant.

Noise and vibration from the construction activities at the site will need to be assessed prior to commencing works to ensure any potential impacts are minimised, in accordance with the City of Westminster's Noise Strategy 2010-2015 and the Code of Construction Practice 2016. The assessment should predict the noise and vibration levels associated with the key construction activities at the most affected noise sensitive receptors, and propose mitigation measures if required, in accordance with the methodology and guidance included in British Standards BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise and BS5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration. The assessment is likely to require establishing the baseline ambient noise levels at the most affected noise sensitive receptors, and using the results to set the thresholds for construction noise from the Site.

The potential noise and vibration mitigation measures could include the following:

- Physical noise control measures, such as acoustic screens around the Site, acoustic enclosures/sheds for noisy equipment or noisy activity area;
- Using alternative quieter machinery, tools and work methods/practices; and
- Restricting the area and/or duration/time of the noisy activities.

8.3.2. Operation

The Scheme will comprise an external memorial, court and gardens, as well as a visitor centre located primarily underground. The visitor centre is to be served by new air conditioning and ventilation systems. The noise from these systems has the potential to affect the local amenity. Given the relatively high documented existing noise levels in the area, adverse impacts are not expected to occur. Nevertheless, an assessment should be carried out to establish the effect of noise from the proposed building services on the nearest noise sensitive receptors.

The assessment should predict and rate the noise from the proposed systems at the nearest receptors, and propose mitigation measures if required. The assessment should be carried out in accordance with the methodology and guidance included in the British Standard BS4142:2014 Methods for rating and assessing industrial and commercial sound, and should comply with the requirements of Westminster's Unitary Development Plan 2007 (Policy ENV 7: Controlling Noise

from Plant, Machinery and Internal Activity). A baseline noise survey should be carried out to establish the existing background noise levels at the assessment locations.

The potential noise mitigation measures could include the following:

- Physical noise control measures, such as acoustic screens and enclosures around the equipment, duct attenuators and acoustic cladding;
- Using alternative quieter equipment, or quieter modes of operation;
- Relocating the equipment; and
- Restricting the duration/time of equipment operation.

Considering limited vehicular traffic related to site operation, restricted primarily to coaches dropping off/picking up visitors and goods/service vehicles, the impact of operational road traffic associated with the Site is not expected to be significant and therefore it is proposed to be **scoped out** from the EIA.

Considering the Site is already an established public open space, the impact of noise from visitor's activity around the Site is not considered significant, and therefore it is proposed to be **scoped out** from the EIA.

8.3.3. Next steps

The scoping of issues related to noise and vibration impacts from the project identified the following key assessment areas:

- Noise and vibration impact from construction activities; and
- Noise impact from the proposed mechanical building services.

It has been concluded that the impacts of noise from road traffic and visitors' activity associated with the site's operation are not expected to be significant, and therefore can be **scoped out** from the EIA.

Further assessments should include the following:

- A consultation with the Westminster City Council to agree on the noise survey and assessment methodology;
- An environmental noise survey at the locations representative of the nearest and most affect noise sensitive receptors, to establish the baseline ambient and background noise levels to serve as a basis for the noise impact assessments. The measurements should be carried out in accordance with ISO 1996-2:2017 Acoustics – Description, measurement and assessment of environmental noise – Part 2: Determination of sound pressure levels;
- Assessment of noise and vibration impact from construction activities, in accordance with the City of Westminster's Noise Strategy 2010-2015 and the Code of Construction Practice 2016, as well as BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise and BS5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration; and
- Assessment of noise impact from the proposed mechanical building services plant, in accordance with Westminster's Unitary Development Plan 2007 (Policy ENV 7: Controlling Noise from Plant, Machinery and Internal Activity) and BS4142:2014 Methods for rating and assessing industrial and commercial sound.

9. Population and Human Health

9.1. Methods used in Scoping

This Chapter considers where there is the potential for the Scheme to result in impacts to the human environment; which in this context is intended to mean any local communities or residents who may be affected by either the construction or operation of the Scheme.

The scoping of issues for this chapter has been undertaken through a desktop review, supplemented by pedestrian movement surveys that were undertaken by Atkins in 2017 (Atkins, 2017c) to establish usage of Victoria Tower Gardens by the public. The locations of recreational assets such as footpaths, cycleways and angling access have been identified from a review of maps and relevant websites.

No consultation has been undertaken to date in relation to this aspect of the Scheme. A formal public consultation exercise will be undertaken for this Scheme as the design is progressed through the EIA and planning stages. Specific advice from the Westminster City Council Environmental Health Officer will be sought in relation to possible impacts of the Scheme on local residents.

9.2. Baseline conditions

The residential population of Westminster (2013 mid-year estimates) is 226,841. There is limited residential property in the immediate vicinity of Victoria Tower Gardens, with the River Thames and Palace of Westminster to the immediate north and east, and Lambeth Bridge to the south. The buildings adjacent to the Gardens on Millbank and extending back towards Smith Square are predominantly Government, commercial and office space, although there are also some residential buildings. Guy's and St Thomas's Hospital is located on the opposite bank of the river.

Victoria Tower Gardens is part of the Jubilee Greenway from Westminster Bridge to Buckingham Palace. The Jubilee Greenway is a walking and cycling route which was launched in 2009. The full Jubilee Greenway route was completed in 2012 to mark the Queen's Diamond Jubilee and the London 2012 Games. It is an important heritage route that links 2012 Olympic and Paralympic venues with parks and monuments across central London.

There five pedestrian access points to the Gardens off the road to the west and, at the south end, near the roundabout on the western side of Lambeth Bridge. The Gardens are a popular leisure venue, used equally by people taking advantage of the open green space, benches, play area, toilets and refreshment kiosk, and by walkers and runners passing through while following a riverside route. Most activity is concentrated along the riverside on the eastern edge of the site. A Parliamentary Education Centre, opened in 2015, attracts visitors, including school groups, to the northern end of the Gardens.

Pedestrian movement surveys (Atkins, 2017c) were undertaken over a Bank Holiday weekend in May 2017 to help inform the Scheme. The aim of the surveys was to observe uses of Victoria Tower Gardens and general movements of pedestrians through the park. The surveys noted average movements of between 179 and 238 people per hour entering and exiting the Gardens throughout the weekend. The northern entrances and areas to the Gardens (closest to the Houses of Parliament) were the most heavily used areas.

The Gardens were used by people who came to sit on a bench or on the grass and spend time relaxing with a few visiting the kiosk and going into the playground. In addition to being a place where visitors spent time, some individuals and groups did not stay long and came in to see

another view/of the Houses of Parliament, to take photos, or look at the river and exit. The main activities observed were to take photos or to look at the river and several monuments in the Gardens. The playground was observed as being busy throughout the weekend with both local families and tourists with children.

Westminster's built up central location means that its parks and open spaces play an essential role in the quality of life for residents. Although this part of the borough is not deficient in publicly accessible open space it is close to an area of open space deficiency and within an area lacking in informal play space (City of Westminster Open Space Strategy 2007) which makes the existing play area within Victoria Tower Gardens an important local resource. This is supported by the observations of use of the play area during the recent pedestrian movement surveys.

9.2.1. Data gaps

No significant data gaps are identified that could affect the scoping of issues relating to the local population at this stage.

9.3. Potential significant effects and mitigation measures

9.3.1. Construction

The key issues relating to population and human health during construction are likely to involve:

- Temporary loss of amenity and open space during construction, potentially including the play area in the south of the Gardens, and possible interruption of access along the riverside; and
- Potential health and safety risks associated with the establishment of an active construction site within an area of public open space and adjacent to a children's play area.

Potential impacts on the local population arising from construction noise are discussed separately in Chapter 8.

No specific mitigation is available for the temporary loss of amenity and recreation areas. The Gardens would be kept open to the public as far as possible during construction, and suitable diversion routes would be included for any public rights of way or cycling routes affected by the works. The timing of the proposed relocation of the play area, toilets and kiosk has not been determined, but if possible, this should be undertaken as part of the site enabling works. This will be particularly important as the construction is likely to extend over a number of years, and would ensure as much continuity of use for the local community as possible. It would also reduce potentially detrimental effects from noise and dust caused by construction taking place immediately adjacent to the current play area location. The design of the relocated play area will need to ensure an equivalent or better standard to that currently available.

It is anticipated that health and safety risks to the public could be managed through good construction planning and the secure separation of the works and any access points from the surrounding public areas. No further assessment is recommended in this respect.

It is recommended that this issue is **scoped in** to the EIA, and further assessment is undertaken of the potential impacts of the Scheme construction on local recreation and amenity resources.

9.3.2. Operation

It is anticipated that the new Memorial and Learning Centre will attract a higher number of visitors than at present, and change the way that visitors use the Gardens. This should be subject to further assessment within the EIA. The introduction of the new Memorial and changes to landform

may also result in alterations to daylight, sunlight and overshadowing within the open spaces of the Gardens, and further specific assessment of this potential impact of the development is proposed.

Significant operational impacts on air quality that could affect the local population are considered in Chapter 4. The new buildings (with new heating and ventilation systems) could result in increased ambient noise levels. These issues will be subject to separate assessments (as detailed in Chapters 4 and 8) and considered as part of an in-combination effects assessment for the Scheme.

9.3.3. Next steps

There is no standardised methodology for the assessment of impacts on recreation and amenity. The assessment of effects will be undertaken in accordance with the EIA Regulations 2017, and general guidance documents including the Guidelines for Environmental Impact Assessment, published by the Institute of Environmental Management and Assessment. The assessment will be supported by further technical studies (such as the Daylight, Sunlight and Overshadowing study) where appropriate.

10. Soils, Geology and Hydrogeology

10.1. Methods used in Scoping

Chapter 10 considers potential impacts related to soils, geology and groundwater/surface water. Soils, geology and groundwater comprise a fundamental component of the natural environment whose properties also directly and indirectly affect the built environment. Consideration of the potential geo-environmental impacts of any proposed development is therefore a key element of an Environmental Impact Assessment (EIA). Geo-environmental issues considered in an EIA typically comprise, but are not limited to, the following:

- Geological sites of academic, cultural or historical importance;
- Mineral resources;
- Groundwater resources;
- Soils available for agricultural use, as mineral resources, or supporting sensitive land uses/habitats;
- Soil-water interaction (e.g. slope stability and flooding);
- Land quality (contaminated land, including potential effects on water quality); and
- Waste soils.

Land contamination risks in the UK are considered within a conceptual framework based on Potential Pollutant Linkages (PPL). A PPL comprises a source, a receptor, and a pathway. In assessing the environmental impacts of a scheme, consideration is given to whether it may add, remove or modify sources, pathways or receptors relating to land contamination.

Waste is sometimes considered alongside geology and soils on the grounds that earthworks involved in a scheme can potentially generate significant volumes of waste soils. The most common fate for such material is disposal to land (either by re-use on site or by removal to an off-site waste disposal facility) wherein there can be potential geo-environmental impacts.

There is typically some overlap between the geo-environmental issues described above, and issues assessed under other technical disciplines. The most significant of these is groundwater which has relevance to both this chapter and to the water quality and flood risk chapter (Chapter 13).

The scoping of issues for this chapter has been undertaken through a desktop review. Publicly available mapping and data were collated, reviewed and analysed in order to develop a preliminary geo-environmental conceptual site model from which potential impacts were assessed. Much of the data reviewed was acquired via a Landmark Envirocheck™ Report purchased for the Site.

10.2. Baseline conditions

10.2.1. Geology

The Site is located with the area covered by the British Geological Survey (BGS) 1:50,000 scale map Sheet 270 “South London”. Records of five historical boreholes within the Site are held by the BGS, with a further 37 within 100m of the site. The quality of these records is variable and some are not publicly available, but they provide some detail on local ground conditions. At the time of writing, preliminary non-intrusive site investigations have been completed, but the results are understood to have been inconclusive owing to adverse conditions limiting the depth of effective geophysical survey analysis. Further intrusive ground investigations are expected to be undertaken later in 2018.

Made Ground

There is no made ground recorded on available geological mapping beneath the site, except for in the extreme northeast corner of the site. However, given the known history of the site (see Section 10.24, below), and based upon available historical borehole records, indications are that some made ground is present beneath the site, particularly on the east side. The made ground appears to be between approximately 2.7m and 5.6m thick. The only reliable description available is from the north of the site, and indicates that made ground in this vicinity comprises dark grey silty, sandy clay with fragments of brick, tile, flint, chalk, and shells.

The natural geology underlying the Site comprises superficial deposits of alluvium, with some Kempton Park Gravels in the northwest corner. Beneath the superficial deposits, the bedrock comprises the London Clay Formation.

Alluvium

The alluvium is composed of sediments deposited in the relatively recent geological past by processes associated with the adjacent River Thames. The alluvium generally comprises soft to firm consolidated, compressible silty clay that can contain layers of silt, sand, peat and basal gravels. Historical borehole records suggest the alluvium beneath the site may comprise two distinct layers. The first layer appears to be present down to between approximately 4.3 and 6.3 mbgl (metres below ground level) and comprises sand or sandy clay, with pebbles. Beneath this, down to a depth of between approximately 5.2 and 7.6 mbgl, appears to comprise silty and/or sandy clay with peat in places.

Kempton Park Gravel Member

The Kempton Park Gravel Member generally comprises sand and gravel, locally with lenses of silt, clay or peat. Older historical logs describe the presence of 'ballast' – thought to coincide with this stratum, while elsewhere it is described as sand with gravel. In the south of the site historical borehole logs indicate the Kempton Park Gravels are present beneath the alluvium down to between 6.4 and 10.7 mbgl. In the north of the Site the gravels appear to be thicker, though their base was not proved within the site.

London Clay Formation

The London Clay Formation generally comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite. It also includes a few thin beds of shells and fine sand partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occur in places. Glauconite is present in some of the sands and in some clay beds, and white mica occurs at some levels. Within the Site, the depth below ground to the top of the London Clay is quite variable, being as shallow as 6.4 mbgl in the south, while in the north it appears to be greater than 11.2 mbgl.

Mineral resources and environmental designations

Westminster is not identified within the Local Aggregate Assessment for London (GLA, 2016) as one of the Boroughs of strategic importance for the supply or transport of aggregates to supply the capital, and there are no geological conservation designations covering or adjacent to the Site.

10.2.2. Hydrology and Hydrogeology

The nearest and only significant surface water feature in the vicinity of the Site is the River Thames. The river is located adjacent to the east boundary of the site, and flows northwards at this point on its meandering course. Being tidal the stretch of the river concerned is classified as a transitional water body.

Based on the proximity of the river, groundwater is likely to be present beneath the Site at shallow depths, though the few historical borehole logs available within the site do not indicate groundwater was struck as they were drilled. Depending on the silt and clay content of the alluvium, the formation may act as a barrier to groundwater flow. The Kempton Park Gravels may be saturated and perched water may be present within the made ground. This groundwater is very likely to be in hydraulic continuity with the surface water of the River Thames. The flow direction of the groundwater is unknown, but may be bidirectional depending on the degree of tidal influence from the river. In absence of any other information it is considered likely that the net groundwater flow direction is generally eastwards towards the river, and under low hydraulic gradients.

While water will be present in the underlying London Clay bedrock, this groundwater is considered immobile owing to the generally low permeability of the formation.

The superficial deposits beneath the site are classified by the Environment Agency as a Secondary (Undifferentiated) Aquifer. The London Clay is classified as Unproductive Strata. Made ground is not designated by the Environment Agency (EA).

With regard to aquifer vulnerability to pollution, the Site is located within an area classified by the EA as a Minor Aquifer with soils of high leaching potential.

The Site is not located within a groundwater Source Protection Zones (SPZs) as defined by the EA. The nearest SPZ to the site is an SPZ Zone 2 (Inner Zone) present approximately 340m south of the site.

There are no known licensed water abstractions within 500m of the Site.

10.2.3. Geo-hazards

The BGS maintains a geographic database that classifies the general level of risk associated with different commonly encountered geological hazards (mainly regarding ground stability) based on mapped geology. The risk classifications for the site are presented in Table 10-1, below.

Table 10-1 Potential geo-hazards within and in the immediate vicinity of the site

Ser.	Geo-hazard type	BGS risk rating
1	Potential for collapsible ground	Very low
2	Potential for compressible ground	Moderate
3	Ground dissolution	No hazard
4	Landslide	Low
5	Running sand	Very low
6	Shrinking/swelling clay	Low to moderate

No known natural cavities are recorded beneath or within 250m of the Site, and the area is not known to be affected by mining activities.

The Site lies within an area where less than 1% of homes are above the action level (defined by the Health Protection Agency), therefore no radon protective measures are necessary.

10.2.4. Land Contamination

In addition to understanding the nature of the geology, soils and groundwater associated with a Site, baseline conditions required to inform consideration of potential impacts relating to land

contamination include the identification of potential existing sources of contamination, and potential contamination receptors that may be affected by contamination.

10.2.4.1. Potential Contamination Sources

Potential sources of contamination in the context of soils, geology and hydrogeology can be divided into residual sources left behind as a result of historical land use, and sources related to contemporary land use.

Historical Land Use

Historical maps from 1873 to 1999, mainly from the Ordnance Survey, were acquired as part of the Envirocheck™ Report and reviewed for evidence of potentially contaminative historical land use or activities within or near to the site. A brief summary of the findings is presented below:

- In the late 19th Century, the shoreline of the River Thames was further west, and the banks were occupied by a number of commercial and industrial activities including two coal wharves, a cement works, and an oil factory (possibly kerosene or whale oil), a brewery, distillery, cooperage, and a graveyard;
- Sometime between 1898 and 1916, the wharves were removed and replaced by Victoria Towers Gardens;
- An electricity works was recorded to the west of Lambeth Bridge from 1916 to 1940.
- By the early 1950s, the remaining wharves and local industrial/commercial activities were no longer recorded on maps;
- During the latter half of the 20th century there was little significant change in land use evident from historical maps.

Based on the location of the Site in central London there is a generalised potential risk of unexploded ordnance (UXO) such as war-time bombs being present beneath the site. UXO is not usually considered a contaminant (except in cases where explosive chemicals may be present in the soil outside of munitions, such as at weapons manufacturing facilities), however it does constitute a risk associated with soils.

Only two historical pollution incidents are recorded by the Environment Agency within 250m of the site. A category 3 minor incident involving oils was recorded approximately 210m east of the site at Vauxhall in 1995. A category 3 minor incident involving oils was recorded approximately 180m south of the site in Lambeth in 1997.

Contemporary Land Use

Contemporary trade directories record 10 entries within 250m of the Site, of which only two are considered to be potentially contaminative: a dry cleaners at 54 Horseferry Road, 160m southwest of the site; and another at 27 Page Street located 240 m southwest of the site. Dry cleaning operations are potential sources of chlorinated solvents, though it should be noted that a dry-cleaning business may not carry out cleaning operations on the premises, particularly given the limited size of commercial premises in central London.

Three discharge consents are recorded within 250m of the Site. Two consents are for storm water overflow discharge, located 30m and 90m south of the site, and one is for sewerage discharge and is located 140m north of the Site, associated with the Palace of Westminster.

There are no Local Authority Pollution Prevention and Control permits or enforcement and prohibition notices recorded within 250m of the Site.

No known operational or historical landfills are recorded within 250m of the Site.

No fuel stations are recorded within 250m of the Site.

10.2.4.2. Potential Contamination Receptors

Human Health

Site users – includes children as there is a play park present. However, the duration of presence on site is short as there are no residents.

Off-site human health receptors include occupants of neighbouring buildings. Though there are residential properties in the surrounding area, there are not known to be any adjacent to the Site. Most, if not all, of the nearby buildings are commercial offices or administrative buildings normally occupied only during business hours.

Controlled Waters

There are two potential controlled waters receptors that might be affected by contamination; the Secondary Aquifer comprising the superficial deposits beneath the Site, and the River Thames. The transitional waters of the adjacent stretch of the River Thames are classified as a Marine Nature Reserve.

10.2.5. Data gaps

Detailed information on ground conditions beneath the Site is currently limited to records from a small number of historical boreholes with unreliable logging, and non-intrusive survey results which are understood to be limited to very shallow depths. In order to close this data gap, detailed intrusive ground investigation will be required.

Some anecdotal evidence from a number of websites whose references cannot be verified suggests the possible presence of tunnels beneath the Westminster area (possibly constructed for communications between various government buildings). There is no evidence of the tunnels in publicly available information sources. If any are present, it is possible depending on the nature of their intended use, that information on their location may be restricted. In order to close this data gap, it may be necessary to raise the issue within MHCLG and have enquiries made by personnel with the appropriate security clearance to at least rule out the possibility that unidentified voids exist beneath or in the immediate vicinity of the Site.

10.3. Potential significant effects and mitigation measures

10.3.1. Construction

During construction, the most likely risk to land and soils that could arise is possible contamination of soils due to a pollution incident (e.g. spilt fuel or oil from machinery and plant) at the Site. It is likely that this risk can be effectively controlled through the application of good site layouts and working practices. Potential mitigation measures could include (but are not limited to):

- Appropriate pollution emergency response planning;
- Use of suitable spill kits and containment measures for refuelling on Site; and
- Use of biodegradable oils and lubricants in construction plant.

Potential disturbance and mobilisation of contamination as a result of construction activities, particularly those involving excavation, is a significant potential impact that requires consideration. For example, changes to the drainage characteristics of the land when topsoil is temporarily removed for construction may increase the volume of rainfall infiltration entering soils and result in the transport of contamination to groundwater and/or the River Thames. Boreholes, wells, piles and other structures sunk into the ground can also potentially form preferential pathways for the transport of contamination, increasing the rate at which it might reach receptors. Such potential

impacts can usually be significantly mitigated using best practice construction methods such as clean drilling techniques, the preparation of a discovery strategy to deal with unexpected ground conditions, appropriate materials handling procedures, and a piling risk assessment. Risks can also be mitigated using site investigation to reduce uncertainties regarding ground conditions prior to construction and, where necessary, soil and/or groundwater remediation techniques.

Generation of waste is a notable potential issue during the construction phase. Excavated soils may be contaminated and will thus require waste characterisation with appropriate handling and disposal.

Construction activities including excavation and temporary ground loading with vehicles and plant may locally change the physical conditions of the geology and soils and may increase the risk of a geo-hazard being realised. For example, vehicles and heavy plant may cause compression or collapse of soils owing to their load, or changes in drainage may increase or decrease moisture contents causing volumetric changes in shrinking/swelling clays. Such effects can be mitigated through good construction practices such as the correct selection of plant, equipment and construction methods, the use of temporary surfacing to spread vehicle loads, and appropriate phasing of the works.

Construction activities also present potential environmental health risks that may affect human receptors including site workers and local residents. With respect to soils, geology and groundwater, these include potential exposure to contaminated materials. Construction workers may be directly exposed, particularly during excavation work, while local residents could be exposed by wind-blown dust. Environmental health impacts like these can usually be adequately mitigated through best practice construction techniques such as good site hygiene, use of appropriate Personal Protective Equipment (PPE), and regular wetting of soils to suppress dust.

10.3.2. Operation

The change in land use, in terms of who is present on the Site and for how long, imposed by the Scheme may change the levels of human health risks present in relation to land contamination. Mitigation will require evaluation of the degree of risk during the operational period to ensure that it remains acceptably low. Where necessary, design changes can be made to ensure that source-pathway-receptor linkages are restricted, or broken, to reduce risk to acceptable levels.

Made ground and alluvium present potential sources of ground gas which can be a hazard where spaces for its accumulation are present on a site. The construction of enclosed underground spaces that will be occupied (albeit temporarily) by humans, means that this is a significant potential impact that requires appropriate consideration. Where further assessment indicates a significant risk, mitigation can be achieved with appropriate design measures such as gas protection membranes.

The construction of significant underground structures, including sheet piling, may cause long term changes to the groundwater conditions beneath the Site. This may result in the potential increase in flood risk related to groundwater. Structures may also create or change preferential pathways for contaminant transport, and thus change the risk to controlled waters receptors. Where further assessment indicates significant risk, mitigation can be achieved by engineered drainage design solutions, and selection of appropriate construction techniques.

It should be noted that the potential impacts of the Scheme related to soils, geology and groundwater are not necessarily all negative. With appropriate design it is possible that the existing level of geo-environmental risk can be reduced by the development. For example, where existing soils are found to be affected by contamination, excavation and off-site disposal during the construction of the void for the underground elements of the scheme may restrict or break potential contaminate linkages by removing the source.

10.3.3. Next steps

In summary, the baseline geo-environmental conditions at the Site briefly comprise a geological succession typical for central London, with several meters of made ground underlain by alluvium and gravels, underlain by London Clay. While no significant geological or mineral resources are present at the site, both human health and controlled waters receptors are present comprising site visitors and workers, groundwater and the adjacent River Thames.

Desk study review of available information indicates there are likely to be plausible potential contaminate linkages as likely residual sources of contamination from historical land use have been identified.

The Scheme includes significant excavation and construction of underground structures, so significant interaction with ground conditions is anticipated.

Further assessment will be required to develop the preliminary conceptual site model and reduce uncertainties regarding ground conditions beneath the site. A carefully designed intrusive ground investigation is recommended to facilitate this further assessment.

Based on the desk study review of baseline conditions, it is recommended that the following subjects should be **scoped out**:

- Geological sites of importance;
- Mineral resources; and
- Soil resources.

Geo-environmental subjects that will need to **remain in the scope** of the EIA include:

- Soil-water interaction (e.g. ground stability and groundwater elements of flooding);
- Land quality (contaminated land); and
- Waste soils.

11. Archaeology

11.1. Methods used in Scoping

An initial Heritage Appraisal was undertaken by Atkins in January 2017 (Atkins, 2017b). The initial appraisal sought to identify the potential constraints sensitivities around the Site specifically in relation to cultural heritage and archaeology. This section provides a summary of the results of the appraisal with regard to archaeology (Built Heritage is addresses in Chapter 6).

11.1.1. Assessment criteria

This scoping assessment has been undertaken in accordance with the methods set out in the Design Manual for Roads and Bridges (DMRB), the specific established method for the assessment of the effects of proposals on the historic environment for EIA. Although it was developed for road schemes, this method is sufficiently robust for other types of development. The Environmental Statement (ES) should identify the likely effects on the significance of heritage assets, as required by the National Planning Policy Framework (NPPF).

11.1.2. Proposed scope

Due to the high-density nature of the archaeological resource within Westminster, the defined Study Area for assessment should be limited to a 500m area around the Site for designated heritage assets and to a 250m area for non-designated assets.

The ES will be undertaken in accordance with DMRB, and the Standards and Guidance for Historic Environment Desk-based Assessment set out by the Chartered Institute for Archaeologists (CIfA 2014). The Greater London Archaeology Advisory Service (GLAAS) should also be consulted in relation to the archaeology relating to proposed development.

The ES should include a range of sources, including:

- Data from the Greater London Historic Environment Record (GLHER);
- Data from Historic England's National Heritage List (NHLE);
- Original sources held at the National Archives;
- Historic cartographic sources;
- Historic secondary sources; and
- Online data and secondary sources.

11.1.3. Establishing the baseline

Consultation with GLAAS will be undertaken to help identify any archaeological assets likely to be affected by the proposals.

An initial Heritage Desk-Based Assessment (DBA) was undertaken by Atkins in January 2017 (Atkins, 2017b). This appraisal sought to identify the potential Cultural Heritage constraints sensitivities around the Site most specifically in relation to archaeology. The baseline conditions below (section 6.2) provides a summary of results.

Following recommendations made in the DBA, and preliminary consultation with GLAAS, a ground penetrating radar (GPR) survey was undertaken at the site of the proposed memorial. This report will be presented as an appendix to the ES, and will inform an additional programme of archaeological mitigation. The GPR survey has not removed the requirements for further archaeological works, but has broadly confirmed the baseline archaeological understanding of the site outlined below.

Whilst considering the archaeological mitigation strategy, the 2017 appraisal however, did not provide a detailed assessment of the significance of effects posed by the Scheme. In order for a comprehensive assessment to be undertaken, the ES will follow the methodology set out in the DMRB, Volume 11, Section 3, Part 2, Cultural Heritage, paragraph 5.13.1 (Archaeological Remains).

Heritage value is determined by professional judgment, grounded in established criteria. These are elaborated in English Heritage's Conservation Principles (2008), which sets out four values: evidential, historical, aesthetic and communal values. These encapsulate architectural, historic and archaeological interest and are consistent with the DMRB methodology. Historic England is currently updating Conservation Principles. Should the new version be finalised before the preparation of the ES the revised version of the significance criteria will be followed.

In addition to the ES, where adverse impacts are identified, a judgment should be made as to whether there is substantial or less than substantial harm to designated archaeological assets, in accordance with the NPPF, and the relevant planning tests applied. Harm will need to be weighed against the wider benefits of the scheme

11.2. Baseline conditions

11.2.1. Location and constituent heritage assets

Victoria Tower Gardens is a Grade II Registered Park and Garden within the City of Westminster.

The Gardens are situated:

- Within a Tier 1 Archaeological Priority Area (APA), where known or suspected archaeological remains of national significance (of schedulable quality) are to be found;
- Within the Westminster Abbey and Parliament Square Conservation Area;
- Immediately south of the 'Palace of Westminster and Westminster Abbey' World Heritage Site (WHS) (1000095);
- Immediately south of the Houses of Parliament and Palace of Westminster (1226284), Grade I;
- Immediately south of Victoria Tower Lodge and Gates to Black Rod Garden (1066149), Grade I; and
- C. 150m south-east of Westminster Abbey (1291494), Grade I.

The Gardens contain four listed heritage assets within their boundaries:

- Statuary Group of the Burghers of Calais (1066150), Grade I;
- Buxton Memorial Fountain (1066151), Grade II*;
- River Embankment from the Houses of Parliament to Lambeth Bridge (1357335), Grade II; and
- Statue of Mrs. Emmeline Pankhurst (1357336), Grade II.

11.2.2. Archaeological potential

Victoria Tower Gardens has potential for finds from the prehistoric period and remains from the Roman to medieval periods. Although no assets dating to these periods have been identified within the Site to date, there are previously recorded remains of these periods within the vicinity of the Gardens.

It is expected that the archaeology of Victoria Tower Gardens has a clear north-south dividing line partitioning the site into two archaeological characterisations. The eastern half of the gardens represent an area reclaimed from the River Thames during the creation of Bazalgette's Victoria Embankment in the late 19th century. Here early riverine deposits and associated features may be

preserved at considerable depth beneath 19th century made ground. This dividing line has broadly been confirmed by a programme of geophysical survey including ground penetrating radar (GPR), electron resistance tomography (ERT) and seismic survey.

The western half of the Site comprises an area which became developed during the medieval and post medieval periods; initially as wharves and related features associated with the ecclesiastical and secular administrative centre at Westminster established by the later Anglo-Saxon kings. This area may be fronted on its eastern side by a former river wall or sequence of river walls representing staged reclamation onto the Thames foreshore. Complex archaeological deposits can be expected in this area including evidence for former docks, wharves, warehousing and other buildings; including a potential 16th century Royal slaughterhouse and the remains of the river mill associated with Westminster Abbey. It is also possible that further evidence related to the Palace of Westminster and Westminster Abbey may extend into the northern edge of the gardens. Given the lack of modern redevelopment within the gardens it is likely that any such remains will be relatively well preserved even to relatively shallow depth.

The medieval and post medieval archaeology itself represents an infilling of the former mouth of the Tyburn river at its confluence with the Thames. The mouth of the Tyburn describes the southern edge of the Isle of Thorney, a former eyot within the braided channels of the Thames upon which the later Saxon administrative and ecclesiastical centre at Westminster was founded. It has also been postulated that this island may have incorporated the northern end of an ancient crossing of the Thames.

Deeply buried remains in this area have a high potential to contain waterlogged deposits in which a good survival of unusual artefacts such as preserved wood and leather might be expected as well as significant palaeoenvironmental evidence charting the Holocene development of the Thames and its tributary, the Tyburn. The possibility of there being a perched water table within more recent made ground across the site adds to this potential and could mean an environment conducive to organic survival could survive at a higher level within the archaeological sequence than might otherwise be predicted.

The existing Victoria Tower Gardens have undergone internal changes since their original creation in the 1870s and the evidence for former path and bed alignments have been clearly demonstrated by the geophysical survey undertaken of the Site. This geophysical survey also confirmed the broad east-west division of the Site between historic waterfront development and 19th century reclamation into the Thames. In addition, the geophysical survey identified anomalies that may represent former structural footprints concentrated within the western portion of the gardens.

World War II bomb damage is likely to have had a localised, severe impact on below-ground remains: three high-explosives bombs exploded within the northern half of the Gardens, one exploded on the northern border and one on the southern border near the roundabout. The Gardens have also undergone several re-orderings, including one in 1952 when the Burghers of Calais sculpture (c. 1895) and Pankhurst memorial (c. 1930) were re-sited. The Buxton Memorial Fountain (c. 1865-6) was removed from Parliament Square in 1949 and installed in the gardens in 1957. Today, the Gardens feature a central, open grassed space, with perimeter paths, mature trees and shrubbery, along with the three standing monuments.

Overall there is a very real possibility that non-designated archaeological remains of an equivalent significance to scheduled remains will be present under Victoria Tower Gardens, particularly towards its northern end. Although non-designated, any such remains of commensurate significance would be subject to the same policy and guidance tests as designated remains.

11.2.3. Data gaps

An updated HER and NHLE data set will be required as part of the ES, and a targeted programme of archival research may be required to fill the gaps and augment the map regression undertaken as part of the DBA.

The presence, nature and significance of the archaeological resource will require further assessment. Where possible, archaeological investigations may be required as part of any ground investigations undertaken as part of the ES, and investigations on the Site as part of the process of detailed construction design should also be subject to appropriate archaeological monitoring.

11.3. Potential significant effects and mitigation measures

11.3.1. Construction

Construction of the memorial will require excavation of an extensive area within the central portion of Victoria Tower Gardens, straddling the likely interface between the western (medieval riverside) and eastern (19th century reclaimed) sections of the Site. The excavation of the memorial and associated educational facilities will totally remove all archaeology within the footprint to the depth of the construction (c. 8m blg). Remains that may be truncated or removed include:

- Evidence for a former river wall or succession of river walls built out into the Thames;
- Potential evidence for medieval and post medieval wharf, dock and associated features including potentially jetties, river stairs and boats;
- Potential buried remains associated with the Saxon and medieval Royal and ecclesiastical centre at Westminster;
- Potential deeply buried remains (including palaeoenvironmental) associated with Thorney Island, former channels of the Thames and the mouth of the River Tyburn; and
- Potential evidence for the former Victorian and later redesigns of Victoria Tower Garden.

The Site is within a Tier 1 APA, meaning there is a high potential for nationally significant archaeology to be encountered. A 250m area around the Site contains 71 known archaeological assets and 13 previous archaeological interventions. The northern portion of the Gardens is likely to have a higher survival of archaeological remains than the southern portion. However, subterranean work within Victoria Tower Gardens is likely to encounter archaeological remains, as identified in Section **Error! Reference source not found.**. Based on the assessment of the Westminster APA, there is a high potential for these remains to be of national significance commensurate to designated (scheduled) status. Removal of any such remains would be considered a major adverse impact and would have a significant adverse effect.

11.3.2. Operation

All direct physical impacts to buried archaeology will occur during the construction phase. No direct physical impacts will occur during the operational phase.

11.3.3. Next steps

11.3.3.1. Mitigation measures and further investigation required

General recommendations

Archaeology

Close consultation with the GLAAS is necessary to identify appropriate evaluation and compensation/mitigation measures for archaeology.

The proposed location is within a known APA, and the potential for significant archaeological remains has already been established. Nevertheless, further desk-based investigations are likely to be required to establish the nature of buried archaeology within the scheme footprint.

Site-based archaeological investigation will be required and may include the following, to be agreed with GLAAS:

- Archaeological excavation, including evaluation trenching and/or targeted area excavation; and
- Environmental sampling for waterlogged deposits.

12. Traffic and Transport

12.1. Methods used in Scoping

Chapter 12 deals with the impacts of the Memorial on all aspects of transport, including vehicle and pedestrian movements as well as public transport patronage. The chapter identifies the number and distribution of trips anticipated to be generated by the Memorial for all transport modes, together with an assessment of these trips' impacts on the transport network and any associated mitigation measures.

The principal assessment criteria for traffic and transport are as follows:

- Changes in traffic flows as a result of the development: increase or decrease in road traffic flows as a result of the installation of the Memorial;
- Severance: the perceived division that can occur within a community when it becomes separated by a major transport artery (e.g. road);
- Driver delay: valuation of the delay (or benefit) to drivers;
- Pedestrian delay: the change in the ability of pedestrians to cross a given highway link due to changes in traffic flow, speed, composition, highway design;
- Pedestrian and cyclist amenity: the relative pleasantness of a pedestrian or cyclist journey, influenced by traffic flow but also including consideration of the overall relationship between pedestrian/cyclist and traffic (e.g. air quality and noise);
- Public transport: identifying the future baseline conditions based on factored survey information and the expected usage of public transport for each mode, route and direction;
- Fear and intimidation: linked to pedestrian amenity and influenced by factors including traffic flow, composition and pavement conditions; and
- Accidents and safety: increase or decrease in risk of road traffic accident resulting from changes in traffic flows and street layout.

Trip generation calculations will be undertaken with reference to a number of comparator sites, both in London and elsewhere, which are considered to reflect the nature of the Memorial. Visitor numbers are also likely to be closely related to footfall in nearby locations, and therefore an assessment of the patronage of other sites close to the Memorial will also be undertaken. Servicing trip generation estimations will be based on the land use classes under which the application is being made.

12.2. Site description

The Site is in the City of Westminster immediately south of the Houses of Parliament. The Memorial will occupy the southern part of Victoria Tower Gardens, which is bounded by Millbank to the west, the River Thames to the east and Lambeth Bridge to the south.

There are a number of pedestrian crossings along Millbank which facilitate access towards the entrances to Victoria Tower Gardens. Signalised crossings, uncontrolled crossings and Zebra crossings lie close to three of the park entrances. This enhances the permeability of Millbank by giving pedestrians multiple opportunities to cross and access the different gates. There are several bus stops along Millbank which are situated immediately adjacent to the site. Westminster Underground station is also within proximity of the Memorial, with additional bus routes also stopping on Parliament Square. Millbank Millennium Pier is located a short distance south of the Site. The Scheme would therefore be easily accessible by public transport.

Data on pedestrian, cycle and vehicle movements as well as kerbside activity was collected and analysed in 2017 (Atkins, 2017c). This provides details of the number and nature of transport movements in the vicinity of the Site.

12.2.1. Data gaps

Once the final design of the Memorial has been confirmed, the floor areas of each land use category as well as the anticipated number of employees for each element of the Memorial will be known. This information is required to inform the trip generation, waste storage requirements and blue badge parking provision.

It is understood that visitor access to the Memorial will be by free, pre-booked admission slots. To assess the pedestrian impacts in particular, further details are awaited regarding provision for visitors turning up on the day. The current working assumption is that 90% of tickets will be allocated in advance, leaving 10% available on the day. The precise location of the collection point for tickets on the day will be confirmed in due course once the internal site layout has been refined, and this in turn will allow the pedestrian impacts to be assessed in detail.

The 2017 surveys covering pedestrian, cycle and vehicle movements were comprehensive and have gathered the majority of data required to inform the assessment. It is recommended that an allowance be made for a localised parking beat survey, specifically focusing on blue badge parking. The kerbside proposals may potentially include a lower quantum of blue badge parking than the Memorial would be expected to provide (depending on which land use category is used).

The Memorial is likely to generate significant localised pedestrian flows, in particular along Millbank. Once the internal layout of the Memorial is confirmed, a decision will be taken regarding the method of pedestrian assessment which is required for the footway. It should be clarified whether the scope of LEGION pedestrian modelling would be limited to the internal site, even if the pedestrian access is close to the park access, in which case queuing may extend onto the public footway.

Discussions are ongoing with TfL and City of Westminster regarding the existing usage of the coach stop on Millbank (southbound) and how this could be combined with the adjacent bus stop to free up kerb space for other purposes. The outcome of these discussions will inform the kerbside design and thus the impacts of servicing and coach movements.

The construction timeline will be required to inform the construction-phase assessment. Based upon the indicative design of the Memorial, it is anticipated that the construction programme will require some large goods vehicles but no abnormal indivisible loads. This will be verified once the final design of the Memorial is confirmed.

12.3. Potential significant effects and mitigation measures

12.3.1. Construction

Impacts relating to traffic during construction will be temporary, and will result in short term effects only. The scope of any forthcoming Transport Assessment will need to be developed in consultation with the City of Westminster.

The construction-phase transport impact most likely to require assessment is the loading and unloading activity of delivery vehicles. Permanent changes are proposed to the kerbside arrangements along Millbank to accommodate the Memorial, and the construction-phase assessment will be undertaken on the basis that changes to the kerbside can take place at the start of construction. This will allow mitigation measures to be incorporated into the new

arrangements for the construction phase, to then be converted to the final arrangement upon commencement of the operational phase.

Mitigation measures will be developed once the anticipated nature and profile of construction vehicle movements is known, but are likely to include:

- Incorporation of construction-phase servicing bay requirements into the Millbank kerbside designs, to enable a smooth transition subsequently to the operational phase;
- Specific mitigation measures for cyclists to mitigate the effects of kerbside changes along Millbank;
- Temporary signage for bus users in the event of bus stop relocation; and
- Designation of construction traffic routes which are suitable in both the nature of roads used and the turning movements required.

Any construction-phase effects are anticipated to be comparatively short in duration and unlikely to have major impacts.

12.3.2. Operation

Once the Scheme is operational, the key operational considerations for transport and movement are likely to be associated with coach drop off/pick up and parking, footway and pedestrian crossing capacity, crowd management and queuing around the gates to the Gardens, and potentially impact on the underground station and public transport. The section below describes the methodology which is proposed to estimate the number of trips by each mode of transport, which will in turn determine the operational impacts.

Precedents of visitor numbers from Holocaust Memorials around the world will be used to estimate annual visitor numbers for the Scheme. The Operational Business Plan produced by Barker Langham estimates that it would attract between 300,000 and 890,000 annual visitors². For robustness, the higher end of the range will be rounded to 1,000,000 annual visitors in order to ensure robustness in trip generation forecasts. This is also the figure which also been used to inform the internal circulation strategy and pedestrian modelling.

To deduce trip distribution and mode split, the 1,000,000 annual visitors will be broken down into the following three categories for detailed analysis:

- School groups;
- Special interest groups; and
- General admission visitors.

Given the overlap between the content at the Scheme and the mandatory elements of the Key Stage 3 History National Curriculum, a significant number of school groups are expected to visit. Drawing on comparable sites in London, it is projected that up to 100,000 pupils per year could visit the Scheme.

It is considered beneficial to calculate the trips generated by special interest groups separately to general admission visitors, since the former are more likely to arrive by coach as an organised party. A working assumption will be that 60,000 of the one million annual visitors will be part of a special interest group,

The remainder of the total visitor numbers not ascribed to either School Groups or Special Interest Groups will be assigned to the General Admission category. This amounts to a projected 840,000 annual visitors, of which approximately one third (280,000) are anticipated to be new trips on the wider transport and pedestrian network. The remaining 560,000 trips are expected to be linked

² Barker Langham Operational Business Plan, paragraph 2.5.2.1

trips by people already visiting nearby attractions such as the Houses of Parliament and Westminster Abbey.

Mode Split Methodology

Research on comparable central London attractions drawing large numbers of school visits found that the majority of trips originated from outside London. Data from the Houses of Parliament Education Centre, for example, indicates that 20% of school groups originate from the Greater London area. Given the proximity of the Houses of Parliament Learning Centre to Victoria Tower Gardens and that both attractions provide material linked to mandatory aspects of the National Curriculum, a similar distribution of school visitors is expected for the Scheme: indeed, some school groups may choose to spend half a day in each of the two visitor centres. The location of two similar trip attractors so close to one another will therefore serve to reduce the number of new vehicle trips added to the highway network.

It will therefore be assumed that of the 100,000 projected annual school visitors, 20,000 (20%) will be from London and will be assumed to travel by public transport, as is commonplace for school trips by both primary and secondary school pupils within the capital. The remaining 80,000 visitors will be assumed to travel by coach, which is the main mode of travel for school trips from outside London. These 80,000 annual visitors equate to 409 people per school day; with an average coach capacity of 50, this is equivalent to 8 coaches per day during term time, and no journeys on the remaining 170 days a year which fall outside of term time. Although it is understood that only 50% of school group visits to the Houses of Parliament arrive by coach, an 80% estimation will be used for robustness, since this has a more onerous requirement for coach bays.

Whilst it is difficult to predict the demographics of the special interest group visitors, precedent from similar memorials indicate that a range of mobility needs and transport preferences should be anticipated. A working assumption will be that half will travel by public transport and half by coach. As such, 30,000 special interest group visitors are expected to arrive by coach: spread across a whole year, this equates to less than two coaches per day.

As set out above, it will be assumed that one third of the general admission visitors will constitute new trips on the public transport network; these will be distributed onto the network based on the existing trip distribution during the proposed hours of operation. The remaining two thirds of general admission visitors are not expected to represent new trips on the wider transport network; they will be treated as new pedestrian trips between existing trip attractors and the Scheme, and will be distributed based upon existing footfall patterns on pedestrian routes around the Scheme. Given the location of the Site where there are excellent transport links and minimal car parking provision, only blue badge holders are expected to arrive at the Memorial by car. This amounts to 2 car arrivals an hour, totalling to more daily car trips in summer days. The TRICS database will be used to estimate the number of taxi trips made by general admission visitors, which amount to less than 1% of all trips and equates to 14 taxi trips per day.

Once further details are known regarding the anticipated split between advance tickets and on-the-door tickets are known, more precise calculations regarding pedestrian footfall along different sections of the footway can be undertaken. However, it is being assumed that the ticket booth would be located within the grounds of Victoria Tower Gardens, and therefore all visitors to the Scheme – both advance and on-the-day bookings – will enter via the same accesses to the Gardens, with no need to distinguish between them. It is recognised that some pre-booked visitors approaching from the south may wish to enter the Memorial from the southern end via the shortest route, but given that the vast majority of visitors are anticipated to approach from the north (where the Houses of Parliament, Westminster Abbey and Westminster station are situated), this is not considered to make a material difference to trip distribution.

The principal anticipated operational effects, together with potential mitigation, include:

- High footfall and queuing extending onto the Millbank footway: mitigated by internal site design and queue management;
- Reduction in pedestrian comfort level along Millbank: mitigated by promotion of alternative through routes including along the Thames path;
- Pedestrian congestion at the Site entrance in the event of visitors without reservations being turned away: mitigated by overall ticketing strategy/management and clear signage to the off-site ticket booth (if applicable);
- Increased parking stress, if blue badge parking is to be located on-street: mitigated by locating these bays in locations where there is deemed to be existing spare capacity;
- Lengthening of bus journey times as a result of bus lane removal on Millbank;
- Kerbside congestion: mitigated by staggering of activities (e.g. daytime coach drop-offs and night-time servicing) and enforcement of maximum durations of stay; and
- Displacement of existing kerbside activities: mitigated by demonstrating the existing capacity of other kerbside bays in the vicinity of the site.

12.3.3. Next steps

As a stand-alone Transport Assessment report will be produced to support the planning application, it is proposed that all relevant issues are documented within this report, and that transport risk is **scoped out** of the EIA.

The next steps with regards to traffic and transport assessment are as follows:

- Undertaking the detailed trip generation and distributions calculations based on the methodologies described above, subject to any refinement once comments from WCC and TfL have been received;
- Undertaking Pedestrian Environment Review System / Pedestrian Comfort Level analysis as necessary, once trip generation numbers are known;
- Refining the kerbside layouts once the internal Site layout is finalised; and
- Undertaking a parking beat survey for blue badge spaces.

Two criteria will be included in the assessment for completeness but are unlikely to require any analysis given the nature of the development proposals, namely:

- Severance: no new highway links are being created, and the number of additional highway trips is likely to be negligible compared to the pedestrian footfall. There are already several zebra crossings along Millbank which enable pedestrians to cross on demand. It is therefore considered that severance can be discounted as an impact;
- Fear and intimidation: the anticipated changes in traffic flow and composition along the local highway network are negligible, and no changes are proposed to the footways with the exception of small amendments to the crossovers which will be used by a small number of vehicles. The Site is located in central London with good natural surveillance. Fear and intimidation are therefore not considered to require specific assessment.

13. Water Quality and Flood Risk

13.1. Methods used in Scoping

This chapter considers the potential effects of the Scheme on the surface water aspects of the local environment, and the implications for flood risk. This has primarily been undertaken using a desk-based approach, using readily available information contained within the following sources:

- The Environment Agency's Catchment Data Explorer (<http://environment.data.gov.uk/catchment-planning/>);
- The Flood Map for Planning (<https://flood-map-for-planning.service.gov.uk/>);
- The Natural England website; and
- Defra and Multi-agency Geographical Information for the Countryside (Magic www.magic.gov.uk).

13.2. Site description

Victoria Tower Gardens are located immediately adjacent to the River Thames. The River Thames at this location is tidal and is classified under the Water Framework Directive (WFD) as part of the Thames Middle transitional water body (ID number GB530603911402). This water body covers a large portion of the tidal River Thames, extending from Battersea Bridge downstream to Mucking, Essex (north bank) and Cliffe Marshes, Kent (south bank). The Thames Middle is designated as a Heavily Modified water body, and its current WFD status is that the water body is at 'Moderate' ecological potential. Particular issues which are contributing to the current WFD classification of 'Moderate' ecological potential include recorded levels of zinc, tributyl-tin, dissolved oxygen and dissolved inorganic nitrogen in the water body, and the status of the flowering plant communities.

As discussed in Chapter 5, the River Thames at this location is also designated as an SMI, with the ecological features of interest being the intertidal foreshore (comprising gravel and sand), and the presence of some artificial structures (such as wharves or embankment walls) that provide some roost or nest sites for birds and waterfowl.

A Level 1 Flood Risk Assessment has been carried out to inform the Scheme (Atkins, 2017d). This initial assessment identified that the Site is at significant risk of flooding from the following potential sources:

- Tidal flooding (although this risk is extensively managed by the presence of flood defences in the immediate and wider area);
- Flooding from surface water; and
- Flooding from sewers.

Initial consultation was held with the Environment Agency and informed recommendations to manage these flood risk impacts, these are summarised below.

13.2.1. Data gaps

No primary data has been collected in relation to surface water quality, river hydrology or flood risk, however at this stage these data are not considered necessary for the initial appraisal of potentially significant environmental risks to the surface water environment.

13.3. Potential significant effects and mitigation measures

13.3.1. Construction

13.3.1.1. Water Framework Directive

At the time of writing, the Scheme does not involve any work being undertaken directly within the river itself or to the river banks (embankment walls), as the Site is contained within the Gardens and other riverside parkland to the south of Lambeth Bridge. The Scheme and the construction works are therefore not considered to constitute a new 'modification' to the Thames Middle transitional water body, and no further assessment of WFD issues in relation to construction is proposed (i.e. this issue will be **scoped out** of the EIA). As the detailed Scheme design is still at an early stage of development, this decision may need to be reviewed if any aspects of the proposals are altered to incorporate works directly to the river walls, or in the channel of the tidal River Thames.

13.3.1.2. Water quality

Construction, excavation and dewatering can affect surface water quality by introducing additional suspended solids or other contaminants into surface runoff from construction areas. Whilst good site practice can minimise these risks, it is important that these issues are addressed. During construction, the most likely risk that could arise to the water environment is possible pollution of the River Thames due to run-off of silt or other pollutants (e.g. spilt fuel or oil from machinery and plant) from the construction site. Uncontrolled discharge of these (either directly to water or to soils, thus contaminating runoff) can lead to impacts on water quality, with secondary or indirect implications for aquatic ecology and habitats; in this case the River Thames and Tidal Tributaries SMI.

It is considered that these risks during construction can be managed to an appropriate level through the implementation of appropriate construction working methods, the application of good site layouts and working practices, controls on site plant and pollution response planning. There are well-established mitigation methods for construction working that can be employed to effectively manage pollution risks, including guidelines for working over or adjacent to water. Guidance on pollution prevention was provided in the Pollution Prevention Guidelines (PPG) series produced by the Environment Agency, Northern Ireland Environment Agency and SEPA, which has since been withdrawn from use in England. However, these documents are still considered to represent a reliable source of good practice guidance, and (in the absence of any replacement guidance) can still be referred to, to inform any necessary site mitigation. The measures outlined in Chapter 10 to control potential pollution of soils will also be applicable to protecting the water environment. With the application of these guidelines to construction planning and site operations, the risks of a 'significant' water pollution event occurring are very low. Potential mitigation measures to specifically prevent pollution of water could include (but are not limited to):

- Ensuring that any dewatering from excavations (if required) is treated prior to discharge, or discharged to the sewer system, subject to the correct permissions being obtained; and
- Appropriate routing of site drainage and use of silt barriers if necessary to prevent direct run-off to the River Thames.

The following PPGs are likely to be particularly relevant to the control of water pollution in addition to those already outlined in Chapter 10 (although this should not be considered a definitive list):

- PPG 1 - General guide to the prevention of water pollution; and
- PPG 5 - Works in, near or liable to affect watercourses.

Provided that the recommendations made in the PPGs are incorporated into an overarching Construction Environmental Management Plan, it is considered that construction water quality impacts are unlikely to be significant, and can be **scoped out** of detailed assessment in the EIA.

13.3.1.3. Flood risk

The nature of the construction works, with the need for piling and deep excavation works, and their proximity to the river walls of the tidal Thames, which are also formal flood defence structures, has potential implications for flood risk. The construction site is also located with the defended flood plain, and therefore care should be taken during construction regarding storage of materials and equipment in case of the occurrence of an extreme flood event during the works. The construction methodology will need to be developed to ensure that there is no risk to the integrity of the tidal flood walls during the works.

An Environmental Permit will be required for the elements of the works located near the formal flood defences. Overall, it is considered unlikely that the level of flood risk posed to the construction works will be significant. The Environmental Permit process will also stipulate the requirements for appropriate construction methods to avoid the works resulting in a temporary or permanent increase in flood risk. Any specific construction controls that are identified should be contained within a Construction Environmental Management Plan. However, the potential risks are not considered to be 'significant', and it is proposed that flood risk during construction is **scoped out** and not assessed in detail in the EIA.

13.3.2. Operation

13.3.2.1. Water Framework Directive

The completed Scheme will not result in any permanent changes to the Thames Middle transitional waterbody, and no effects on the WFD status or objectives for this surface water body are predicted. It is anticipated that a WFD compliance assessment will not be required for this scheme, although this will need to be formally confirmed in consultation with the Environment Agency. It is proposed that WFD issues during operation are **scoped out** of further assessment in the EIA.

13.3.2.2. Water quality

It is assumed that the built design of the Scheme will incorporate appropriate drainage design for foul water and surface water. No new direct discharges into the River Thames are anticipated at the time of writing. Consequently, no operational pathways for impacts on surface water quality are anticipated, and it is proposed that this issue is **scoped out** of any further assessment in the EIA.

13.3.2.3. Flood risk

The Scheme has the potential to increase flood risk from surface water, due to the change of land use from amenity grassland and gardens to impermeable surfacing, and the potential for increased sewer flood risk due to loading of the sewer and drainage network due to demands from the new development.

The Scheme will not increase the risk of tidal flooding from the River Thames, provided there is no impingement on the existing defences that could de-stabilise them or impede future maintenance. A suitable evacuation plan will need to be developed for the Memorial and Learning Centre to consider the possibility of risk to life in the event of an extreme flood event breaching or overtopping the tidal flood defences.

These issues will be addressed, with due consideration given to the potential effects of future climate change, through further stages of design development to mitigate any potential increases in flood risk; for example, by including flood-resilient building designs and Sustainable Drainage Systems (SuDS) to mitigate any possible increase in runoff. An accompanying full (Level 3) Flood

Risk Assessment will be undertaken to inform the Scheme and a report will be submitted alongside the planning application for the Scheme. As a stand-alone Flood Risk Assessment report will be produced to support the planning application, it is proposed that all relevant issues are documented within this report, and that flood risk is **scoped out** of the EIA.

13.3.3. Next steps

The Scoping of issues relating to surface water and flood risk has concluded that, with appropriate mitigation where required, the Scheme is unlikely to result in any significant effects on these aspects of the environment, and that issues relating to surface water and flood risk can be **scoped out** of the EIA for both the construction and operational stages of the Scheme.

The following steps and recommendations will need to be taken forward by the design team, the team undertaking the flood risk assessment and the Contractor (as specified) outside of any formal EIA process:

- Review of designs as they are developed to ensure that these Scoping conclusions remain valid;
- Ongoing consultation with the Environment Agency regarding the scheme design and screening of requirements for WFD assessment (design team);
- Preparation of Construction Environmental Management Plan, incorporating the recommendations relating to water quality and pollution risks (to be developed alongside the Environmental Statement);
- Preparation of Level 3 FRA to accompany the planning application, once the details of the design have been developed in sufficient detail (FRA team);
- Contractor to prepare appropriate method statements for the works; and
- Contractor to apply for Environmental Permit prior to construction.

14. Summary and next steps

This Scoping Report has been produced to inform the proposal by the UK Holocaust Memorial Foundation to develop a new National Holocaust Memorial and Learning Centre in Victoria Tower Gardens in the City of Westminster, and has considered the details of the Scheme against the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017. The total area allocated for the Scheme is above the size threshold for discretionary EIA development of 'urban development projects', and the Site is within a 'sensitive' area. It is the intention of the MHCLG to submit an Environmental Statement in support of the planning application for the Scheme.

A Scoping Opinion is sought from Westminster City Council to confirm the scope and level of detail to be included in the Environmental Statement.

14.1. Scoping conclusions

This Scoping exercise has considered the range of issues required by the EIA Directive and EIA Regulations, identified the range of significant environmental effects that are likely to arise as a result of the Scheme, and made recommendations relating to the proposed scope of further assessment required for specific environmental topics as part of the forthcoming EIA. Issues that are not considered to be significant have also been identified. The Scoping conclusions are summarised and presented in Table 14-1 below **Error! Reference source not found.**

Table 14-1 Summary of Scoping conclusions

Environmental topic / Effects	Scoped in/out of further assessment		Comment /Justification
	✓	x	
Air Quality			
Emissions of dust from construction activities	✓		A formal air quality and dust risk assessment is required to be undertaken to assess the full impacts of the Scheme on air quality. However, it is assumed that best practice mitigation measures will be undertaken to reduce impacts on air quality.
Vehicle movements to and from the site during construction	✓		A formal air quality and dust risk assessment is required to be undertaken to assess the full impacts of the Scheme on air quality. However, it is assumed that best practice mitigation measures will be undertaken to reduce impacts on air quality.
Traffic and vehicle movements to and from the site during operation	✓		A Transport Assessment is suggested to be undertaken and will provide further information on anticipated changes in local traffic flows due to the Scheme, and thus inform any requirement for quantitative assessment of operational transport emissions.
Biodiversity, flora and fauna			
Impacts on ecological features including designated sites, protected species and notable habitats from construction and operation		x	Assumed that any impacts on these features will be mitigated through best practice construction practice and management and design. A stand-alone ecological impact assessment report will be prepared.
Built Heritage, Townscape and Visual			
Built Heritage Statement and Assessments	✓		Assessments (including impact assessment) of Victoria Tower Gardens, as well as other relevant assets whose setting includes Victoria Tower Gardens, or whose setting may be affected; and of the protected views in the London View Management Framework as well as additional assessment of both visual and non-visual aspects of setting. Measures to mitigate effects on heritage assets and their settings will be considered during the design process and be incorporated into the final design.

Environmental topic / Effects	Scoped in/out of further assessment		Comment /Justification
	✓	*	
Desk-based assessments of any designated and/or non-designated assets proposed to be relocated	✓		Assessments of any designated assets and/or non-designated heritage assets proposed to be relocated would be undertaken as appropriate. The assessments would consider the significance of the relevant assets and their setting and their role in the settings of other heritage assets to identify impacts and suitable locations for their re-siting.
Options appraisal of new locations for any memorial to be re-sited	✓		Assessment of the impact of any memorials to be relocated upon the settings of heritage assets and the character of conservation areas or on the WHS in which they are proposed to be relocated.
Building consent applications	✓		Relevant planning applications will be required to remove and relocate any memorials to be relocated, including heritage statements, drawings, method statements, site plans etc.
Recording of the gardens and monuments	✓		This may be recommended by Historic England, which includes archival, desktop and site-based research and recording, resulting in a written report, illustrated with photographs and historic and contemporary maps and figures.
Landscape/townscape effects	✓		<p>The impacts of construction will be temporary in nature on landscape and townscape elements however, due to the sensitivity of the location and its national significance, effects are likely to be considered as significant but only for the duration of the works.</p> <p>In terms of townscape operational impacts, there will be a significant change to the character of the Gardens which may affect the sense of openness within the park and how the townscape is experienced.</p>
Visual effects	✓		Visual effects during construction will be temporary and would relate to construction and the presence of plant and deliveries to from the site. The degree of the temporary visual effects is likely to vary depending on proximity to the Scheme but overall is considered to be significant given the sensitivity of the site relative to the international WHS and national recognised landmarks within very close proximity.

Environmental topic / Effects	Scoped in/out of further assessment		Comment /Justification
	✓	✘	
			Visual operational impacts are inevitable as the Memorial is intended to be a visible new element. Measures to mitigate effects on views and the character of townscape will be considered during the design process and be incorporated into the final design.
Material assets (infrastructure) and climate change			
Impacts on drainage and other critical infrastructure		✘	Assumed that all existing site utility infrastructure will be dealt with appropriately through the design process, and subsequently either fully protected during construction, or suitably diverted or relocated in advance of the works.
Carbon emissions and energy use associated with construction and operation		✘	Assumed that proposed mitigation will reduce potential emissions from construction and operational activities.
Climate-related vulnerability and hazards (but see flood risk below)		✘	Assumed that these issues will be mitigated through the design of the Scheme.
Impacts on material assets in operation of the Scheme		✘	Assumed that the design of the works will include provision for new foul and surface water drainage.
Noise			
Noise surveys		✓	These are required to establish the ambient and background noise levels at the nearest and most affect noise sensitive receptors including the noise and vibration impact from construction activities; and the noise impact from the proposed mechanical building services.
Noise from vehicular traffic related to site operation		✘	Traffic is already restricted primarily to coaches dropping off/ picking up visitors and goods/service vehicles.
Noise from visitors		✘	The Site is already an established public open space.

Environmental topic / Effects	Scoped in/out of further assessment		Comment /Justification
	✓	✗	
Population and Human Health			
In combination effects on amenity with air quality and noise	✓		This will be assessed in the Air Quality and Noise assessment for the Scheme.
Impacts from loss of the Gardens	✓		Further assessment is required to assess the impacts of the Scheme construction on local recreation and amenity resources.
Changes to daylight, sunlight and overshadowing affecting	✓		Further technical studies will be undertaken to assess the impact on amenity value.
Soils, Geology and Hydrogeology			
Geological sites of importance		✗	There are no Geological sites of importance in the vicinity of the Scheme.
Mineral resources		✗	The are no geological conservation designations covering or adjacent to the proposed Memorial site.
Soil resources		✗	Assumed that proposed mitigation will reduce potential contamination of soils from construction and operational activities.
Soil-water interaction (e.g. ground stability and groundwater elements of flooding)	✓		Detailed intrusive ground investigation will be required to gather information on ground conditions beneath the site which is currently limited to records from a small number of historical boreholes with unreliable logging, and non-intrusive survey results which are understood to be limited to very shallow depths.
Land quality (contaminated land)	✓		Further assessment is required to understand whether the Scheme may add, remove or modify sources, pathways or receptors relating to land contamination.
Waste soils	✓		Further assessment is required to understand the volumes of waste that may be created from the Scheme and whether there will be a potential geo-environmental impact.

Environmental topic / Effects	Scoped in/out of further assessment		Comment /Justification
	✓	✘	
Archaeology			
Additional site surveys	✓		These may be required, with a walk over survey, in order to provide a detailed setting assessment as part of the ES and supporting appraisals including a Heritage options appraisal to identify an optimal site for the Memorial and Learning Centre, determining the area of least impact upon the Gardens, its archaeology and its constituent and surrounding heritage assets.
Further archaeology desk-based investigations		✘	The proposed Site location is within a known APA, and the potential for significant archaeological remains has already been established. Therefore, further desk-based investigations are unlikely to be required to establish the necessity for and nature of archaeological mitigation.
Archaeological investigations	✓		These may be required as part of any ground investigations undertaken as part of the ES, and investigations on the Site as part of the process of detailed construction design should be subject to appropriate archaeological monitoring.
Site-based archaeological investigation	✓		This will be required and may include an archaeological watching brief, an archaeological excavation, including evaluation trenching and/or targeted area excavation and an environmental sampling for waterlogged deposits.
Traffic and transport			
Traffic and transport impacts	✓		Potential impacts on transport and traffic during the construction-phase are anticipated to be comparatively short in duration and unlikely to have major impacts.
Transport and movement impacts	✓		The key operational considerations for transport and movement are likely to be associated with coach drop off/pick up and parking, footway and pedestrian crossing capacity, crowd management and queuing around the gates to the Gardens, and potentially impact on the underground station and public transport. These will be considered in more detail in the Transport Assessment . Further consultation will be undertaken with WCC and Transport for London to confirm the scope of potential issues and the proposed Transport Assessment that will be used to support an eventual planning application.
Severance		✘	As no new highway links are being created, and the number of additional highway trips is likely to be negligible compared to the pedestrian footfall. There are already several zebra crossings

Environmental topic / Effects	Scoped in/out of further assessment		Comment /Justification
	✓	✗	
			along Millbank which enable pedestrians to cross to demand. It is therefore considered that severance can be discounted as an impact.
Fear and intimidation		✗	The anticipated changes in traffic flow and composition along the local highway network are negligible, and no changes are proposed to the footways with the exception of small amendments to the crossovers which will be used by a small number of vehicles. The Site is located in central London with good natural surveillance. Fear and intimidation are therefore not considered to require specific assessment.
Water quality and flood risk			
Water Framework Directive issues		✗	The Scheme is not considered to constitute a new 'modification' to the Thames Middle transitional water body.
Water quality impacts		✗	Assumed that proposed mitigation and pollution prevention measures during construction and operation will prevent water pollution.
Flood risk		✗	Assumed that appropriate construction methods and construction controls will prevent any potential flood risk issues. A stand-alone FRA report will be produced to support the planning application, it is proposed that all relevant issues are documented within this report.

14.2. Next Steps

The next steps in the EIA process will be focussed around consultation on this Scoping Report, and refinement of the scope of the forthcoming assessment stage of the EIA. The process of finalising the scoping stage of the EIA is anticipated to be as follows:

- Issue of the Scoping Report to inform a request for an EIA Scoping Opinion to Westminster City Council;
- Receipt of the Scoping Opinion and review of recommendations made therein;
- Adjustment of the key issues to be addressed within the Environmental Statement in accordance with the information contained within the Scoping Opinion (this is anticipated to be an update of Table 14-1, rather than a review and reissue of the Scoping Report);
- Adjustment of any specific design aspects to reflect the views of consultees, if it is appropriate to do so; and
- Progression to the assessment stage of the EIA.

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