ISLINGTON COUNCIL
ENVIRONMENT AND REGENERATION
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REFERRED TO:

# Cardinal Tower

# EIA SCOPING REPORT

*Cardinal Tower Limited*

6 July 2011

Section Page No

# 1. INTRODUCTION

## 1.1. Background

Cardinal Tower Limited (the 'Applicant') is seeking full planning permission for the construction of an office-led scheme at the corner of Cowcross Street and Farringdon Road, London EC1 M3 (hereafter referred to as the 'Proposed Development'). The Proposed Development comprises an Over Site Development (OSD) above a new Crossrail station at Farringdon.

The site has an area of approximately 0.35 hectares (ha) and is located within the London Borough of Islington (LBI) and is bounded to the north by Cowcross Street, to the west by Farringdon Road and to the south by commercial buildings. The integrated western ticket hall for Thameslink (and Crossrail when it opens) is located beneath and to the east of the site and is currently under construction.

The site does not include any listed buildings and is not within a conservation area, although a number of conversation areas and listed buildings lie in the surrounding area to the north, south and east.

The site location is shown in Figure 1.

**Figure 1 – Cardinal Tower Site Location and Context**

## 1.2. The Need for an Environmental Impact Assessment (EIA)

Applications for development that are covered by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 as amended (referred to as the 'EIA Regulations') are termed 'EIA applications'. In most circumstances, the actual requirement for an EIA is either mandatory or conditional, depending on the classification of the development project. This is based, in turn, on the likelihood of significant impacts arising.

The Crossrail Act 2008 is an Act of Parliament that makes provision for a railway transport system running from Maidenhead, in the County of Berkshire, and Heathrow Airport, in the London Borough of Hillingdon, through central London to Shenfield, in the County of Essex, and Abbey Wood, in the London Borough of Greenwich, and for connected purposes. Section 14 of the Act provides that, where a building is demolished or substantially demolished for the purposes of the Crossrail works, any later planning application for the replacement development (for example an OSD over a Crossrail station) must be accompanied by an environmental assessment. This is irrespective of whether they would be defined as an 'EIA development' under the EIA regulations. This is on the basis that the replacement development forms part of the overall Crossrail project, and in this sense, it seeks to ensure that all the direct and indirect environmental effects of the development authorised by the Act are properly assessed at the appropriate stage.

As a result, an EIA will be undertaken and an Environmental Statement (ES) prepared to support the planning application for the Proposed Development, in accordance with the requirements within the Crossrail Act 2008, and submitted to LBI as part of the wider planning application documents. URS Corporation Limited (URS) has been commissioned to conduct an EIA on behalf of the Applicant in line with the EIA Regulations and relevant EIA guidance.

## 1.3. The Purpose of Scoping in the EIA Process

Scoping forms an early stage of the EIA process. It refers to the activity of reviewing any environmental studies undertaken to date and identifying those environmental aspects that may be significantly affected / impacted by a proposed development. This then allows the ES to consider all of the relevant environmental aspects which may be impacted upon as a result of the Proposed Development.

This Scoping Report describes the scope of the technical studies to be undertaken in order to provide a comprehensive assessment of significant impacts likely to arise and to determine suitable mitigation measures for the construction and operation phases of the Proposed Development.

Regulation 10 of the EIA Regulations provides that an Applicant may ask the Local Planning Authority / Authorities (LPA), in this case the LBI to state in writing their opinion as to the scope of the ES. The purpose of this document is to provide the LBI with the opportunity to comment, along with other consultees, on the scope of work proposed for the EIA and the contents of the ES.

## 1.4. Structure of the Scoping Report

The remainder of the Scoping Report is structured as follows:

- **Section 2** describes the existing environment;
- **Section 3** describes the Proposed Development;
- **Section 4** summarizes the key applicable planning policy documentation;
- **Section 5** summarises the key consultees relevant to the application;
- **Section 6** presents issues to be addressed by the EIA;
- **Section 7** summarises the key potential issues;
- **Section 8** explains the approach to impacts not considered to be significant;
- **Section 9** details the proposed structure of the Environmental Statement; and
- **Section 10** provides a summary and conclusions to the Scoping Report.

# 2. THE EXISTING ENVIRONMENT

## 2.1. Site Description and Context

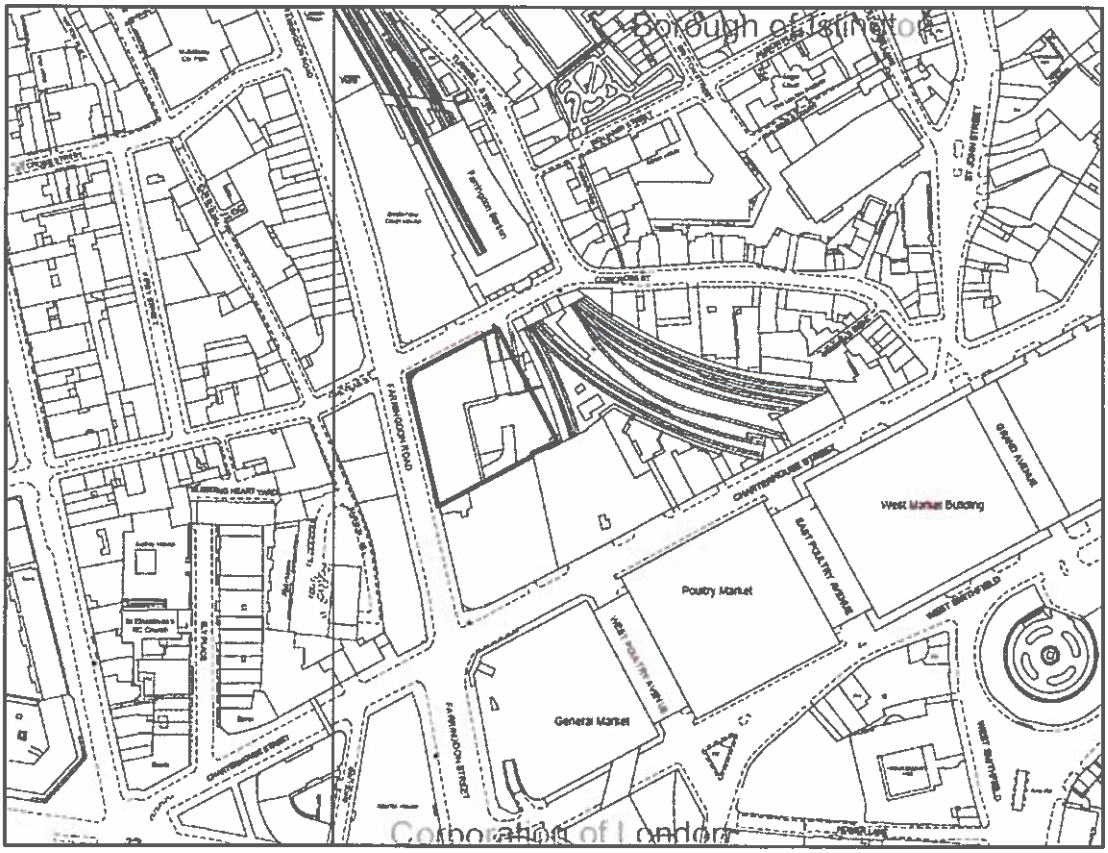
The site currently comprises the partially constructed western ticket hall of the new Farringdon Thameslink/Crossrail Station. Prior to commencement of the Crossrail project the site was occupied by a single 12 storey office building known as Cardinal Tower. Cardinal Tower was demolished in 2009 as part of the Crossrail enabling works.

The wider area surrounding the site is characterised by a mixture of commercial uses including offices, some residential uses and generally active frontages at ground floor level with a wide range of shops, cafés and other businesses.

The structure of the streets and spaces in and around Farringdon has evolved for nearly 1,000 years. The historic development of the area is reflected in the neighbouring designated conservation areas (including Charterhouse Square Conservation Area to the east and Hatton Gardens Conservation Area to the west) and the extent of listed buildings throughout the area, including the London Underground Farringdon Station and 25-27 Farringdon Road, both of which are Grade II Listed Buildings. St John's Gate, located approximately 300 metres (m) to the northeast of the site, is the only Scheduled Ancient Monument (SAM) in the vicinity.

The planning application redline boundary is shown in Figure 2.

**Figure 2 – Existing Site Plan and Red Line Boundary**



## 2.2. Potential Environmental Sensitivities/Sensitive Receptors

When undertaking an EIA it is important to understand which receptors will be considered as part of the assessment. Initial studies and consultations have revealed the following potential sensitive receptors to the development:

- Key short, medium and long-distance views;
- Residential units located along Farringdon Road, Greville Street, Cowcross Street, Turnmill Street, Saffron Hill and Charterhouse Street;
- Commercial units located Farringdon Road, Greville Street, Cowcross Street and Charterhouse Street;
- Pedestrians, cyclists and road users;
- Nearby Conservation Areas (Charterhouse Square Conservation Area to the east and Hatton Gardens Conservation Area to the west and Smithfield Conservation Area to the South; and
- Listed Buildings (London Underground Farringdon Station and 25-27 Farringdon Road, both of which are Grade II Listed Buildings).

# 3. DESCRIPTION OF THE PROPOSED DEVELOPMENT

The Proposed Development will involve the construction of an office-led OSD at the corner of Cowcross Street and Farringdon Road, London W1S 1HZ.

The Proposed Development will be constructed immediately adjacent to the west side of the Thameslink/Crossrail Integrated Ticket Hall and above Crossrail back of house operational accommodation. As part of the Crossrail works, the northwest portion of the site (approximately 1,000 square metres ($m^2$) gross external area (GEA)) will be finished as a concrete slab to street level; the western section of the Proposed Development will be constructed upon that slab. The design and external appearance of Crossrail structures have been submitted for approval under Schedule 7 of the Crossrail Act.

The 9 storey building will comprise retail space and an office reception at ground and mezzanine level, followed by 6 floors of offices and plant space on the top floor. The total GEA of the proposed building will be approximately 21,000$m^2$. No car parking will be included as part of the Proposed Development. It should be noted that the ground and mezzanine floors will be predominantly occupied by Crossrail and therefore these particular areas will not be considered within the Cardinal Tower Planning Application.

# 4. POLICY CONTEXT

The ES will be prepared in accordance with statutory requirements and current guidance. In particular, the ES will be prepared with due consideration to:

- The Crossrail Act (2008);
- Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended);
- The Town and Country Planning (Environmental Impact Assessment) Regulations 2010 - Consultation Document;
- Department for Communities and Local Government (DCLG), 2006; Amended Circular on Environmental Impact Assessment. A Consultation Paper June 2006;

- Department of Environment, Transport and the Regions (DETR) Circular 02/99 Environmental Impact Assessment;
- Preparation of Environmental Statements for Planning Projects that require Environmental Assessment: Good Practice Guide, Department of the Environment (DoE) 1995;
- Institute of Environmental Management and Assessment (IEMA) Guidelines for Environmental Impact Assessment, 2004; and
- Office of the Deputy Prime Minister (ODPM) Environmental Impact Assessment – A Guide to Procedures, 2001.

The EIA technical studies will have regard to the national, regional and local policies for the site and place these in the context of each technical study proposed in Section 6 of this document.

National Planning Policy

- PPS 1 Delivering Sustainable Development;
- PPS 4 Planning for Sustainable Economic Growth;
- PPS 5 Planning for the Historic Environment;
- PPS 9 Biodiversity and Geological Conservation;
- PPS 10 Planning for Sustainable Waste Management;
- PPG 12 Local Spatial Planning;
- PPG 13 Transport;
- PPS 22 Renewable Energy;
- PPS 23 Planning and Pollution Control;
- PPG 24 Planning and Noise; and
- PPS 25 Development and Flood Risk.

Regional Planning Policy

- The London Plan: Spatial Development Strategy for Greater London Consolidated with Alterations since 2004 (GLA, 2008);
- The London Plan – Spatial Development Strategy for Greater London (Consolidated draft replacement plan) (GLA, 2010);
- London View Management Framework (July 2010);
- Sustainable Design and Construction SPG (2006);
- Land for Transport Function SPG (2007); and
- Accessible London: Achieving an Inclusive Environment (2004).

Local Planning Policy:

- The saved policies of the LBI Unitary Development Plan (2002) and LBI's Interactive Proposals Map (2008);
- The LBI Core Strategy (2011);
- Metropolitan Views Draft SPD (2007);
- Sustainable Buildings (2003); and
- Any other relevant local Supplementary Planning Guidance/Documents.

## 5. CONSULTATION

The process of consultation is important to the development of a comprehensive and balanced ES. Views of the interested parties serve to focus the environmental studies and to identify specific issues that require further investigation. Consultation is an ongoing process as part of design development.

Key consultees involved in the evolution of the design and preliminary assessment of environmental impacts will include:

- The London Borough of Islington (LBI);
- The Greater London Authority (GLA);
- The Environment Agency (EA);
- English Heritage (EH);
- Crossrail Limited (CRL); and
- Transport for London (TfL).
- The London Borough of Camden (LBC);
- The City of London (CoL);
- The Commission for Architecture and the Built Environment (CABE);
- Natural England; and
- Other local amenity groups and stakeholders.

# 6. ISSUES TO BE ADDRESSED BY THE EIA

## 6.1. Introduction

The EIA and associated technical studies will be carried out in accordance with statutory guidance including the requirements for the contents of an ES. For the EIA to be an effective decision-making tool, the ES needs to focus on the likely environmental effects. These issues have been identified through the preliminary consultation process, data review and early site visits. The following sub-sections describe the works proposed to fulfil the requirements of the EIA process.

## 6.2. EIA Methodology

The EIA will address the direct effects of the Proposed Development in addition to the indirect, cumulative, short, medium and long term, permanent, temporary, beneficial and adverse likely significant effects arising from the Proposed Development. The main mitigation measures envisaged in order to avoid, reduce or remedy significant adverse effects will be described. The concluding chapters will provide a summary of the cumulative and residual impacts of the Proposed Development.

The methodology will define the scenarios against which the environmental impacts will be assessed. This will include the following scenarios:

- Baseline;
- The Proposed Development; and
- The Proposed Development in addition to a number of schemes identified in order to assess cumulative impacts.

A Non-Technical Summary (NTS) will be produced as part of the ES in accordance with the EIA Regulations. In addition, a compilation of technical data and associated information required to support the content of the ES, will be included within Volume III of the ES.

### 6.2.1. Crossrail Assessment Criteria

For the purposes of Crossrail, a definition of a significant impact has been defined as *"an impact that (either in isolation or combination with others) should, in the opinion of the EIA team having regard to relevant criteria, be taken into account in the decision-making process"*. On the basis of this definition, the significance of impacts on the environment arising from Crossrail was determined using a set of assessment criteria for each environmental topic. The physical or spatial boundaries, the time-based or temporal boundaries, the technical environmental assessment methodologies required, and the thresholds by which magnitudes of impacts are described (significance criteria) are set out for each environmental topic in the Crossrail ES Volume 1 & 5.

For the purpose of consistency and in accordance with the principals of Schedule 14 of the Crossrail Act (as described in Section 1.2), URS has used Crossrail's assessment methodology as far as possible, and will adopt the significance criteria set out in Volumes 5 and 8a of the Crossrail ES. The criteria are set out below, with further details of provided within **Appendix A** of this report.

Given that the nature of the Proposed Development is different to the Crossrail project, where appropriate the assessment criteria will be tailored and focus on the requirements of the Proposed Development to ensure that the impacts are addressed appropriately.

The significance of impacts, both beneficial (advantageous or positive impact to an environmental resource or receptor) and adverse (detrimental or negative impacts to an

environmental resource or receptor) will be categorised for each technical assessment, but will depend primarily on:

- Impact magnitude; and
- The sensitivity of receptors.

Therefore, different levels of impact significance will be determined from the relationship between magnitude and sensitivity. As such, for consistency with the Crossrail EIA (2005) the following terms will be used to describe the impacts:

| | With **Low** receptor sensitivity | With **Moderate** receptor sensitivity | With **High** receptor sensitivity |
|---|---|---|---|
| With **Negligible** Impact Magnitude | NSig | NSig | NSig |
| With **Low** Impact Magnitude | NSig | NSig/Sig | NSig/Sig |
| With **Moderate** Impact Magnitude | NSig/Sig | Sig | Sig |
| With **High** Impact Magnitude | NSig/Sig | Sig | PSig |
| With **Very High** Impact Magnitude | Sig | Sig/Psig | PSig |

*Note: **NSig**: non-significant impact; **Sig**: significant impact; **PSig**: significant impact of particular importance.*

Each technical chapter will provide the criteria, including sources and justifications, for quantifying the different levels of residual impact. In the context of the proposals, **short** to **medium-term** impacts are considered to be those associated with the construction phase, and **long-term** impacts are those associated with the completed and occupied Proposed Development. **Local** impacts are those affecting neighbouring receptors, while impacts upon receptors at the borough level are considered to be at a **district** level. Impacts affecting Greater London are considered to be at a **regional** level, whilst impacts that affect different parts of the country, or England as a whole, are considered to be at a **national** level.

### 6.2.2. Baseline

In order to assess the potential impact of the Proposed Development, it is necessary to determine the environmental conditions against which any future changes can be measured or predicted and assessed. These are known as 'baseline conditions'.

It is often assumed that the environmental baseline for a proposed development comprises environmental conditions as they exist today. In most cases this assumption is valid and correct. However, in some circumstances the environmental baseline can change as a result of natural or human processes. It is because of these complications (i.e. where environmental conditions on-site are changing or will change as a result of ongoing or future works, respectively), that it can be important to establish as a baseline the predicted environmental conditions that would exist in the absence of the particular development under consideration. This includes taking account of progress on the ground having regard to the site clearance that may be part of the development process.

As discussed, the original Cardinal Tower was demolished in 2009 as part of the Crossrail enabling works and the site currently comprises the partially constructed western ticket hall of the new Farringdon Crossrail Station.

In keeping with the assessment methodology outlined in the Crossrail ES (2005), the ES for the Proposed Development will consider two baseline scenarios (where appropriate):

- The pre-existing Cardinal Tower building; and

- The current conditions on site with the Crossrail Station currently under construction.

### 6.2.3. Cumulative Impact Assessment

In accordance with the EIA Regulations, the EIA will give consideration to 'cumulative impacts'. By definition these are impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the Proposed Development. For the cumulative assessment, two types of impact will be considered:

- The combined effect of individual impacts, for example noise, airborne dust or traffic on a single receptor; and
- The combined impacts of the following nearby planned or consented development schemes, which may, on an individual basis be insignificant but, cumulatively, have a likely significant impact.

Schemes that will be considered within the cumulative assessment comprise:

- Those with planning consent (or with a resolution to grant consent) and those under construction;
- Located within an approximate 500m radius of the site; and
- Which result in an increase of more than 10,000m$^2$ GEA in floor area (unless smaller schemes are considered to have significant effects despite a lower floorspace).

The cumulative impact assessment will include the following schemes (a map showing the location of the cumualtive schemes is provided within **Appendix B** of this report):

- ***Farringdon West Crossrail Station, 54-60 Cowcross Street (P091441)***: Construction of a an integrated western ticket hall to serve a new Crossrail Station at Farringdon – *under construction*;
- ***Farringdon East Crossrail Station, Lindsey Street, 38-42 Charterhouse Street, 33-37 Charterhouse Square (P091441)***: Construction of an integrated eastern ticket hall to serve a new Crossrail Station at Farringdon – *under construction*; and
- ***Charter House (aka Caxton House), 2 Farringdon Road, EC1 (P081100)***: Demolition of existing buildings and erection of a part 9, part 12 storey building plus basement level, providing for A1(retail) use at ground floor level and B1(office) floor space to part ground and wholly to upper floors – *consented*.

Further to the above schemes, the cumulative assessment will consider one further scheme that does not fit into the category of Cumulative Schemes (i.e. has not received approval by the LBI, or the design details have not been formally released into the public domain). The scheme has been considered as it is nearby in development terms, but the description of development may change prior to consideration of planning for the Cardinal Tower development.

The additional cumulative scheme is as follows:

- ***Farringdon East Crossrail Station OSD, Lindsey Street, 38-42 Charterhouse Street, 33-37 Charterhouse Square***: Construction of an office-led OSD above the proposed eastern ticket hall at Farringdon.

In addition to the cumulative schemes identified above, a number of additional schemes will be included in the Townscape and Visual impact assessment due to their size and height. These will be agreed during ongoing consultation with the LBI.

## 6.3. Alternatives Assessment

The EIA process provides an opportunity to consider alternative development options before a final decision is taken on the design. In accordance with the EIA Regulations and statutory guidance, the ES will describe those alternatives that were considered by the Applicant, project team and architects, including:

- 'Do Nothing Scenario' – the consequences of no redevelopment taking place on the site;
- 'Alternative Sites' – consideration of alternative locations for the Proposed Development and the rationale behind the selection of the site; and
- 'Alternative designs' – the ES will summarise the evolution of the design of the Proposed Development; the modifications which have taken place to date and the environmental considerations which have led to those modifications. A summary of the main alternatives considered, such as alternative use combinations, floor heights, massing, and materials used will be presented together with a justification for the final design.

## 6.4. Construction Programme

As the original Cardinal Tower building was demolished in 2009 as part of Crossrail's construction activities, the ES will focus on the activities associated with the construction of the Cardinal Tower OSD. Reference will be made to the Crossrail Environmental Minimum Requirements (EMR). Where construction activities associated with the Crossrail Station and OSD overlap, any potential impacts resulting from this overlap will be considered within a separate Cumulative Impact Assessment.

The ES will provide details of the proposed programme together with specific construction activities and methods and their anticipated duration. An outline Demolition and Construction Method Statement (DCMS) and Environmental Management Plan (EMP) will be provided, which will detail the specific mitigation measures to be followed to reduce nuisance impacts from:

- Construction traffic;
- Changes to access and public rights of way;
- Noise and vibration;
- Dust generation (air quality); and
- Waste generation.

The DCMS will take into account the LBI's 'Code of Practice for Construction Sites' and the London Councils' guidance on 'The Control of Dust and Emissions from Construction and Demolition'.

## 6.5. Waste and Recycling

The ES will include a review of both waste legislation and national, regional and local planning policies to identify waste management objectives and targets the Proposed Development will be provided.

Waste management strategies for storing and disposing of /construction wastes will be summarised, with reference to the Site Waste Management Plan (SWMP) Regulations

2008. A detailed SWMP will be produced by the OSD contractor, prior to the commencement of any on-site works relating to the Proposed Development.

The Proposed Development operational management strategy, provided by the design team, will be described detailing relevant waste reduction measures, British Standards, Duty of Care compliance and how it complies with the LBI's policies. The findings of this review will be provided within an ES Chapter.

## 6.6. Sustainability

The London Plan (GLA, 2008) contains policies that promote sustainability principles, particularly with regard to the reuse of land and buildings, energy conservation, materials and water usage, waste minimisation and conserving and enhancing the natural environment. The Mayor's supplementary planning guidance (SPG) on 'Sustainable Design and Construction' (GLA, 2006) provides guidance to developers on sustainable design and construction. This SPG provides an essential context for all developments and offers a mechanism for addressing climate change impacts through new developments. It contains the Mayor's essential and preferred standards and also identifies several methodologies that can be used to measure and demonstrate sustainability.

In addition to the London policies, the 'saved' LBI UDP policies and the LBI's recently adopted Core Strategy, set out the local authority's strategy for shaping the Borough. Its policies guide the LBI in deciding planning applications, and enhancing the environment. The Core Strategy covers a number of strategic 'sustainability' policies, including:

- High quality architecture and urban design are key to enhancing and protecting Islington's built environment, making it safer and more inclusive;
- The council will seek to minimise Islington's contribution to climate change and ensure that the borough develops in a way which respects environmental limits and improves quality of life;
- The council will encourage sustainable waste management;
- Islington will meet its housing challenge, to provide more high quality, inclusive and affordable Homes;
- The council will provide employment space for businesses in the borough;
- The council will provide inclusive spaces for residents and visitors, and create a greener Borough;
- Opportunities for play in Islington will be maximised; and
- Existing and future need for formal sport and recreation provision will be met.

The Green Construction SPG provides advice to applicants on how to ensure greater environmental sustainability in developments. It examines overall design, and then provides further details on five key aspects: materials, energy, waste, water and biodiversity.

Considering the uses associated with the Proposed Development, it is proposed to undertake a Preliminary BREEAM Assessment for office uses. The assessment will be undertaken as an independent sustainability appraisal to assess the environmental performance of the development.

A Sustainability Chapter will be prepared as part of the ES. The Sustainability Chapter will be based upon the topics identified in the Mayor's Sustainable Design and Construction SPG, LBI's UDP, LBI's Core Strategy and Green Construction SPG sustainability planning policies.

An Energy Strategy for the Proposed Development will be prepared and will seek to meet the requirements of the London Plan and Mayor's Energy Strategy, i.e. meet the Mayor's energy hierarchy through a combination of passive design features, low carbon technologies, and renewable technologies.

Energy consumption and carbon emissions will be estimated using National Calculation Methodology approved dynamic thermal simulation software for Part L loads, combined with nationally recognised benchmarks to assess total carbon emissions.

A series of low carbon and renewable technologies will be investigated in detail to identify which schemes provide practical solutions for the site.

The Preliminary BREEAM Assessments and Energy Strategy will be prepared as stand-alone documents submitted in support of the planning application.

## 6.7. Socio-economics

The site is located within the Farringdon / Smithfield Intensification Area and is identified as an Area for Intensification within the London Plan and draft replacement London Plan. In accordance with the London Plan, the area is expected to deliver 2,000 new jobs, as well as new housing, up to 2026. The draft replacement London Plan would see this increasing to 2,500 new jobs. Activities in this area are currently dominated by the presence of Farringdon station and Smithfield meat market, and other activities typical of its location on the City Fringe.

The main uses in the locality of the site include retail, office, entertainment, and smaller amounts of residential uses. It is very well provided for in terms of public transport, and is within a short distance from a number of open spaces that provide amenity space. A full socio-economic assessment will be undertaken to assess the impact of the Proposed Development on the baseline conditions predicted following the completion of the Crossrail works within the local and wider area.

A socio-economic assessment will be undertaken to assess the impact of the scheme on baseline conditions within the local and wider area. For the purposes of the ES, due consideration will be given to the scheme in terms of the following:

- Role of the scheme in the provision of retail and office accommodation;
- Role of the scheme in the generation of direct, indirect and induced employment opportunities at the local and regional level during both the construction and operational phases of the Proposed Development; and
- Impact on public amenity, access and safety.

The methodology for assessing socio-economic impacts will follow standard EIA guidance and will involve:

- Review of relevant baseline conditions at the site and surrounding area;
- A local workforce and business profile;
- Assessment of existing local services and open space;
- Consideration of policy, plans and development constraints; and
- Assessment of the likely scale, permanence and significance of impacts.

The assessment will be carried out using a number of recognised data sources including, but not limited to the following:

- Office of National Statistics Labour Force and Neighbourhood Statistics;
- Annual Business Inquiry;
- Annual Population Survey;
- Census 2001;
- Annual Family Expenditure Survey; and
- Travel to Work data.

Wherever possible, the impacts of the socio-economic assessment will be appraised against relevant national standards such as those provided by HM Treasury and English Partnerships. Where no standards exist, professional experience and judgement will be applied and justified.

## 6.8. Transportation and Access

A comprehensive Transport Assessment (TA) will be prepared in accordance with TfL best practice. It will be prepared following pre-application discussions with LBI and TfL Highway Officers. This study will be a stand-alone document and will be submitted in support of the planning application. However, in summary the TA will comprise:

- An outline of the site context including consideration of accessibility by all main transport modes;
- A review of the planning policy context ranging from general principles through to specific proposals at the local scale;
- An assessment of the travel demands expected to arise from the Proposed Development including the split of transport modes and likely distribution of trips across the catchment area;
- An assessment of the impacts arising to different transport modes, in particular focussing on "active modes" such as walking and cycling;
- An assessment of the predicted servicing needs of the Proposed Development; and
- A summary of the predicted impacts and consideration of mitigation measures (including the preparation of a Framework Travel Plan and a Delivery and Servicing Plan – both of which will be appended to the TA).

In addition to the TA, a separate Transport ES Chapter will be prepared. The ES Transport Chapter will consider and assess the potential effects of the Proposed Development before/during (i.e. during the construction phase) and after the Proposed Development is completed and occupied. In particulate, the Transport chapter will:

- Outline the existing site context, including a summary of existing (baseline) vehicular and pedestrian flows in the vicinity of the site and, also, a summary of accident statistics in the vicinity of the site;
- Seek to establish the predicted future vehicular and pedestrian flows in the vicinity of the site;
- Outline the predicted impacts on pedestrians, cyclists, buses and other vehicles in the vicinity of the site during the construction works. In order to inform this element of the Transport Chapter, a preliminary assessment of the likely scale and nature of construction activity will be summarised;

- Seek to summarise the impacts of the Proposed Development on traffic flows on the local highway network and will identify any proposed modifications to the adjacent highway layout around the completed development, if considered necessary or appropriate;

- Seek to summarise the impacts of the Proposed Development on public transport services i.e. buses, London Underground, Thameslink and (future) Crossrail services;

- Seek to summarise the impacts of the Proposed Development on walking and cycling trips and, where appropriate, will identify measures to mitigate against any adverse impact arising as a result of the Proposed Development; and

- Provide a summary of the predicted impacts of the Proposed Development and will seek to determine the scale of the impacts and whether they are likely to be experienced short-term or long-term, and subsequently, it will identify proposed mitigation measures in the form of suggested Conditions, legal obligations and/or "Plans" (e.g. Travel Plan / Delivery and Servicing Plan) to mitigate against any potential adverse impacts predicted to arise as a result of the Proposed Development.

## 6.9. Air Quality

Based on a review of current air quality information, the whole of the LBI is designated an Air Quality Management Area (AQMA), due to exceedences of nitrogen dioxide ($NO_2$) and particulate matter ($PM_{10}$) as specified in the National Air Quality Strategy. As such, potential air quality impacts are a key issue for the Proposed Development.

It is proposed that an atmospheric dispersion modelling assessment be utilised to assess the impact to local air quality potentially brought about through the generation of road traffic on the local road network during the construction and operation of the proposed development. The study would be desk-based and investigate a number of pollutants emitted from vehicles (such as $NO_2$ and $PM_{10}$) that are potentially hazardous to human health at a number of receptor points (residential homes, schools, etc) along the local road network. Baseline, or existing, background air quality will be determined using a nearby representative automatic monitoring station, supplemented by Local Authority diffusion tube sampling and Defra background air quality maps, where necessary.

It is not proposed to conduct diffusion tube (or automatic) monitoring as part of the EIA given the abundance of local monitoring data available (e.g. Bloomsbury, St. Martin's College, and Shaftsbury, monitoring stations), as well as the inherent 20 - 25% level of uncertainty associated with passive, diffusion tube monitoring.

The assessment will apply either the DMRB screening model or detailed ADMS-Roads dispersion model (depending on background concentrations and percentage predicted traffic increase), which have been specifically designed to assess the impact of road traffic emissions in urban areas in the U.K (taking into account the recent changes to $NO_X$:$NO_2$ factors in accordance with LAQM TG.09). The model will require local traffic data attained during the Transport Assessment, including traffic numbers, fleet composition, and average vehicle speeds, to calculate emission fluxes for the above listed pollutants from each road source. A number of traffic scenarios will be modelled, including present-day, and a given future date both with and without the proposed development. The modelling will focus upon $NO_2$ and $PM_{10}$, the two main pollutants of concern from road traffic in London.

In light of recent debate about whether air quality in London is improving as forecast, it will be conservatively assumed that there will be no change in background concentrations between the present-day and 2016 (unless local monitoring data indicates otherwise). This is based on a recent publication by Defra advising that background concentrations and

vehicle emissions have remained relatively stable since 2002-2004 and will continue to do so until about 2016 (when the new EURO 6 vehicle emissions standard comes into effect).

The road traffic modelling assessment will determine the severity, extent, and duration of predicted impacts to local air quality at sensitive receptors in the locality (i.e. the deterioration in air quality at residential dwellings along the roads due to the additional road traffic attributed to the Proposed Development).

In addition, potential impacts and nuisance from construction dust and site plant exhaust emissions generated during the construction phase will be considered in a semi-quantitative context (i.e. a basic screening assessment using estimated data), and where appropriate mitigating measures recommended to minimise, or remove, the potential impacts. Any heating plant associated with the completed development (e.g. CHP's or boilers for heating and hot water provision) will be assessed qualitatively, if data is sparse, or quantitatively using the ADMS4 (version 4.2) atmospheric dispersion model, if sufficient data is available to estimate the pollutant flux and likely stack parameters.

Following determination of the likely impacts, a standard suite of mitigation measures will be recommended for the control of dust and site plant emissions during construction works, with specific attention paid to the LBI 'Code of Practice for Construction Sites' and the London Councils' guidance on 'The Control of Dust and Emissions from Construction and Demolition'. Additional site specific mitigation measures will be proposed as necessary, in order to minimise or remove adverse impacts to local air quality.

The assessment of potential impacts and their significance will be based on the criteria outlined in the Environmental Protection UK publication 'Development Control: Planning for Air Quality 2010 Update'. The EPUK criteria of importance will be modified slightly to incorporate the Crossrail ES (2005) defined assessment methodology and criteria.

## 6.10. Noise and Vibration

A noise survey will be undertaken which will establish both background noise levels at nearby sensitive receptors, and ambient levels at the façades of the Proposed Development. Appropriate figures will be included in the ES to illustrate the noise measurement locations.

The ambient noise levels at the façades of the buildings will be reviewed in conjunction with recommended British Standard (BS) noise limits for the various internal spaces (BS 8233). Mitigation measures, such as façade sound insulation and ventilation attenuation requirements, will be recommended as appropriate.

Potential noise and vibration impacts arising from the construction and operation of the Proposed Development will be assessed in line with the significance criteria used in the noise and vibration sections of the Crossrail ES (2005). A construction noise impact assessment will be undertaken based on construction activity, plant use and traffic movement information. Noise levels at receptors will be calculated using BS 5228 methodologies. Vibration risks will be assessed based on the types of plant used and their proximity to receptors, using guidance in BS 7385 and BS 5228.

From the results of the construction noise impact assessment, potential mitigation measures will be listed and relevant construction procedures will be taken into account. The identified likely mitigation measures, including work procedures, screening, working hours and monitoring activities will be used to determine the reduction in noise and vibration and determine the residual impact.

Based on background noise levels at receptors, suitable operational phase noise limits for building services plant will also be recommended according to BS 4142. Preliminary advice on mitigation measures will be provided as required.

Based on indicative traffic changes generated by the Proposed Development, calculation methodologies from Design Manual for Roads and Bridges (DMRB) and the calculation of road traffic noise (CRTN) will be used to determine the potential impacts on road traffic noise levels, and mitigation measures will be recommended where necessary.

Cumulative impacts will also be assessed. This will take into account the potential for cumulative construction noise and vibration impacts from nearby schemes, as well as cumulative impacts of operational noise and vibration from the Farringdon Crossrail station.

## 6.11. Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare

The LBI's amenity policy seeks to safeguard the daylight and sunlight received by habitable rooms in existing neighbouring dwellings and educational buildings. It also seeks to safeguard the quality of designated amenity areas such as gardens, playgrounds and sitting-out areas.

The sensitive receptors for daylight and sunlight are habitable rooms within residential dwellings and include living rooms, kitchens and bedrooms. Bathrooms, WCs, hallways and circulation space are excluded. In the specific case of kitchens, they generally need only be classed as a 'habitable room' where they are 'family' kitchens (i.e. are large enough to be used for a habitable purpose such as a dining room or day room and not just limited to food preparation only).

For both daylight and sunlight, the principal living room of the dwelling is the most sensitive receptor with kitchens and bedrooms being of lesser importance especially in respect of sunlight availability.

Daylight, sunlight and overshadowing is measured objectively and empirically using the guidelines contained within the Building Research Establishment (BRE) Report "Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice" 1991, together with the British Standard Code of Practice for Daylighting, BS8206 Part 2, 2008.

Light Pollution is defined as any light emitting from artificial sources into spaces where this light would be unwanted, such as spillage of electric light from office or commercial buildings onto streets or into residential accommodation such as bedrooms, where this would cause inconvenience to their occupants. Quantitative criteria for acceptable levels of light pollution are detailed within the Institution of Light Engineers (ILE) document entitled 'Guidance Notes for the Reduction of Light Pollution'. The light emanating from the existing site will be compared against that from the Proposed Development and an assessment of the level of impact made.

Solar glare is particularly important at pedestrian and vehicular junctions where the glare can cause temporary blinding of either vehicle operators or pedestrians at such junctions. An analysis of the potential for the Proposed Development to glare will be made from a selection of key viewpoints located at pedestrian and vehicular junctions. The results of the daylight, sunlight, overshadowing, Light Pollution and Solar Glare assessment will be incorporated into an ES chapter with a supporting technical appendix.

## 6.12. Wind Microclimate

Given the size and massing of the Proposed Development, and its location in relation to surrounding buildings, it is possible that undesirable wind speeds could be generated at ground level and upper level amenity spaces, thus making some spaces around the Proposed Development uncomfortable or unsafe for pedestrian use. Therefore, the EIA will consider potential changes to the wind environment in terms of pedestrian amenity, surrounding buildings and public open space.

A wind and microclimate specialist will undertake a desk based assessment of the Proposed Development, i.e. based on a detailed review of an electronic 3-D model of the Proposed Development and surrounding buildings. This is considered to be sufficient to assess the Proposed Development qualitatively around the base of the OSD, and at other selected points of the Proposed Development for all wind directions. These predicted conditions will be expressed as the well established Lawson Comfort Criteria to determine the suitability of the different areas for sitting, standing, entering a building, leisure walking, business walking or crossing the road.

The desk study will demonstrate the suitability of the wind microclimate for the intended pedestrian use of the site. Should mitigation measures be required, the areas requiring this will be identified and measures will be developed to ensure that all areas are suitable for their intended use.

## 6.13. Water Resources and Drainage

The site lies within Flood Zone 1, which is classed as low risk of flooding from fluvial and tidal sources. As the Proposed Development covers an area less than one hectare, a full Flood Risk Assessment (FRA) is not required.

However, a Water Resources and surface water drainage assessment will be included within the ES. This will consider the generation of surface water runoff both pre-development and post-development and assess measures by which to reduce runoff from the site. This will include an assessment of which Sustainable Urban Drainage Systems (SuDS) are appropriate for inclusion at the site.

The ES Chapter will include: legislative and planning policy context; explanation of the assessment methodology and impact significance criteria; analysis of baseline conditions covering geology, hydrology, hydrogeology and groundwater, surface water resources, aquifers, abstractions, source protection zones, water quality and water services; assessment of potential impacts and mitigation measures (both during construction and once the Proposed Development is operational); and an assessment of residual and cumulative impacts.

In addition to the assessment of the impact of the Proposed Development on water resources and drainage, an assessment of the potential water demand of the Proposed Development will be undertaken in addition to the generation of wastewater. This will be compared to the baseline (existing) situation. The potential for the inclusion of water efficient fixtures and fittings will be considered as a means of reducing water demand and, therefore, the generation of wastewater (see earlier section on sustainability).

## 6.14. Townscape Conservation and Visual Amenity

ES Volume II will include an assessment of the Proposed Development in relation to its local and wider setting by considering a number of pre-selected views, architectural and historic accounts of the area, policy designations - such as conservation areas and listed buildings - and consented schemes in the vicinity that may alter the townscape in the future. A general overview of the visual context following the completion of the Crossrail works and extent of views will form part of the baseline assessment. A descriptive comparison of impacts between the conditions 'pre-Crossrail' and following construction of the Proposed Development will also be made, using the Townscape characterisation specified in the Crossrail ES (2005). The impacts of the Proposed Development upon Built Heritage will be assessed in accordance with Planning Policy Statement 5: Planning for the Historic Environment. Both construction and operational impacts will be assessed as part of the EIA.

Accurate visual representations in the form of photomontages of the Proposed Development will be inserted into the selected views to demonstrate its potential impact on the townscape.

In addition, the Proposed Development will be illustrated in other verified views by means of wire line images. Specifically, the methodology will cover:

- Rationale for the selection of views and ways in which the Proposed Development is represented within them;
- Explanation of the guidance and criteria used to assess the views; and
- Means of photographing the views.

The views assessment will be informed by an appraisal of the site and surrounding townscape areas in their existing state. This will be based on study of the historic development of the area with reference to relevant publications, and study of the present-day condition of the area based on site visits, study of maps and aerial photographs, and relevant publications. This analysis will inform the division of the study area into townscape areas, i.e. geographical areas which have readily identifiable characteristics in common. The impact of the Proposed Development on these townscape areas will then be assessed, based on conclusions drawn from the views analysis. Specifically, the assessment of townscape and views will address:

- The historic development of the area and a review of nearby conservation areas (e.g. Clerkenwell Green, Charterhouse Square, Smithfield and Hatton Garden) and listed buildings (e.g. 25-27 Farringdon Road and Farringdon London Underground Station);
- Local, regional and national planning policy and guidance with regard to design and townscape matters;
- A review of any statutory and other significant views and constraints;
- Short, medium and long distance views; and
- Implications of the above for the design concept including design mitigation.

The proposed list of views to be studied as part of design development and the EIA are as follows (refer to **Appendix C** of this report for the location map).

- Viewpoint 1 – Farringdon Road, corner with Bowling Green Lane;
- Viewpoint 2 – Farringdon Road, junction with Farringdon Lane;
- Viewpoint 3 – Farringdon Road/ Clerkenwell Road – NW corner of junction;
- Viewpoint 4 – Clerkenwell Road Bridge;
- Viewpoint 5 – Farringdon Road/ Clerkenwell Road – SE corner of junction;
- Viewpoint 6 – Greville Street, southern pavement;
- Viewpoint 7 – Greville Street, northern pavement;
- Viewpoint 8 – Farringdon Lane;
- Viewpoint 9 – Ray Street Bridge;
- Viewpoint 10 – Farringdon Lane, south of Ray Street Bridge;
- Viewpoint 11 – Turnmill Street, near junction with Clerkenwell Road;
- Viewpoint 12 – Turnmill Street, south of viewpoint 11;

- Viewpoint 13 – Turnmill Street, south of viewpoint 12;
- Viewpoint 14 – Cowcross Street junction with Turnmill Street, looking west along Cowcross Street;
- Viewpoint 15 – Holborn Viaduct;
- Viewpoint 16 – Parliament Hill (LVMF 2A.1); and
- Viewpoint 17 – Kenwood (LVMF 3A.1).

# 7. SUMMARY OF POTENTIAL ISSUES

The table below provides a summary of potential environmental and socio-economic issues.

| Environmental and Socio-economic Issue | |
|---|---|
| **Socio-economics** | Generation of direct construction employment, associated goods and services;<br>Creation of employment opportunities through operation; and<br>Impacts on the surrounding area and public services through the provision of office and retail space. |
| **Transportation and Access** | Potential changes to local traffic flow patterns during construction;<br>Potential disruption to pedestrians, cyclists and road vehicle users during construction works;<br>Building servicing; and<br>Impacts to the capacity of the public transport network once development complete and occupied. |
| **Air Quality** | Construction dust; and<br>Impact of mechanical plant and potential traffic levels during construction and once development is complete and occupied. |
| **Noise and Vibration** | Noise and vibration from construction activities; and<br>Potential noise disturbance from operational activities and servicing. |
| **Daylight/Sunlight Overshadowing, Light Pollution and Solar Glare** | Potential reduction in daylight and sunlight levels to neighbouring residential properties;<br>Potential overshadowing of public amenity areas;<br>Light pollution to neighbouring properties; and<br>Solar glare impact to key pedestrian and vehicular routes around the site. |
| **Wind Microclimate** | Changes to the speed and direction of wind affecting the local wind environment and pedestrians; and<br>Wind impact to adjacent buildings. |
| **Water Resources and Drainage** | Potential contamination to aquifer and surface water; and<br>Impact to TWUL's water supply and drainage infrastructure. |
| **Townscape and Visual** | Appearance/visual impact of construction works on surrounding area and from adjacent sensitive receptors;<br>Changes to townscape and site setting;<br>Impact on the London City skyline;<br>Long-term changes to local and long views; and<br>Potential improvements to the public realm/public open space. |

# 8. NON SIGNIFICANT ENVIRONMENTAL ISSUES

Due to the Proposed Development being claimed as an OSD a number of environmental aspects will not need to be considered as they were considered as part of the Crossrail ES.

## 8.1. Ground Conditions

The assessment of potential impacts to ground conditions resulting from the excavation/subsurface works associated with the new Crossrail station, and the construction of the ticket hall up to plinth, has already been considered within the Crossrail ES (2005). The Proposed Development will not include any further excavation / subsurface activities as it will be constructed entirely above the concrete slab constructed as part of the Crossrail works. As a result, the Proposed Development will not impact upon ground conditions at the site or neighbouring areas and therefore this topic is not required for inclusion in the ES.

## 8.2. Archaeology

Crossrail considered the potential impacts of their excavation activities on archaeology within their Crossrail EIA (2005). As discussed, the Proposed Development will not include any further excavation/subsurface activities as it will be constructed entirely above the concrete slab constructed as part of the Crossrail works. As a result, the Proposed Development will not impact upon archaeology at the site or neighbouring areas and therefore this topic is not required for inclusion in the ES.

## 8.3. Ecology

The development site is located within a dense urban area in central London and the (currently under construction) Crossrail Station will encompass almost the entire footprint of the site. Therefore, the ecological value of the site is expected to be low. In addition, Crossrail considered the potential impacts of their demolition and construction activities within the Crossrail EIA (2005), therefore it is considered unnecessary to assess ecological impacts of the proposed Cardinal Tower development as it will be built entirely above the concrete slab constructed as part of the Crossrail works.

## 8.4. Electronic Interference

The introduction of new structures of significant height and bulk into an environment can cause disruption to the reception of electromagnetic waves for TV and radio reception. However, given the surrounding built form and height of the Proposed Development (i.e. 8 storey's), the potential impact of the Proposed Development on TV and radio reception is considered low.

Further to this, analogue signals will cease to be transmitted in 2012 and will be replaced by digital signals. In addition, the previous Cardinal Tower scheme on the site was 12 storeys in height (compared to 9 storeys associated with the Proposed Development. As such, an assessment of the Proposed Development's potential to interfere with television, radio (both analogue and digital) and mobile phone reception has concluded that the impacts will not be significant and therefore this topic is not required for inclusion in the ES.

## 8.5. Wind Tunnel Testing

Given the height and scale of the proposed building in relation to the surrounding area, it is considered that a desk based assessment will be sufficient to assess the likely wind impacts of the Proposed Development. Therefore, wind tunnel testing is not proposed as part of the ES.

## 9. PROPOSED STRUCTURE OF THE ENVIRONMENTAL STATEMENT

The ES will comprise the following set of documents:

***ES Non-Technical Summary (NTS):*** this document will provide a concise summary of the Proposed Development, alternative designs that were considered, environmental impacts and mitigation measures.

***ES Volume I: Main Chapters:*** This will contain the full text of the EIA with the proposed ES chapter headings as follows:

1. Introduction;
2. EIA Methodology;
3. Planning Policy Context;
4. Alternatives and Design Evolution;
5. The Proposed Development;
6. Construction Programme;
7. Waste and Recycling;
8. Sustainability;
9. Socio-economics;
10. Transportation and Access;
11. Air Quality;
12. Noise and Vibration;
13. Daylight, Sunlight and Overshadowing, Light Pollution and Solar Glare;
14. Wind Microclimate;
15. Water Resources and Drainage;
16. Cumulative Impacts; and
17. Residual Impacts and Conclusions.

***ES Volume II: Townscape Conservation and Visual Assessment:*** the ES will include a stand-alone Townscape and Visual Assessment accompanied by a full set of views and verified images.

***ES Volume III: Technical Appendices:*** these will provide supplementary details of the environmental studies conducted during the EIA including relevant data tables, figures and photographs.

## 10. SUMMARY AND CONCLUSIONS

This Scoping Discussion Paper requests the LBI issue a Scoping Opinion pursuant to Regulation 10 of the Town and Country (Environmental Impact Assessment) (England and Wales) Regulations 1999 (as amended). This report suggests a comprehensive scope of work based on previous experience of the assembled team of specialists and baseline studies of the Proposed Development. The Council and consultees are invited to consider the content of this Scoping Discussion Paper and comment accordingly within the five week period prescribed by the EIA Regulations.

# APPENDIX A: PROPOSED ASSESSMENT CRITERIA

# Cardinal Tower Assessment Criteria

| OSD Environmental Statement | Crossrail Environmental Statement | Assessment Criteria to be used | | | | Notes |
|---|---|---|---|---|---|---|
| Chapter xxx: Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare | N/A | Daylight, Sunlight and Overshadowing | | | | |
| | | Criteria | | | Impact | |
| | | Improvement ratio >1.3 of baseline value. | | | PSig (beneficial) | |
| | | Improvement ratio between <1.3 and ≥1.0 of baseline value.<br>Daylight:<br>A VSC of:<br>>27%.<br>ADF:<br>Living Room 1.5%<br>Bedroom 1.0%<br>Kitchen 2.0% | Sunlight to neighbouring properties:<br>An Total APSH of:<br>>25%, of which<br>>5% are in Winter | Overshadowing:<br>Area of amenity that receives direct sunlight on 21st March:<br>>60% | Sig (beneficial) | |
| | | Or a Reduction ratio <1.0 and ≥0.8 of baseline value. | | | NSig | |
| | | Daylight:<br>A VSC of:<br>26.5% - 13%.<br>ADF:<br>Living Room 1.0-1.4%<br>Bedroom 0.6-0.9%<br>Kitchen 1.2-1.9% | Sunlight to neighbouring properties:<br>An Total APSH of:<br>24% - 10%, of which<br>4% - 1% are in Winter | Overshadowing:<br>Area of amenity that receives direct sunlight on 21st March:<br>59% - 40% | | |
| | | Or a Reduction ratio <0.8 and ≥0.7 of baseline value. | | | Sig (adverse) | |
| | | Daylight:<br>A VSC of:<br>12.5% - 0%.<br>ADF:<br>Living Room 0-0.9%<br>Bedroom 0-0.5%<br>Kitchen 0-1.1% | Sunlight to neighbouring properties:<br>An Total APSH of:<br>< 10%, of which<br><1% are in Winter | Overshadowing:<br>Area of amenity that receives direct sunlight on 21st March:<br>< 40% | | |
| | | Or a Reduction ratio <0.6 of baseline value. | | | PSig (adverse) | Not assessed as part of Crossrail's ES. |
| | | Light Spillage and Solar Glare<br>Evaluation of lighting impacts was determined based on the sensitivity of the receptor and the magnitude of the change in perceived brightness, including the duration of the impact. | | | | |
| | | | With low receptor sensitivity | With moderate receptor sensitivity | With high receptor sensitivity | |
| | | With negligible impact magnitude | NSig | NSig | NSig | |
| | | With low impact magnitude | NSig | NSig/Sig | NSig/Sig | |
| | | With moderate impact magnitude | NSig/Sig | Sig | Sig | |
| | | With high impact magnitude | NSig/Sig | Sig | Sig/PSig | |
| | | With very high impact magnitude | Sig | Sig/PSig | PSig | Use Crossrail's assessment criteria |

# Cardinal Tower Assessment Criteria

<table>
<tr><th>OSD Environmental Statement</th><th>Crossrail Environmental Statement</th><th>Assessment Criteria to be used</th><th>Notes</th></tr>
<tr><td>Chapter xxx: Wind (Microclimate)</td><td>N/A</td><td>Based upon the Lawson Comfort Criteria, significant impacts can either be of beneficial or adverse, and significant or an impact of particular significance as follows:<br>Beneficial – If the measured criteria are less windy than the baseline or desired conditions;<br>Adverse – If the measured conditions are windier than the baseline or the intended use of the Application site;<br>Non-significant – If the measured conditions are equivalent to the baseline or the intended use of the Application site;<br>Significant impact (either Beneficial or Adverse) – A one or two-category difference in the wind classification on the Lawson Scale;<br>Impact of particular significnace (either Beneficial or Adverse) – A three-category difference in the wind classification on the Lawson Scale.</td><td>Not assessed as part of Crossrail's ES.</td></tr>
<tr><td>Chapter xxx: Waste and Recycling</td><td>N/A</td><td>Descriptive chapter (i.e no assignment of impact significance)</td><td>Not assessed as part of Crossrail's ES.</td></tr>
<tr><td>Chapter xxx - Water Resources</td><td>Water resources</td><td>Surface water levels/flows/quality:<br>• cross drainage: the current clear opening and stage-discharge capacity (of up to a design check value of the 1:100 year flow plus 20%) at all cross drainage structures should be maintained. If changes in configuration were proposed, a measurable change in head loss at the design check flow was the threshold of significance for major structures;<br>• stormwater runoff: the likely present and future runoff should be not worse than existing "NWTE" in areas draining to a Thames Water combined sewer. Elsewhere, a greenfield rate between 2 to 8 l/s/ha should be achieved. An assessment was made of the potential use of and effect that any balancing pond or sustainable drainage systems (SUDS) might have on controlled waters;<br>• impacts on surface water quality: the Environment Agency GQA and river classification target for each reach were obtained and an assessment made of the likely water quality of any discharges needing a consent. A simple mass balance approach was adopted to test if the discharge would cause a reach to either drop a GQA class or delay its reaching of a target;<br>• flood risk: impacts on surface water levels included developments which fall within a functional flood plain and which would take up flood storage capacity; and<br>• construction in rivers: impacts affecting flow and quality of surface waters were considered. All works taking place in, under or over, or within sixteen metres of tidal defences, eight metres of main rivers or affecting the flow in an ordinary watercourse would be notified to the Environment Agency.<br>Groundwater levels/flows/quality:<br>• impacts on groundwater flows and levels: a modelling approach was used to test how drawdowns might impact on protected rights, licensed abstractions or designated sites with water features. Since deep groundwater levels have been rising and are planned to, or may, be lowered in future, the 1990 piezometry was used as reference for the assessment of drawdown. In the shallow aquifer, a change of head of 2m, a rise to within basement levels or a rise of 25 percent of the annual fluctuation was considered significant depending on site specific conditions; and<br>• impacts on groundwater quality: the likely time of travel to groundwater resources, as identified from the SPZ or TTZ, and type of works undertaken and water use, existing monitoring and any water treatment at each receptor was evaluated in consultation with the owners. The evaluation could lead to limited closure or intensified monitoring during critical operations where the time of travel is less than 100 days. Times of travel of more than 400 days were considered as exceeding the threshold of significance. A review of the use of controlled chemicals during all construction and operational works was undertaken to limit the risk of List 2 substances, and prevent List 1 substances, entering groundwater. Potential impacts on groundwater quality included increases in turbidity.
<table>
<tr><th></th><th colspan="3">Severity</th></tr>
<tr><th>Likelihood:</th><th>Low</th><th>Moderate</th><th>High</th></tr>
<tr><td>Remote</td><td>Not significant (N)</td><td>Not significant (N)</td><td>Significant (S)</td></tr>
<tr><td>Occasional</td><td>Not significant (N)</td><td>Significant (S)</td><td>Significant (S)</td></tr>
<tr><td>More likely to happen than not</td><td>Not significant (N)</td><td>Significant (S)</td><td>Particularly significant (PS)</td></tr>
<tr><td>Expected</td><td>Significant (S)</td><td>Significant (S)</td><td>Particularly significant (PS)</td></tr>
</table>
</td><td>Use Crossrail's assessment criteria</td></tr>
</table>

# Cardinal Tower Assessment Criteria

<table>
<tr><th>OSD Environmental Statement</th><th>Crossrail Environmental Statement</th><th>Assessment Criteria to be used</th><th>Notes</th></tr>
<tr><td>Chapter XXX - Noise and Vibration</td><td>Noise and Vibration</td><td>
<u>Ambient Noise Affecting the Development</u><br>
Any ambient noise fêting residential use would be categorised according to PPG24, and ability to meet "good" day/night indoor noise according to BS8233<br>
Any ambient noise effecting commercial development would be assed according to ability to meet indoor noise levels according to BS8233<br>
<u>Ambient Vibration Affecting The Development</u><br>
Crossrail criteria will be used as derived from BS6472
<table>
<tr><th>Place</th><th>Low probability of adverse comment VDV $ms^{-1.75}$</th><th>Adverse comments possible VDV $ms^{-1.75}$</th><th>Adverse comments probable VDV $ms^{-1.75}$</th></tr>
<tr><td>Residential buildings 16h day</td><td>0.2-0.4</td><td>0.4-0.8</td><td>0.8-1.6</td></tr>
<tr><td>Residential buildings 8h night</td><td>0.13</td><td>0.26</td><td>0.51</td></tr>
<tr><td>Offices</td><td>0.8</td><td>1.6</td><td>3.2</td></tr>
</table>
Low probability of adverse comment – Not significant<br>
Adverse Comment possible – Significant<br>
Adverse Comment Probable – Significant<br>
<u>Construction Vibration</u><br>
Crossrail criteria – for prevention of cosmetic damage to buildings will be applied as follows<br>
A significant impact on structures was deemed to occur if the limits defined in BS7385 Part 2: 1993 were likely to be exceeded.
<table>
<tr><th>Category of building</th><th>Threshold for significant impacts (peak particle velocity at building foundation)</th></tr>
<tr><td>Standard buildings</td><td>5mm/s</td></tr>
<tr><td>Listed or potentially vulnerable buildings</td><td>3mm/2</td></tr>
</table>
Vibration levels above these criteria will be assessed as significant<br><br>
<u>Operational Traffic (and construction traffic) Noise</u><br>
Crossrail significance criteria will be used as follows
<table>
<tr><th>LAeq (07:00 – 23:00) Day</th><th>LAeq (23:00 – 07:00) Night</th><th>Scale Rating</th></tr>
<tr><td>Decrease of more than 3 dB</td><td>Significant decrease</td><td>Significant beneficial impact</td></tr>
<tr><td>Less than 3 dB</td><td>No Significant change</td><td>No significant impact</td></tr>
<tr><td>Increase of 3-5 dB</td><td>Slight increase</td><td>Significant adverse impact</td></tr>
<tr><td>Increase of 6-10 dB</td><td>Moderate increase</td><td></td></tr>
<tr><td>Increase of more than 10 dB</td><td>Substantial increase</td><td>Significant adverse impact</td></tr>
</table>
<u>Operational noise from The Development (e.g. plant noise)</u><br>
Crossrail significance criteria will be sued as follows<br>
Airborne noise arising from mechanical and electrical services, will be assessed for locations in proximity to neighboring residential and other noise-sensitive development will be assessed in accordance with BS 4142:1997.<br>
If the difference between Rating Level of the plant in normal operation and the existing LA90 background noise level is not more than +5 dB, - Not significant<br>
If the difference between Rating Level of the plant in normal operation and the existing LA90 background noise level is equal to or more than +5 dB, - Significant
</td><td>Use Crossrail's assessment criteria</td></tr>
</table>

# Cardinal Tower Assessment Criteria

<table>
<tr><th>OSD Environmental Statement</th><th>Crossrail Environmental Statement</th><th>Assessment Criteria to be used</th><th>Notes</th></tr>
<tr><td>Chapter xxx - Air Quality</td><td>Air quality, climate change and electromagnetic fields</td><td><u>Local air quality</u><br>The following thresholds of significance were adopted for the assessment of local air quality.:<br>• Significant – Where an Air Quality Management Area has not currently been declared, if the increase in ground level concentrations results in the relevant air quality objective or limit value being equalled or exceeded and where the increase is such that the implementation of an Air Quality Action Plan by the relevant local authority would be prejudiced. Where an Air Quality Management Area has been declared, if there is an increase in ground level concentrations of a sufficient degree that the implementation of an Air Quality Action Plan by the relevant local authority would be prejudiced.<br>• Insignificant – the change in ground level concentrations does not result in the air quality objective or limit value to be equalled or exceeded.<br><u>Construction Dust</u><br>There are no established criteria for the assessment of nuisance from dust arising from construction sites. A risk-based approach was therefore developed to identify construction sites with potential to generate significant quantities of dust near sensitive receptors. The assessment of risk focused on the type and duration of dust raising activities present at each worksite combined with the number and type of receptor within 150 m of the worksite. The method is summarised as follows:<br>• Dust raising activities at each worksite were ranked either high, medium or low (3, 2 or 1) according to severity of impact. The duration of each activity was then weighted by the dust raising potential. A total dust raising potential for each worksite was then calculated.<br>• Receptor counts were made around each worksite within distance bandings of 20 m, 50 m, 100 m and 150 m, and weighted by a factor of 4, 3, 2 or 1, respectively.<br>• A total dust nuisance score for each worksite was calculated by multiplying the weighted dust raising potential with the weighted receptor counts.<br>The worksites were then divided into categories reflecting the degree of dust mitigation required.<br>Emissions of Greenhouse Gases<br>Emissions were evaluated as follows:<br>• the total emissions during construction compared to the baseline emissions; and<br>• the estimated cumulative emissions for the opening year compared to the baseline emissions.<br><br><u>Electromagnetic Fields</u><br>A grading system based on the requirements of the National Radiological Protection Board recommended exposure limits and the EU Directive on Electromagnetic Compatibility (Directive 89/336) was used. The thresholds were:<br>• significant if an impact exceeds the guidelines for electromagnetic fields;<br>• potentially significant if an impact is greater than 75% of the guidelines for electromagnetic fields; and<br>• not significant if an impact is less than 75% of the guidelines for electromagnetic fields.</td><td>Use Crossrail's assessment criteria<br><br>Electromagnetic fields not applicable to the proposed development</td></tr>
<tr><td>Chapter XXX - Socio economics</td><td>Community</td><td>Significance was determined based on both professional judgement and the use of the criteria laid out in the table below. It focused on impacts that are likely to have significant implications for the community as a whole, or for a discreet section of it, rather than for individuals.<br><table><tr><th>Effect</th><th>Threshold of Significance (at community level)</th></tr><tr><td>Permanent loss of residential accommodation</td><td>Demolition or displacement for 3 months or more of 5 properties or more.</td></tr><tr><td>Temporary loss of residential accommodation</td><td>Displacement of residents from 10 or more properties</td></tr><tr><td>Community facilities or key services:<br>- closure or rendered unusable<br>- other impairment of use</td><td>Assessed based on the availability of alternative facility within a reasonable distance.</td></tr></table></td><td>Use Crossrail's assessment criteria</td></tr>
</table>

# Cardinal Tower Assessment Criteria

| OSD Environmental Statement | Crossrail Environmental Statement | Assessment Criteria to be used | | Notes |
|---|---|---|---|---|
| | | Closure or substantial diversion* of public right-of-way or other access | For more than a few week-ends and resulting in a diversion of 500 m or more | |
| | | Impact on local amenity as a result of lorry traffic during construction | Over 100% increase in lorry numbers subject to a threshold of at least 5 construction lorries a day. | |
| | | Noise and Vibration | As defined in Noise and Vibration | |
| | | Visual | As defined in Visual | |
| | | Atmospheric | As defined in Air Quality | |
| | | *substantial diversion being 500m or more | | |
| | Socio-economics | The following criteria were used to assess the significance of residual impacts:<br>• Magnitude of change: this entailed consideration of the absolute number of people or businesses affected and the size of area in which impacts will be experienced.<br>• Scale of the impact: this entailed consideration of the relative magnitude of each impact in its relevant market context (for example, the impacts on local employment were considered in the context of the overall size of the local labour market).<br>• Timing of change: more weight was given to long-term, permanent changes than to short-term, temporary ones.<br>• Scope for adjustment or mitigation: the socio-economic study was concerned in part with markets. Markets adjust themselves continually to changes in supply and demand, and the scope for the changes brought about by the project to be accommodated by market adjustment was therefore a criterion in assessing significance. | | Use Crossrail's assessment criteria |
| Chapter xxx - Planning Policy | Planning policy | The evaluation of impacts to determine significance was based on the following considerations:<br>• the level of importance of the relevant planning policies and designations;<br>• the relative scarcity of the resource;<br>• the sensitivity of the resource;<br>• the magnitude of the impact; and<br>• the conclusions reached in other technical work, including extent of impacts on receptors. | | Use Crossrail's assessment criteria |
| Chapter xxx - Traffic and Transport (and Transport Assessment) | Traffic and transport | Construction (temporary)<br>Traffic levels and delays to vehicle occupants<br>A significant increase in traffic levels and driver and vehicle passenger delay (including delays to bus and coach passengers) is defined as:<br>CT1a A 30 per cent net increase in traffic (lorries or all vehicles) over future baseline two-way flows (or one-way flows where either the link or the lorry route is oneway) for links affected for more than four weeks in any 12-month period, and where the total increase in traffic is more than 40 vehicles a day, subject to the increase leading to delay. Individual temporary increases of up to five days do not count towards the four-week period.<br>Or CT1b A 100 per cent net increase in traffic (lorries or all vehicles) over future baseline two-way flows (or one-way flows where the link or the lorry route is one-way) for links affected for more than five days up to four weeks in any 12-month period, and where the total increase in traffic is more than 40 vehicles a day, subject to the increase leading to delay. Individual temporary increases of up to five days do not count towards the four week period.<br>Or CT1c A temporary diversion, for more than four weeks in any 12-month period, that leads to a maximum increase in length of journey of more than 2.5 km on a route carrying more than 100 vehicles a day, 5 km on a route carrying more than 50 vehicles a day, or 10 km on any other route.<br>Or CT1d A significant delay problem is forecast, such as at a specific junction or associated with access.<br>Public transport delay<br>A significant impact on journeys by bus, rail, underground and light rail is defined as:<br>CT2a Changes in a majority of representative journey times by rail, Underground or light rail of more than 20 per cent lasting for more than four weeks in any 12-month period. | | Use Crossrail's assessment criteria |

# Cardinal Tower Assessment Criteria

| OSD Environmental Statement | Crossrail Environmental Statement | Assessment Criteria to be used | Notes |
|---|---|---|---|
| | | Or CT2b Temporary changes in journey distances by bus for more than four weeks in any 12-month period, of more than 400 m in the GLA area and 1 km elsewhere, where diversions apply.<br>Or CT2c A temporary net increase of more than 30 per cent, for more than four weeks in any 12-month period, in lorries or total traffic on a route running along a bus route, or a net increase of more than 30 per cent in total traffic on a route intersecting a bus route.<br>Or CT2d A significant delay, disruption, overcrowding or other impact affecting the public transport network over a wide area for a period of more than five days.<br>Disruption to interchange<br>A significant impact on interchange is defined as:<br>CT3a A material change in the vicinity of stations and worksites for over four weeks in any 12-month period to public transport interchange such as:<br>• bus facilities and operation (eg material loss of or relocation of bus stops, passenger waiting facilities, bus stands or operator facilities); or<br>• taxi facilities and operations (eg material loss of or relocation of taxi stands, passenger waiting facilities or operator facilities); or<br>• 'kiss-and-ride' facilities or operation (eg material loss or relocation of dropping off areas).<br>Parking and loading<br>A significant impact on parking and loading is defined as:<br>On-street facilities<br>CT4a Loss for more than four weeks in any 12-month period of:<br>• one or more on-street loading bays; or<br>• one or more on-street parking bays for a specific user or vehicle, including disabled persons, buses, taxis, doctors, ambulances and police vehicles; or<br>• five or more on-street bays for residents and businesses; or<br>• five or more on-street pedal or motor cycle spaces; or<br>• 20 or more general parking bays or the equivalent length of unrestricted kerbside space; and<br>• the bays or spaces are reasonably well used.<br>Public off-street parking<br>CT4b Loss for more than four weeks in any 12 month period of:<br>• 30 or more public off-street car parking spaces; or<br>• 20 per cent of the capacity of the car parks if the number of spaces lost is less than 30; or<br>• loss of any public of-street spaces for disabled persons, buses, taxis, doctors, ambulances or police vehicles ; or<br>• loss of any public off-street loading bays or facilities; and<br>• the spaces are reasonably well used and, for ordinary parking spaces, replacement facilities are more than 5 minutes' walk away.<br>Private parking<br>CT4c A material traffic or transport impact due to a loss of private off-street parking or loading facilities for more than four weeks in any 12-month period.<br>Note: the socio-economic consultant will report any significant socio-economic impacts or impacts of particular importance of loss of private parking or loading facilities.<br>Vulnerable road user delay and loss of amenity<br>A significant impact on vulnerable road users (pedestrians, cyclists, mobility impaired persons and equestrians) is defined as:<br>CT5a There will be a temporary increase of more than 30 per cent in the total traffic flow, or the number of lorries, for more than four weeks in any 12-month period; and<br>• the increase is more than 40 movements a day; and<br>• there will be over 100 two-way movements of cyclists or pedestrians per 12-hour average weekday; and<br>Note: the vulnerability of the users is 'high' (eg there are no physically segregated facilities for cyclists, or there is no footway or an inadequate footway or crossing facilities for pedestrians. | |

# Cardinal Tower Assessment Criteria

| OSD Environmental Statement | Crossrail Environmental Statement | Assessment Criteria to be used | Notes |
|---|---|---|---|
| | | Or CT5b A temporary maximum increase, for more than four weeks in any 12-month period, in pedestrian journey length along a road or other public right of way of more than:<br>• 250 m on a route carrying more than 200 pedestrians a day; or<br>• 500 m on a route carrying more than 100 pedestrians a day; or<br>• 1 km on a route carrying more than 50 pedestrians a day; or<br>• 2 km on any other route.<br>Or CT5c A temporary maximum increase in journey length, for cyclists or equestrians along a road or other public right of way, for more than four weeks in any 12-month period, of more than:<br>• 1.5 km on a route carrying more than 100 cyclists a day; or<br>• 3.0 km on a route carrying more than 50 cyclists a day; or<br>• 6.0 km on any other route.<br>Or CT5d A significant problem is forecast such as at a specific crossing, associated with footway or footpath overcrowding or with access to or between stations or bus stops, or to premises.<br>Or CT5e A temporary increase of more than 30 per cent in lorries or total traffic on a route intersecting a bridleway or near an equestrian centre, for more than four weeks in any 12-month period.<br>Accidents and safety<br>Significant impacts on accidents and safety is defined as:<br>CT6 Those junctions that have experienced more than ten personal injury accidents in a three year period ending in 2003 or 2004 for which data is available: or<br>• links for which data is available that have experienced on average more than ten personal injury accidents per 100-metre length in a three-year period ending in 2003 or 2004; and<br>• the junctions or links would be subject to a net increase of 10 per cent or more in total traffic flow during construction for a period exceeding four weeks in any 12-month period.<br>Waterways<br>A significant impact on waterways or waterways users is defined as:<br>CT7 Loss of, or prevention of access to, moorings or waterside or water-borne facilities or closure of a route with a diversion distance of more than 1000 m, for a period of more than five days, considering the level of use and local circumstances.<br>Note: impacts on waterside pedestrians, cyclists, mobility impaired persons and equestrians are assessed in relation to the vulnerable road user criteria.<br>Operational (permanent)<br>Traffic levels and delays to vehicle occupants<br>A significant impact in traffic levels and driver and vehicle passenger delay is defined as:<br>OT1a A 10 per cent increase in morning peak hour two-way traffic levels on the adjoining highway and exceeding the highway capacity on non-congested links.<br>Or OT1b Traffic to or from the station development exceeds 5 per cent of the morning peakhour two-way traffic flow on the adjoining highway where traffic congestion exists or will exist, or in another sensitive area (defined as schools, hospitals or other community facilities).<br>Or OT1c Increased traffic levels that exceed 30 per cent of the off-peak-hour two-way traffic on the adjoining highway in congested or non-congested conditions.<br>Or OT1d A 5 per cent decrease in morning peak-hour modelled traffic link speeds (over future baseline flows) for congested areas (defined as junction approaches running at an average of 85 per cent of capacity during the peak hour) on an individual highway link.<br>Or OT1e A 10 per cent decrease in morning peak-hour modelled traffic link speeds in non-congested areas.<br>Or OT1f A 30 per cent decrease in off-peak modelled traffic link speeds in congested or non-congested areas.<br>Or OT1g There will be a permanent increase in journey length of 1250 m.<br>Public transport<br>A significant impact on journeys by bus is defined as: | |

# Cardinal Tower Assessment Criteria

| OSD Environmental Statement | Crossrail Environmental Statement | Assessment Criteria to be used | Notes |
|---|---|---|---|
| | | OT2a A 20 per cent change in journey times (an increase or decrease) on bus links.<br>Or OT2b A permanent change in journey distance of more than 400 m.<br>A comparison of public transport journey times without Crossrail (by any or all modes) with the proposed Crossrail journey time has been assessed. A significant impact is defined as:<br>OT2c A change (an increase or decrease) in representative journey times of more than 10 per cent.<br>Pedestrian delay and loss of amenity<br>A significant impact is defined as:<br>OT3a A predicted permanent increase of more than 10 per cent in the 12-hour weekday two-way traffic flow; and<br>• the increase will be more than 40 vehicle movements a day; and<br>• there will be over 100 two-way movements of pedestrians per 12-hour average weekday; and<br>• the vulnerability of the pedestrian is 'high'.<br>Or OT3b A predicted permanent increase of more than 30 per cent in the 12-hour weekday two-way traffic flow; and<br>• the increase is more than 40 vehicle movements a day; and<br>• there will be between 50 and 100 two-way movements of pedestrians per 12-hour average weekday; and<br>• the vulnerability of the pedestrian is 'high'.<br>Or OT3c A predicted permanent increase of more than 30 per cent in the 12-hour weekday two-way traffic flow; and<br>• the increase will be more than 40 vehicle movements a day; and<br>• there will be over 100 two-way movements of pedestrians per 12-hour average weekday; and<br>• the vulnerability of the pedestrian is 'moderate'.<br>Or OT3d A predicted permanent increase in journey length of more than 250 m for pedestrians; and<br>• there will be over 100 two-way movements of pedestrians per 12-hour average weekday.<br>Or OT3e A predicted permanent increase in journey length of more than 500 m for pedestrians; and<br>• there will be between 50 and 100 two-way movements of pedestrians per 12-hour average weekday.<br>Or OT3f A predicted permanent increase in journey length of more than 1000 m for pedestrians; and<br>• there will be less than 50 two-way movements of pedestrians per 12-hour average weekday.<br>Note: high vulnerability is, for example, no or inadequate footway or crossing facilities for pedestrians.<br>Cyclist delay and loss of amenity<br>A significant impact is defined as:<br>OT4a a predicted permanent increase of more than 10 per cent in 12-hour weekday twoway traffic flow; and<br>• the increase will be more than 40 vehicle movements a day; and<br>• there will be over 100 two-way movements of cyclists per 12-hour average weekday; and<br>• the vulnerability of the cyclist is 'high'.<br>Or OT4b a predicted permanent increase of more than 30 per cent in 12-hour weekday twoway traffic flow; and<br>• the increase is more than 40 vehicle movements a day; and<br>• there will be between 50 and 100 two-way movements of cyclists per 12-hour average weekday; and<br>• the vulnerability of the cyclist is 'high'.<br>Or OT4c A predicted permanent increase of more than 30 per cent in 12-hour weekday two-way traffic flow; and<br>• the increase will be more than 40 vehicle movements a day; and<br>• there will be over 100 two-way movements of cyclists per 12-hour average weekday; and<br>• the vulnerability of the cyclist is 'moderate'.<br>Note: moderate vulnerability is, for example, limited physically segregated facilities for cyclists.<br>Or OT4d A predicted permanent increase in journey length of more than 750 m; and<br>• there will be over 100 two-way movements of cyclists per 12-hour average weekday.<br>Or OT4e A predicted permanent increase in journey length of more than 1250 m for cyclists; and<br>• there will be less than 100 two-way movements of cyclists per 12-hour average weekday.<br>Note: high vulnerability is, for example, no physically segregated facilities for cyclists. | |

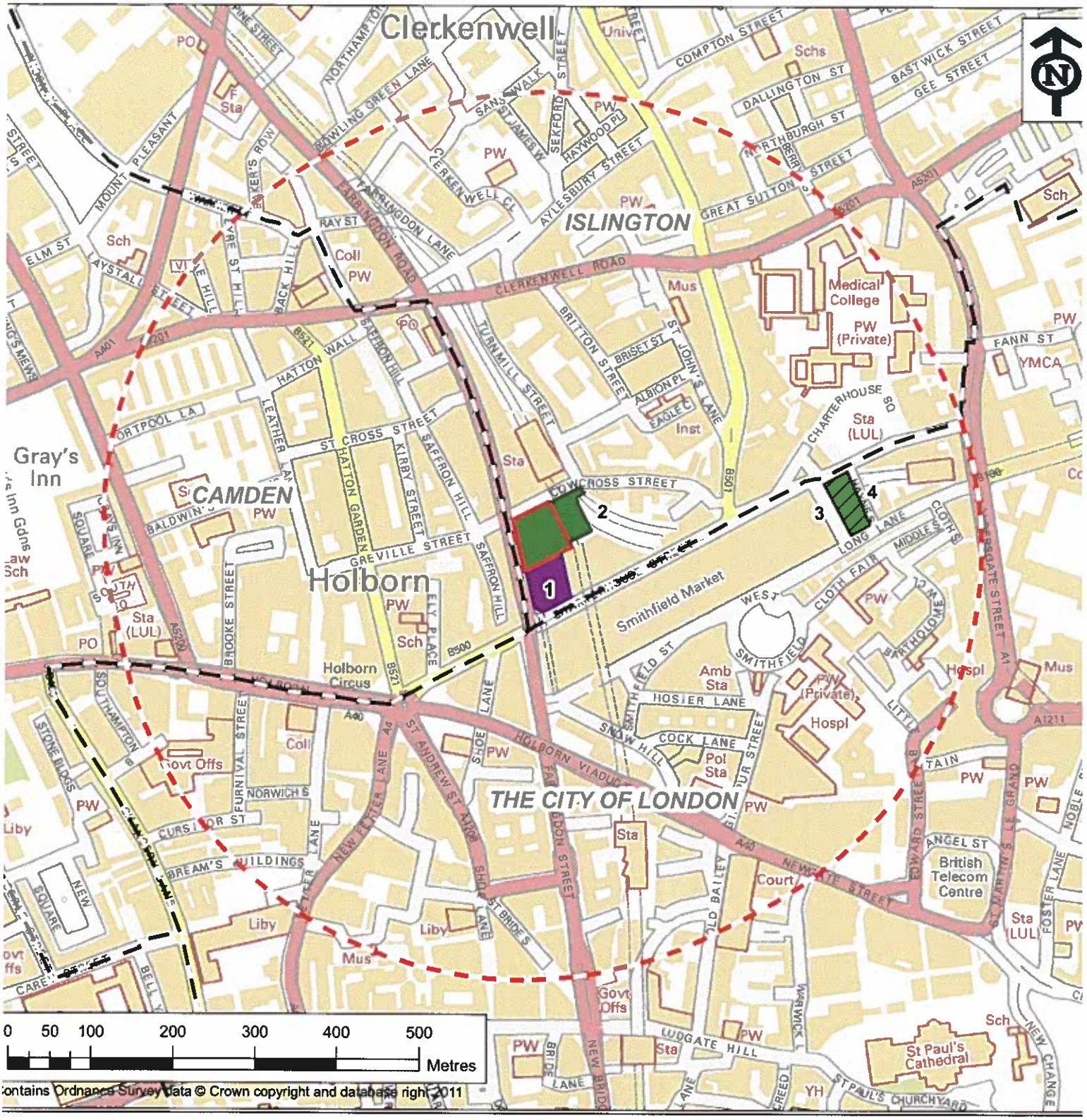
# Cardinal Tower Assessment Criteria

| OSD Environmental Statement | Crossrail Environmental Statement | Assessment Criteria to be used | Notes |
|---|---|---|---|
| | | Station and interchange impacts<br>A significant impact on station interchange is defined as:<br>OT5 Impacts that may be caused by additional Crossrail passengers arriving and departing at stations have been assessed using professional judgement, taking account of:<br>• local transport conditions at each station; or<br>• forecast additional Crossrail passengers; or<br>• the resulting increases in passengers arriving and departing on foot, by bicycle, by car and by bus and taxi.<br>Impacts that it is considered will not be able to be mitigated by local improvement measures are reported as significant impacts.<br>Parking and loading<br>A significant impact on parking and loading is defined as:<br>OT6a A loss of special-use on-street or off-street spaces, including spaces for disabled persons, buses, taxis, doctors, ambulances, police vehicles and car club bays;<br>Or OT6b Any predicted increase in on-street parking demand in the vicinity of the station.<br>Or OT6c A loss of private car parking.<br>Or OT6d Any loss of off-street station car parking.<br>In all cases, based on assessment of impact considering the level of use and local circumstances such as parking controls and availability of alternative parking.<br>Waterways<br>A significant impact on waterways or waterway users is defined as:<br>OT7 Permanent loss of, or prevention of access to, moorings or waterside or waterborne facilities or closure of a route with a diversion distance of more than 1000 m, considering the level of use and local circumstances.<br>Note: impacts on waterside pedestrians, cyclists, mobility impaired persons and equestrians are assessed in relation to the vulnerable road user criteria.<br>Accidents and safety<br>A significant impact on accidents and safety is defined as:<br>OT8 Those junctions that have experienced more than ten personal injury accidents in a three year period ending in 2003 or 2004 for which data is available: or<br>• links for which data is available that have experienced an average of more than ten personal injury accidents per 100-metre length in a three-year period ending in 2003 or 2004; and<br>• the junctions or links would be subject to an increase of 10 per cent or more in the total 12-hour weekday traffic flow. | |
| Volume II: Townscape and Visual Impact Assessment | Direct impacts on built heritage | There is no established methodology for evaluating impacts on built heritage. The methodology which has been used has taken account of the architectural and historic importance of the building, its finishes and robustness. The assessment has drawn on knowledge of existing practice and professional judgement to evaluate the likely extent and significance of potential impacts.<br>The assessment threshold was defined as whether the proposed works will 'affect a building's special (architectural and historic) interest'. This is the test defined by statute to determine whether listed building consent would be required. PPG16 Annex 3 allocates the same level of national importance to SAMs as Grade I and Grade II* listed buildings. This indicates that these structures are classified as of greater national importance than Grade II listed buildings. This weighting was reflected in the assessment of impacts. The bridges on the Great Western Main line, although not individually listed, were collectively assigned the same importance as a Grade II listed structure for the purposes of the assessment.<br>In relation to potential impacts from settlement, the methodology for determining the magnitude of the impact is based on the severity of settlement and the sensitivity of the building to movement.<br>For other types of impacts, the magnitude of impact is determined as follows. A low magnitude impact is defined as where the effect on the building's special character would generally not be adverse. For moderate and high magnitude impacts, the broad criteria set out in PPG15 (paragraphs 3.5 and 3.19) in relation to listed building consent applications) and PPG16 were applied using professional judgement to categorise the significance. These are defined as:<br>• The importance of the building; | Use Crossrail's assessment criteria |

# Cardinal Tower Assessment Criteria

| OSD Environmental Statement | Crossrail Environmental Statement | Assessment Criteria to be used | | | | Notes |
|---|---|---|---|---|---|---|
| | | • The particular physical features of the building; and<br>• The extent to which the proposed works would bring substantial benefits for the community. | | | | |
| | | Level of Impact | Value of Resource | | | |
| | | | Grade II | Grade I and II*, | | |
| | | Low magnitude impact | NSig | NSig/Sig | | |
| | | Moderate magnitude impact | NSig/Sig | Sig/PSig | | |
| | | High magnitude impact | Sig/PSig | PSig | | |
| | Townscape and Landscape | The significance of impacts on landscape and townscape resources, both beneficial and adverse depends primarily on:<br>• impact magnitude; and<br>• the sensitivity of resource.<br>Different levels of impact significance were therefore determined from the relationship between magnitude and sensitivity. Impact significance was determined using the table below. | | | | Use Crossrail's assessment criteria |
| | | | With low landscape/townscape sensitivity | With moderate landscape/townscape sensitivity | With high landscape/townscape sensitivity | |
| | | With negligible impact magnitude | NSig | NSig | NSig | |
| | | With low impact magnitude | NSig | NSig/Sig | NSig/Sig | |
| | | With moderate impact magnitude | NSig/Sig | Sig | Sig | |
| | | With high impact magnitude | NSig/Sig | Sig | Sig/PSig | |
| | | With very high impact magnitude | Sig | Sig/PSig | PSig | |
| | Visual amenity | | With low receptor sensitivity | With moderate receptor sensitivity | With high receptor sensitivity | Use Crossrail's assessment criteria |
| | | With negligible impact magnitude | NSig | NSig | NSig | |
| | | With low impact magnitude | NSig | NSig/Sig | NSig/Sig | |
| | | With moderate impact magnitude | NSig/Sig | Sig | Sig | |
| | | With high impact magnitude | NSig/Sig | Sig | Sig/PSig | |
| | | With very high impact magnitude | Sig | Sig/PSig | PSig | |

# APPENDIX B: LOCATION OF CUMULATIVE SCHEMES




## Key:

- Site Boundary 500m Buffer
- Site Boundary
- Borough Boundary

**Planning Status**

- Consented
- Under Construction
- Pre-Planning

## Cumulative Scheme

1, Charter House, 2 Farringdon Road

2, Farringdon West Crossrail Station, 54-60 Cowcross St

3, Farringdon East Crossrail Station, 38-42 Charterhouse Street, 33-37 Charterhouse Square

4, Farringdon East OSD, 38-42 Charterhouse Street, 33-37 Charterhouse Square

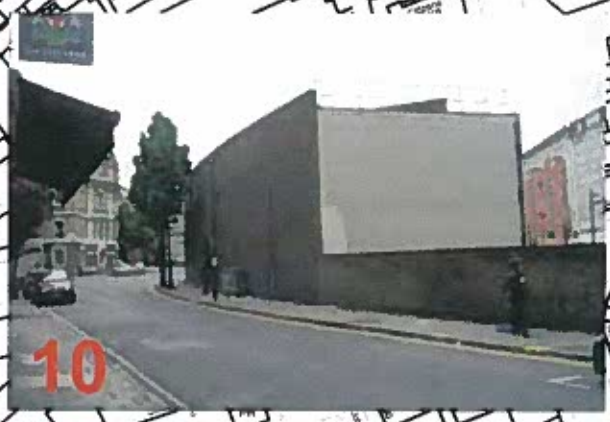
# APPENDIX C: LOCATION OF PROPOSED VIEWS















CARDINAL TOWER - LOCAL & TOWNSCAPE VIEWS REV.03 09/06/11

SCALE: 1:2000@A3