

# 107-129 Seven Sisters Road

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April 2013



## Environmental Statement Volume 3 Non-Technical Summary

**National Grid Substation  
with Residential and Commercial Development**



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# 1 Introduction

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- 1.1.1 This document is the Non-Technical Summary of the Environmental Statement that has been prepared to accompany a planning application by National Grid for a proposed electricity substation and residential-led mixed-use development at 107-129 Seven Sisters Road. The site is located on previously developed commercial and industrial land approximately 100m east of the junction between Seven Sisters Road and Hornsey Road in the London Borough of Islington.
- 1.1.2 National Grid (NG) is in the process of upgrading its electricity distribution network across London to meet future demand in line with the continuing trend of population increases in the Capital. The overall programme of works required to meet this demand involves the construction of two large 4m diameter cable tunnels that connect existing substations at Hackney to St Johns Wood and Willesden Junction to Wimbledon.
- 1.1.3 The following sections of this Non-Technical Summary (NTS) describe:
- the approach to undertaking the environmental impact assessment for the proposed development (section 2);
  - the current site conditions and the proposed construction of the substation buildings and residential-led mixed-use scheme, (section 3); and
  - non-technical summaries of each of the environmental topic areas that have been assessed in the main Environmental Statement, (sections 4-20).

## 2 The Environmental Impact Assessment Process

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2.1.1 The first stage in the EIA process involved a request from the London Borough of Islington (LBI) as to the need for an Environmental Impact Assessment. This was formally confirmed by LBI by its issue of a 'Screening Opinion' which explained that the size and nature of the development was such that an EIA should be carried out. Once the need for EIA was confirmed by LBI the process of scoping was carried out.

2.1.2 The purpose of scoping in Environmental Impact Assessment is to identify the environmental topics that have the potential to be significantly affected by the proposed development and to describe how these will be assessed. In accordance with best practice, the Local Authority and other relevant public bodies have been consulted throughout the scoping process.

2.1.3 A Scoping Report was submitted to the London Borough of Havering in December 2010. The Scoping Report proposed the following list of topics to be assessed in the Environmental Statement.

- Transport
- Air Quality
- Noise and Vibration
- Ground Settlement
- Water Resources and Flood Risk
- Hydrogeology
- Contaminated Land
- Archaeology
- Built Heritage
- Landscape and Visual Effects
- Ecology
- Electric and Magnetic Fields
- Socio-Economic Effects
- Sunlight and Daylight
- Waste

2.1.4 A response from the Local Authority was received in March 2013 which generally confirmed its agreement with the content of topics to be covered as listed above in the Environmental Statement. However two additional topics that were required to be included in the EIA was that of the effects of waste heat from the substation, and potential interference to TV and radio reception as a result of the project.

Summaries of these topics are given in Sections 4-20.



## 2.2 Baseline Information

2.2.1 In order to understand how the current environment (or ‘baseline’) is likely to be affected, information about existing conditions has been obtained for each of the environmental topics listed above. Sources of baseline information have included:

- maps of both historical and contemporary features;
- existing sources of information relevant to the area, for example, previous environmental studies such as ground contamination assessments;
- documents obtained through consultation with relevant organisations, such as London Borough of Islington, Natural England, and the Environment Agency; and
- walkover surveys of the site.

## 2.3 Impact Assessment

2.3.1 The assessment considers the likely significant environmental effects during construction and operation of the proposed scheme. The methodologies for the different assessments vary from topic to topic and are set out in detail in the topic sections of the main Environmental Statement document.

2.3.2 The topic assessments provide details of significance criteria, with reference to relevant topic-specific assessment guidance where relevant.

2.3.3 The definitions of significance are expressed as:

- ‘significant (minor)’ / ‘significant (moderate)’ / ‘significant (major)’; and
- ‘beneficial’ / ‘adverse’; or
- ‘not significant’ (negligible).

2.3.4 Given the range of guidance applicable to the assessment topics and the different approaches required, alternative terms have been used where necessary to follow best practice.

## 2.4 Mitigation

2.4.1 Where likely significant adverse effects have been identified in the assessment, measures have been proposed to avoid or reduce effects where possible. Where adverse effects cannot be avoided, measures to compensate for the adverse effects are proposed. Collectively these are known as mitigation measures.

2.4.2 Enhancement measures to improve the environmental performance of the scheme are also proposed where opportunities to implement such measures within the design of the scheme are identified.

## **2.5 Residual Effects**

- 2.5.1 Residual effects are those that remain once mitigation measures have been applied, and are identified in each topic section as appropriate.

## **2.6 Cumulative Effects**

- 2.6.1 Cumulative effects may arise from the combination of the proposed scheme and other permitted developments not yet constructed or currently under construction in the vicinity, acting together to generate elevated levels of impacts.
- 2.6.2 In the case of the proposed development, there are no other consented schemes in close enough proximity to the site to be considered, and therefore no significant cumulative effects are considered likely.

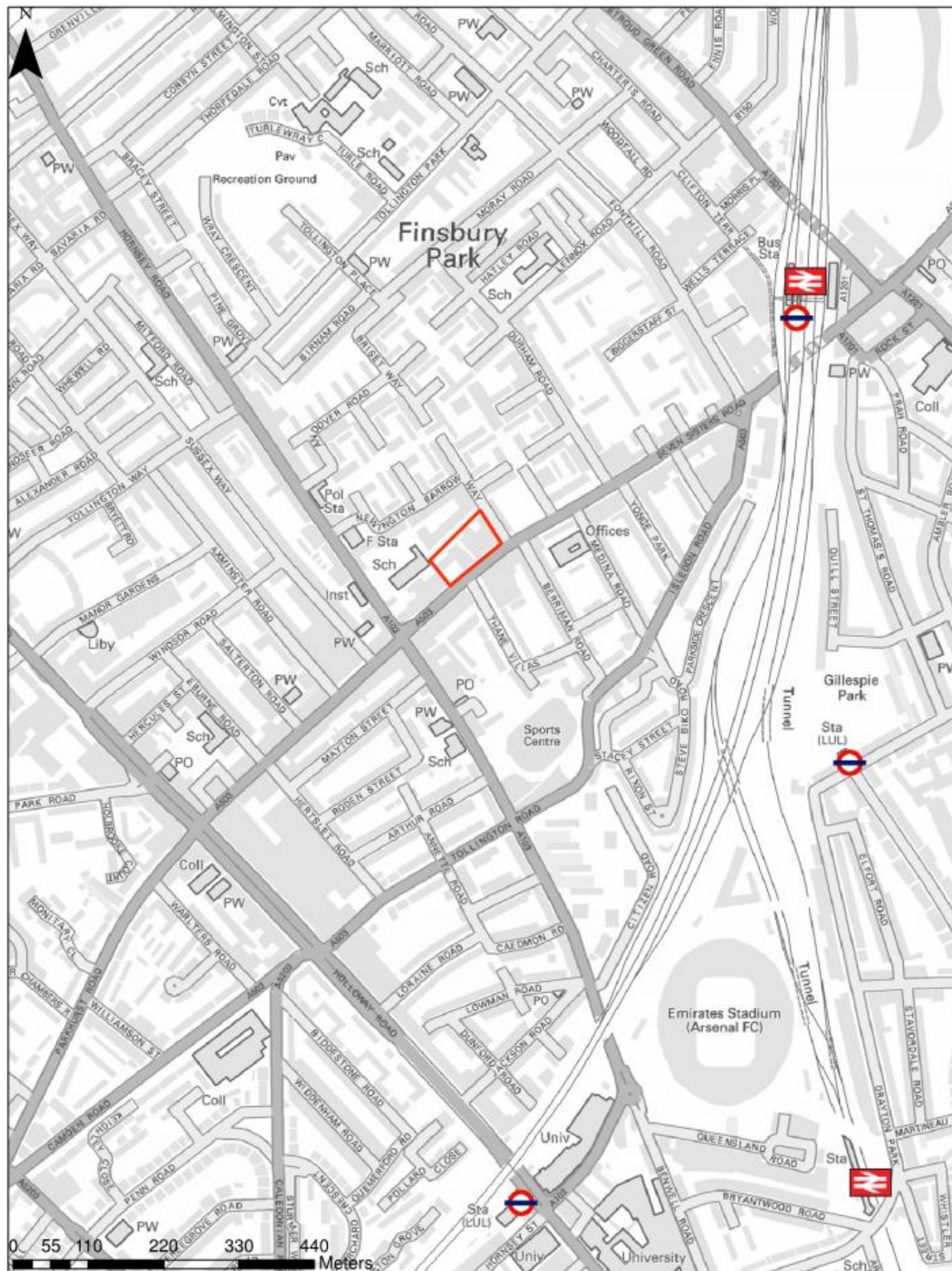
## 3 The Site and the Proposed Development

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### 3.1 The Site

- 3.1.1 The site of the proposed development ("the Site") is located on the north side of Seven Sisters Road in a predominantly residential and commercial area within the London Borough of Islington, and is centred on Ordnance Survey National Grid Reference TQ 308 864. The site is located on former properties 107-129 Seven Sisters Road and is bound by Newington Barrow Way to the east and Heather Close directly to the north of the site, along which lie relatively recent mixed residential and commercial units, generally of 4-5 storeys in height although some units are above 5 storeys. The southern elevation of this block is generally 8m away from the site, but lies approximately 6m from the site boundary at the closest residential receptors there. Montem Primary School is located directly north-west of the site and is a Grade II listed building. To the west of the site is a residential building (Argyle House) fronting Seven Sisters Road beyond which are a mixture of retail and commercial uses with residential units above. The wider area comprises a mixture of mainly residential and commercial buildings and a smaller number of commercial/industrial buildings although none of the latter in close proximity to the site.
- 3.1.2 The Site is roughly rectangular in shape and occupies an area of approximately 100m by 50m on relatively flat ground at a height of 31m above ordnance datum (AOD).
- 3.1.3 The Site was until spring 2013 occupied by up to 10 residential apartment units of up to 4 storeys' height, and a car wash/valet service (107-115 Seven Sisters Road) in the western portion, and the former Red Rose public house and function hall in the eastern part of the site at 129 Seven Sisters Road. All buildings mentioned have since been demolished via permission from the London Borough of Islington granted in February 2013. The central portion of the site had contained a large mound of rubble with some asbestos containing material left over from demolition works undertaken by the previous owner, but has also been removed as a result of implementation of an earlier planning permission. A small electricity transformer remains in the centre of the site.
- 3.1.4 As part of the wider London Power Tunnels project and to which the site is linked, a 15m diameter shaft has been excavated to a depth of approximately 37m below ground. At this depth, two underground 20m long spur shafts that link up to the main cable tunnel beneath Seven Sisters Road have also been constructed.

Figure 1 Site Location





## 3.2 The Proposed Development

- 3.2.1 The proposed development comprises a 400kV electrical substation with residential and commercial/retail development. An illustration of the proposed scheme is shown in Figure 2.
- 3.2.2 The substation is an unmanned development and comprises a switchgear building in the central part of the site (ie the main substation building), a services building in the eastern portion, an ancillary building (shown as the darker shaded building in Figure 2), and a new electricity transformer in the north-east corner of the site to replace the existing. The services building would sit over the main shaft mentioned in section 3.1.4 that has already been constructed on site.
- 3.2.3 The residential led mixed-use development is a five storey 'L'-shaped building fronting Seven Sisters Road with commercial/retail units proposed on the ground floor and residential units in the four floors above.

Figure 2 – The Proposed Development



- 3.2.4 A total of 44 residential apartments are proposed with a mixture of dwelling sizes: 16 x 1-bed units; 21 x 2-bed units; and 7 x 3-bed units and tenure types: half the units will be affordable housing units. Four commercial/retail units comprise a variety of potential uses along Seven Sisters Road. There will also be a courtyard area on the western part of the site, where the building line of the residential apartment block will extend back to the boundary of Heather Close.

- 3.2.5 Existing trees on Seven Sisters Road will be retained, two additional trees will occupy the courtyard area of the mixed use scheme and 'green roofs' will extend across the majority of the scheme, as indicated in Figure 2.
- 3.2.6 There is no car parking proposed for the substation and up to 5 disabled spaces if required have been allocated in the courtyard area of the residential-led mixed use scheme. Some rooftop amenity space is provided on the western part of the residential-led mixed use part of the development.
- 3.2.7 Vehicle and pedestrian access to the substation is via an access road off Newington Barrow Way. Vehicle access to the parking area in the courtyard mentioned above will be via
- 3.2.8 The construction of the development will be phased with the electricity substation buildings constructed first over three years; the land for the residential and commercial/retail element fronting Seven Sisters Road is required to facilitate construction of the substation. Once complete, construction will commence on the residential and commercial/retail element of the development and last up to two years.

### **3.3 Environmental Management of Construction**

- 3.3.1 Construction works can cause disturbance to local neighbours of commercial and residential buildings, as well as to wildlife. Issues such as noise, construction dust and traffic can, if uncontrolled, cause nuisance and as part of the environmental impact assessment, the effects of construction of the scheme were investigated. In order to alleviate potential effects of construction, it is proposed that a Construction Environmental management Plan (CEMP) is drawn up and implemented. This Plan which would require works contractors to put various controls in place and legally abide by them to reduce such construction effects. A CEMP will therefore be drawn up and adhered to by contractors when constructing the proposed scheme.

## 4 Traffic and Transport

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### 4.1 Introduction

- 4.1.1 A transport assessment was undertaken that considered the impacts that may arise from construction and operation of the proposed scheme.
- 4.1.2 Key transport issues addressed include site accessibility to public transport, the number of vehicle trips generated by the proposed scheme during construction and operation, and the proposed parking provision / servicing arrangements.
- 4.1.3 The following topics are covered in this section:
- The existing transport facilities and accessibility in the vicinity of the proposed scheme;
  - The trip generation of the proposed scheme during construction and operation;
  - The impact of the proposed scheme on the local highway network during construction and operation; and
  - A Travel Plan Framework for the proposed scheme.
- 4.1.4 A separate detailed Transport Assessment has been produced and submitted for the proposed scheme.

### 4.2 Baseline

- 4.2.1 A comprehensive review of the existing transport facilities available in the vicinity of the proposed development site has been undertaken and is included in the Transport Assessment. This includes public transport, walking and cycling facilities and the local highway network. A number of known future transport proposals are also discussed.
- 4.2.2 The public transport accessibility level of the proposed development has been assessed using industry guidance and is categorised as 'Excellent'.
- 4.2.3 Finsbury Park London Underground station is located approximately 590m to the east of the proposed scheme. From Finsbury Park, Victoria and Piccadilly line services are accessible. The frequency of these services, as well as key destinations, is outlined in the Transport Assessment.
- 4.2.4 National Rail services are available at Finsbury Park National Rail station some 590m to the east of the proposed development. Finsbury Park National Rail services operate to King's Cross and Moorgate in central London and to areas such as Welwyn Garden City, Letchworth, Cambridge and Peterborough to the north of London.

- 4.2.5 The site has excellent connections with bus routes. A number of bus routes are accessible from a bus stop at Seven Sisters Road / Hornsey Road approximately 160m to the west of the proposed scheme.
- 4.2.6 The pedestrian facilities in the vicinity of the proposed scheme are good, particularly leading to and from the key public transport nodes.
- 4.2.7 There is a good provision of cycle routes in the vicinity of the proposed development.
- 4.2.8 The Local Highway Network serving the proposed site includes Seven Sisters Road, Tollington Park Road, Isledon Road, Hornsey Road and Newington Barrow Way.
- 4.2.9 On-street car parking is available at a number of locations in the vicinity of the proposed scheme.
- 4.2.10 Future public transport proposals include the upgrade of Piccadilly Line.

## 4.3 Impact Assessment

- 4.3.1 Construction of the proposed scheme will be split into two main phases, Phase 1 being undertaken for the switchgear building, services building and ancillary building, and Phase 2 comprising the development of the residential and commercial building.
- 4.3.2 No significant impacts have been assessed relating to traffic levels or delay due to the relatively low numbers of construction vehicles accessing the site, when considering the existing high levels (approximately 18,000 vehicles a day) that use Seven Sisters Road.
- 4.3.3 The proposed scheme will not affect bus services or other forms of public transport during the construction and operation. Therefore there is not anticipated to be a significant impact on public transport journeys.
- 4.3.4 Furthermore, the traffic flows during construction and operation of the proposed scheme on the network will not require any change to bus or taxi facilities in the surrounding area.
- 4.3.5 All vehicular traffic during construction and operation of the proposed scheme will access the site via Seven Sisters Road.

## 4.4 Mitigation

- 4.4.1 A Construction Traffic Management Plan (CTMP) will be produced which would contain measures to be implemented during construction to minimise (as far as practically possible) any adverse impacts associated with construction traffic.
- 4.4.2 Although it is recognised that the potential impacts of construction traffic would be reduced through the implementation of the CTMP,



the residual impact of the construction works on the operation of the surrounding highways network is still considered to remain a short to medium term, local, adverse impact of minor significance.

- 4.4.3 In terms of pedestrians and cyclists, the residual impact would remain insignificant.
- 4.4.4 Given that the proposed Phase 1 development, when completed, will be largely unmanned with only very occasional on-site personnel and occasional vehicle movements to and from the site, no mitigation measures are required.
- 4.4.5 The proposed residential and commercial elements would generate a very low number of vehicle trips during the AM and PM peak hours. Therefore no mitigation measures are required.

## 4.5 Residual Effects

- 4.5.1 Although it is recognised that the potential impacts of demolition and construction traffic would be reduced through the implementation of the CTMP, the residual effect of the construction works on the operation of the surrounding highway network is still considered to remain a short to medium term, local, adverse impact of minor significance.
- 4.5.2 In terms of pedestrians and cyclists, the residual effect would remain insignificant.
- 4.5.3 The impact of the proposed scheme does not require mitigation and therefore effects will remain insignificant.

## 5 Air Quality

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### 5.1 Introduction

- 5.1.1 This section of the NTS describes the current air quality conditions at the vicinity of the proposed scheme and the potential impacts to local air quality due to the scheme's construction and operation. A review of the relevant legislative and policy requirements has also been undertaken at both national and local levels. Where significant effects have been predicted, relevant mitigation measures have been proposed and the residual effects assessed.

### 5.2 Baseline Assessment

- 5.2.1 The site lies within the borough-wide Air Quality Management Area (AQMA) for vehicle pollutants (nitrogen dioxide) and fine particulate matter concentrations. Both types of air emissions are known to cause adverse effects on human health if found in high concentrations.
- 5.2.2 Local monitoring observations from LBI and background mapping from the Department for the Environment, Food and Rural Affairs (Defra) show that the area surrounding the proposed scheme site has nitrogen dioxide and fine particulate concentrations that are below the threshold of UK guidance standards for air quality. Further away, however, monitoring sites record levels of these pollutants in excess of the UK standards of annual averages, especially those located near busy roads.

### 5.3 Impact Assessment

- 5.3.1 The construction effects from the proposed scheme have been assessed using the qualitative approach described in industry guidance. Due to the size of the development, activities taking place during construction and their proximity to sensitive receptors, it was judged that there is an overall high risk to local air quality from dust-emitting activities at the site without any mitigation measures. Taking into account the sensitivity of the surrounding area, it was concluded that there would be moderate effects to local air quality from the construction activities taking place on site. As such, a set of mitigation measures is proposed (via the CEMP) with the implementation of which the effects would be reduced to minor adverse.
- 5.3.2 In terms of operational impacts, the proposed scheme will generate very small volumes of traffic, thus the effect on local air quality from vehicle emissions is expected to be negligible. The proposed scheme will also include an emergency backup diesel generator for the substation, but due to its intermittent use throughout the year, no significant impact to local air quality is expected from its operation. As such, this element was not assessed further in this study.

- 5.3.3 The overall operational effects to local air quality from the proposed scheme have been assessed using the accepted UK guidance. Air quality was judged to be an insignificant consideration for both nitrogen dioxide and fine particulate matter concentrations and of low priority in the planning process.

## 5.4 Mitigation

- 5.4.1 The dust-emitting activities during construction of the proposed scheme can be greatly reduced or eliminated by the application of best practice and mitigation measures. A set of measures has been proposed, based on accepted UK guidance and the Greater London Authority (GLA), that should be incorporated in the CEMP during construction of the proposed scheme. With the implementation of these measures, effects to air quality from the construction activities undertaken on the site would be reduced to minor adverse.
- 5.4.2 Given that only negligible NO<sub>2</sub> and PM<sub>10</sub> impacts on local air quality have been predicted due to the operation of the proposed scheme, no air quality specific mitigation measures are considered necessary.

## 5.5 Residual Effects

- 5.5.1 With the implementation of the proposed mitigation measures, it is expected that construction effects with respect to air quality will be minor adverse; however, these will be temporary and short term. As no significant effects were identified as a result of the operation of the proposed scheme, mitigation measures were not considered necessary and therefore no significant residual effects on air quality are expected.

## 6 Noise

### 6.1 Introduction

6.1.1 This section describes the likely effects of noise and vibration from construction and operation of the proposed development.

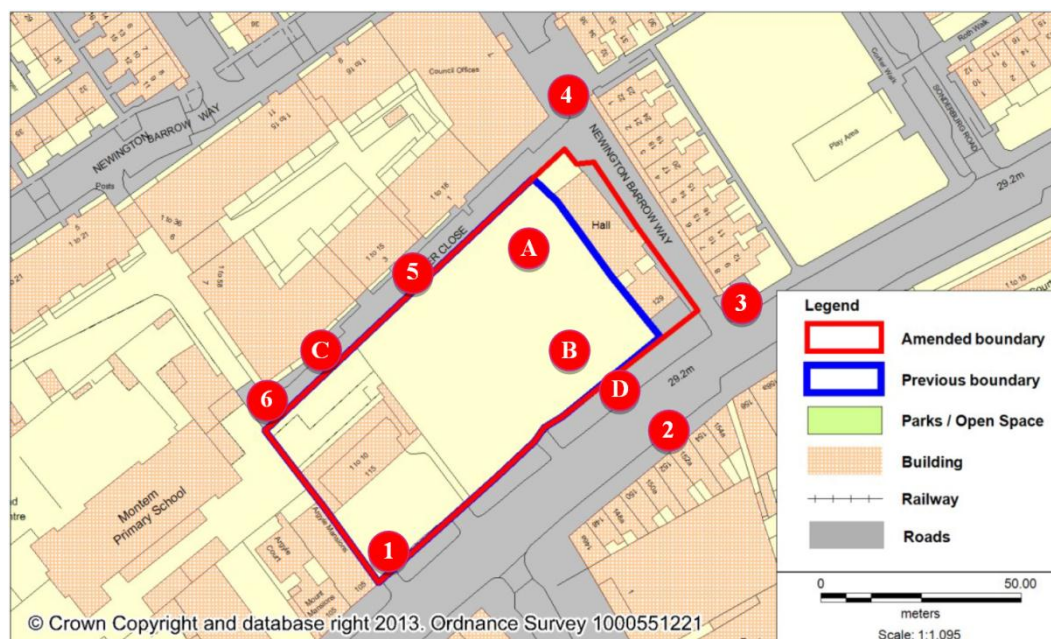
### 6.2 Assessment

#### Baseline information

6.2.1 Noise surveys have been conducted to obtain baseline data to quantify the existing noise conditions surrounding the site. Measurements were taken at seven representative noise sensitive locations around the site perimeter, covering areas and time periods agreed with LBI. During the survey, existing noise sources and noise sensitive receivers were identified.

6.2.2 A plan showing the locations of the noise survey positions is included below as Figure 3.

Figure 3: Noise Monitoring Locations



6.2.3 Measurement locations are:

- Locations 1 - 3 and D – Seven Sisters Road
- Location 4 – Newington Barrow Way
- Locations 5, 6 and D – Heather Close
- Locations A and B – On site

6.2.4 Locations 1 to 6 and C represent the nearest residential noise sensitive receptors. Locations A, B represent the noise climate on

site before any demolition works had commenced and D represents the proposed façade of the Phase 2 development.

### Construction assessment methodology

- 6.2.5 The effect of construction noise and vibration has been assessed in accordance with British Standards for noise.
- 6.2.6 Noise and vibration effects at residential receptors from construction activities have been assessed quantitatively using a likely worst-case scenario, by assuming that all processes, for each stage of construction, take place at the closest point of the construction site to each receptor.
- 6.2.7 Noise levels at 1m from the facade of the nearest noise sensitive receptors have been calculated for each phase of the works. For dwellings, effects have been assessed using significance criteria established by the former Department of Environment. These criteria have been discussed and agreed with LBI.
- 6.2.8 Significance of effects for non-residential receptors has been based on professional judgement and considered the following:
- receptor use;
  - the times of use of the receptor;
  - magnitude and duration of the impact; and
  - ambient noise levels.
- 6.2.9 Vibration from construction activities has been calculated in accordance with British Standard methodologies for activities likely to result in high vibration levels. These activities are:
- piling; and
  - vibratory compaction.

### Operation – Road traffic noise

- 6.2.10 Noise and vibration effects from road traffic have been assessed against the case without the proposed development in place. The approach enables a comparison to be made of noise emissions from individual roads and the effect of changes in traffic flows attributable to the development.

### Operation – Building services plant noise

- 6.2.11 To ensure that operation of the proposed development does not have an unacceptable effect on the surrounding area, noise targets have been based on the existing baseline noise levels. As agreed with LBI, noise emissions from building services plant will be limited to levels well below existing background levels. This is a level at and below which there would be no significant effects.

## Operation – Car park noise

- 6.2.12 There is no standard methodology for the assessment of noise from car parks. The assessment has therefore followed the approach used on other projects that include car parks. The assessment is based on measured maximum noise levels from specific car park activities such as engine start up and car doors.
- 6.2.13 For the daytime period, noise from the car park activities has been compared to the baseline noise levels to determine if a significant effect would occur.
- 6.2.14 During the night-time, recommended World Health Organisation guidance has been followed and the significance level at which sleep disturbance is likely to occur has been applied.

## 6.3 Existing Conditions

- 6.3.1 Noise or vibration effects will be greatest at positions immediately surrounding the site perimeter. The nearest noise sensitive residences are on Heather Close, Newington Barrow Way and Seven Sisters Road, which are where the study has focussed.
- 6.3.2 The main existing noise sources in the area are:
- road traffic noise (A503 Seven Sisters Road)
  - entertainment noise from Arda-2 bar and restaurant (at night-time).

## 6.4 Likely Effects on the Environment

### Construction

- 6.4.1 The assessment has indicated that the following receptors will experience significant temporary adverse effects from construction noise:
- Phase 1: residential receptors on Heather Close
  - Phase 2: residential receptors on Newington Barrow Way, Seven Sisters House and at Argyle House on Seven Sisters Road.
- 6.4.2 The assessment has indicated that no properties will experience significant temporary adverse effects arising from construction vibration.

### Operation

- 6.4.3 There will be no significant effects from operation of the development.

## 6.5 Mitigation and Residual Effects

### Construction

6.5.1 Proposed mitigation for construction activities that would be included within the CEMP include:

- application of best practicable means of working;
- solid site hoardings around boundaries of the site;
- appropriate selection of plant, in particular, use of non-vibratory compaction plant where appropriate and bored or press-in piling; and
- establishing a communication and consultation strategy to inform the public of construction works and their impacts.

6.5.2 With the implementation of mitigation measures there will be negligible residual noise and vibration effects at the ground floor level receptors immediately around the site, as a result of the construction works. Exceptions to this may be the upper floors of the residences on Heather Close, for which it will be impracticable to provide screening for all the works. This situation is likely to last for up to one month.

### Operation

6.5.3 The development will be designed such that there will be no required additional mitigation for operation and there are no significant residual effects. This design will include:

- ensuring adequate building envelope design around the Switchgear Building and Services Building;
- correct specification on building services plant; and
- attenuators to building services plant, where required.

## 7 Ground Settlement

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### 7.1 Introduction

- 7.1.1 From a ground settlement perspective the area to be analysed within this development proposal is the basement of the proposed main Switchgear building. Other structures on the site do not involve large excavations and therefore will have no impact on ground settlement.

### 7.2 Baseline

- 7.2.1 The site already consists of a shaft connected to the main cable tunnel running beneath the Seven Sisters Road. As part of that development, ground settlement analysis and subsequent monitoring of the actual settlement has been carried out. That analysis predicted that there would be minimal effect from the construction of the shaft and tunnel, and subsequent measurements have shown this to be the case.

### 7.3 Assessment

- 7.3.1 The assessment carried out for this development was in the form of modelling of the effect of the basement, which was conservatively assumed to be 6m depth for the whole footprint of the main building. The output from the modelling was compared to the analysis and subsequent measurements from the tunnel construction to determine the potential significance associated with this development.
- 7.3.2 The findings from the assessment were that the predicted settlement was significantly lower than that predicted for the shaft and tunnel, and as actual measurement from the shaft and tunnel work showed minimal effect, the expectation is that there will be negligible effect from the development proposed.

### 7.4 Mitigation

- 7.4.1 As no significant effects are predicted, no mitigation is proposed.

### 7.5 Residual Effects

- 7.5.1 As no significant effects are predicted no residual effects are expected.



## 8 Surface Water

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### 8.1 Introduction

- 8.1.1 Flood risk and drainage implications for the proposed development were assessed for the construction phase and during operation of the proposed scheme.

### 8.2 Baseline

- 8.2.1 An assessment of baseline conditions took place to determine the probability of flooding on site due to the hydrological conditions in the area. The probability of flooding against all of the above baseline conditions is low. The only risk identified is surface water runoff that can potentially affect the site should the drainage system in the vicinity of the site reach capacity. This is due to the location of the site being at a relatively level with no obvious routes for surface water to flow off- site.

### 8.3 Assessment

- 8.3.1 The impact on water quality, water use, and flood risk was assessed during the construction and operational phase of the proposed development when compared with the existing site. The impact of the proposed development is low during the construction phase, given that a CEMP would be in place. No significant issues are expected with respect to water resources being affected during the operational phase.

### 8.4 Mitigation

- 8.4.1 No other measures other than those that would be applied in CEMP during the construction phase are considered necessary. The adoption of sustainable drainage techniques such as green roofs are proposed the operational phase.

### 8.5 Residual Effects

- 8.5.1 Residuals risks for the proposed development were found to be not significant.

## 9 Hydrogeology

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### 9.1 Introduction

- 9.1.1 The hydrogeology of the site was assessed for its potential to be affected by for the proposed development in terms of causing pollution of water resources within the deep aquifer systems underlying the site and surrounding area.

### 9.2 Baseline

- 9.2.1 The site is underlain, in sequence, by Made Ground, Alluvium, London Clay and Lambeth Group. Below the Lambeth group are Thanet Sands then Chalk.
- 9.2.2 The site is not underlain by a shallow aquifer. However the Lambeth Group and Thanet Sands underlying the site at depth is an aquifers and the Chalk as a principal aquifer. The site is not located within a groundwater source protection zone (SPZ) for potable water supply. There are no licensed water abstraction sites within 500m of the site.
- 9.2.3 The nearest surface water feature is a pond in Finsbury Park, located approximately 1.2km north-east of the site. Given its distance away is not considered to be sensitive to activities at the site.
- 9.2.4 There is a potential for contamination at the site associated with previous site use including petrol tanks and a Depot. A small investigation occurred on a part of the site and no significant contamination was identified from tested soil and water samples.

### 9.3 Assessment

- 9.3.1 The main source of potential contamination (relevant to the water environment) is considered to be any residual soil and water contamination which may be present in the made ground in the vicinity of the former petrol filling station site.
- 9.3.2 The proposed construction of the second connecting spur does not provide any new pathways or construction techniques and the quantum of change is small and at a local level. It will not result in any new significant environmental effects, assuming good practice and the recommendations made by the Hackney to St John's Wood Environmental Report are instigated.
- 9.3.3 During construction there is a potential for piling undertaken on the eastern portion of the site, for residential and retail buildings, to encounter hydrocarbons from the historic fuel tanks associated with the former garage. There is unlikely to be a direct link between the proposed shallow works (including piling) and the identified groundwater aquifers due to the thick layer of London Clay. If piling were extended through the clay a link to the aquifer might be established. Considering the small scale and temporary nature of

these works it is judged that there may be a short term minor adverse effect in that case only.

- 9.3.4 Assuming the mitigation measures described in the Hackney to St John's Wood Environmental Report are instigated, the effect of the proposed development on hydrogeology and controlled waters during operation is considered to be negligible.

## **9.4 Mitigation**

- 9.4.1 Pre-construction mitigation would include further ground investigations, including groundwater monitoring and site-specific risk assessment.
- 9.4.2 Emergency plans will be outlined identifying procedures and equipment necessary to tackle any potential environmental incidents rapidly.
- 9.4.3 No additional significant effects have been identified during operation and therefore no additional mitigation is required.

## **9.5 Residual effects**

- 9.5.1 No additional significant effects of the proposed development have been identified and therefore no mitigation is proposed. The residual effect is considered to be negligible.

## 10 Contaminated Land

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### 10.1 Introduction

- 10.1.1 This section describes the likely significant effects of the proposed development arising from any existing ground contamination. Adverse environmental effects associated with ground contamination principally concern human health and safety on-site and off-site, pollution of groundwater or surface water, deterioration of construction materials, harm to designated ecological receptors and potential limitations to plant growth.

### 10.2 Baseline

- 10.2.1 The shallow stratigraphy at the site comprises, in sequence, Made Ground, Alluvium, and London Clay.
- 10.2.2 There is no shallow aquifer at the site. The Lambeth Group and Thanet Sands underlying the site at depth are classified by the EA as secondary aquifers and the Chalk as a principal aquifer.
- 10.2.3 There are no locations which are considered to be designated contaminated land by the local authority, special sites or 'potentially contaminated' in the vicinity of the site. The London Fire Brigade confirmed the presence of six tanks on site, some possibly decommissioned.
- 10.2.4 Historic maps show the site layout has remained unchanged since the late 1960s, although the milk depot became disused and the garage changed use to a car wash around the early 1990s.
- 10.2.5 A ground investigation was undertaken on part of the site associated with the shaft construction. The results of all soil samples showed some slight lead and hydrocarbon contamination. No investigation has been completed in the area of the residential/ commercial development.
- 10.2.6 Previous activities undertaken at the site that may have resulted in contamination of the shallow ground include:
- Garage and petrol filling station located in the south-west corner of the site (former Finsbury Service Station);
  - Milk depot in the eastern portion on the site;
  - Electrical Switchgear buildings;
  - Demolition materials; and
  - General made ground of unknown origin.

### 10.3 Assessment

- 10.3.1 The assessment was undertaken according to the following methodology:

- Review of publically available desk-based information.
- Request for information on ground conditions from the Environment Agency and Islington Council.
- Review of previous ground investigation data.

10.3.2 If the site was left unmitigated, there is the potential that contamination may be encountered during construction, such as that associated with former petrol station tanks, contaminants in Made Ground and excavated material from foundations which could have significant direct, long-term, major adverse effect on the health of workers and visitors.

10.3.3 Ground contamination could have a long-term, direct, minor adverse effect on building materials and services.

10.3.4 If the site was left unmitigated, during operation there would be potential for human exposure of site users and visitors to vapour ingress in enclosed spaces in buildings,. Maintenance workers would be exposed to residual contamination in the ground. As such the effect of the proposed development on the health of future site users during operation, without mitigation, would be short term, direct, minor adverse.

10.3.5 However, in the context of the future operation of a Services building and Switchgear building, the effect of the proposed development on the health of future site users during operation would be insignificant.

## 10.4 Mitigation

10.4.1 Pre-construction mitigation would include ground investigations, including contamination testing of soil samples and site-specific risk assessment.

10.4.2 During construction it would be necessary to input mitigation measures into the Contractor's Method Statements and Health and Safety Plans based on the results of the risk assessments. Mitigation measures that would be incorporated as part of the CEMP may include:

- Specific remediation if significant contamination is identified (for instance spills from tanks).
- Decommissioning of any tanks on site.
- Training, specific additional hygiene procedures, the use of personnel protection, hygiene measures and the implementation of dust control measures.
- If any asbestos materials are specifically identified, they would be segregated, stored in an appropriate fashion and then disposed of appropriately.
- Implementation of a watching brief during the earthworks phase of the development.

- Specification of appropriate building materials and services construction details.

## 10.5 Residual effects

- 10.5.1 The residual effect from contamination relating to the construction and operation of the proposed development following the implementation of the mitigation measures would be negligible.

## 11 Archaeology

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### 11.1 Introduction

- 11.1.1 Research into archaeological deposits within 250m of the site was undertaken to determine the likelihood of archaeology on site. The assessment incorporates the results of an initial consultation with the Greater London Archaeological Advisory Service (GLAAS) which advises the London Borough of Islington on archaeological matters.

### 11.2 Baseline

- 11.2.1 There are no designated archaeological remains on the site. The site lies immediately adjacent to an Archaeological Priority Area (APA) known as Tollington Settlement, which reflects the presumed extent of a hamlet which flourished from the Anglo-Saxon period until the 17<sup>th</sup> century. The Priority Area also includes the presumed site of a moated manor house. A further two moated sites are thought to be located to the south of Seven Sisters Road. None of these sites have been tested by excavation and their location and extent remains speculative.

### 11.3 Assessment

- 11.3.1 Assessment of the baseline data indicates that there is limited potential for archaeological deposits to be present on the site. If present, any archaeological deposits are likely to be associated with the peripheral features of the Tollington Settlement, such as field boundaries, which are likely to have been disturbed by previous development on the site and would be of low heritage value. Construction activities would remove all or most of the deposits resulting in a minor adverse effect during construction and no effects during operation.

### 11.4 Mitigation

- 11.4.1 It is proposed that a programme of archaeological investigation be undertaken to establish whether archaeological deposits are present and if present their location, nature and extent. Significant archaeological features will be preserved by record prior to construction. No mitigation is required during operation.

### 11.5 Residual Effects

- 11.5.1 If the proposed mitigation is implemented the residual effects would be negligible.

## 12 Built Heritage

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### 12.1 Introduction

- 12.1.1 The nature, location and extent of built heritage assets on the site and in the immediate vicinity has been identified to assess the potential effects of construction and permanent works on those assets. The assessment included preliminary consultation with the Greater London Archaeological Advisory Service (GLAAS) which advises the London Borough of Islington on heritage issues.

### 12.2 Baseline

- 12.2.1 There are no listed or locally listed buildings on the site, however two non-designated assets, the Red Rose public house and the Milk Depot building, formerly stood on the site. These buildings have since been demolished.
- 12.2.2 Five Grade II listed buildings and a further 16 locally listed buildings are located within 250m of the site. The closest listed building is the Montem Primary School and laundry directly west of the site, 3 - 5 Thane Villas (premises of Fletcher & Company Ltd), Hornsey Road Baths & attached Railings and 147 Hornsey Road (former vicarage).

### 12.3 Assessment

- 12.3.1 Four of the five Grade II Listed Buildings are in close proximity to the site and have some visibility between the site and the built heritage asset, although these views do not contribute to the significance of these buildings. None of the locally listed buildings and the remaining listed building, the former vicarage at 147 Hornsey Road, have any visibility between the site and the heritage asset.
- 12.3.2 In the case of those buildings which are located close to and have some intervisibility with the site there is likely to be some short-term /temporary effects from noise and visual intrusion during construction. However due to the temporary nature of the activities causing noise and visual intrusion it is considered there will be no permanent impact on the built heritage assets.
- 12.3.3 There will be no impact from the operation of the site.
- 12.3.4 The overall effect of the proposed scheme on built heritage is considered to be neutral.

### 12.4 Mitigation

- 12.4.1 No mitigation is proposed.

### 12.5 Residual Effects

- 12.5.1 There will be no residual effects.



## 13 Landscape and Visual

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### 13.1 Introduction

- 13.1.1 This assessment addresses the likely significant effects that the proposed development would have on the landscape and visual amenity of the surrounding local area.

### 13.2 Assessment Methodology

- 13.2.1 The likely nature and magnitude of changes to individual landscape elements and characteristics have been assessed together with the consequential effect on landscape character. The magnitude or scale of visual change on views and visual amenity of the identified receptors has been assessed. The methodology follows industry-recognised guidelines for visual assessment.

### 13.3 Baseline

- 13.3.1 The site was formerly characterised by disused buildings that have recently been demolished, previously cleared development land, site huts and containers and poor condition boundary treatment. The site borders the busy three-lane Seven Sisters Road with mixed commercial/retail frontage with flats above to the south, residential post-war Andover Estate to the north, Hornsey Road Archaeological Priority Area to the west with Listed Montem Primary School, and 19th century Thane Villas residential area to the south of Seven Sisters Road. There are small areas of non-designated open space surrounding the site that include communal gardens, multi-purpose play areas and public realm spaces.
- 13.3.2 Views towards the site are limited from the majority of locations by the dense built environment throughout the area. Views of the site are most apparent from the streets immediately adjacent to the site including - residential properties and council offices on Heather Close, maisonettes on Newington Barrow Way, upper-storey flats on Seven Sisters Road with ground floor retail/commercial units and the rear upper storeys of the Montem Primary School.

### 13.4 Assessment

- 13.4.1 Due to the presence of construction plant and infrastructure there is potential for moderate adverse effects on the landscape character and views from a small number of areas within the immediate vicinity of the site.
- 13.4.2 The landscape character of the site is likely to experience minor beneficial effects as a result of the proposed scheme. The proposed green roofs, courtyard, roof level terraces, balconies, boundary improvements and new tree planting associated with the scheme are likely to visually enhance the overall landscape character of the area. The proposed building heights and building alignments would reflect

the built- up character, scale and massing of the surroundings and improve the overall urban setting of the area. The proposed façades would use sympathetic detailing and materials that are in character and sympathetic with surrounding buildings. Overall the scheme is likely to make a positive visual contribution to the area.

## **13.5 Mitigation and Residual Effects**

- 13.5.1 Mitigation has been incorporated into the scheme where possible, and therefore no additional construction or operation mitigation is proposed.

## 14 Ecology, Arboriculture and Nature Conservation

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- 14.1.1 An assessment of construction and operation of the proposed scheme on ecology, arboriculture and nature conservation was undertaken. Baseline survey methods have followed best practice guidelines.

### 14.2 Baseline

- 14.2.1 A site walkover survey to study potential habitats for flora and fauna was undertaken in 2011. Since then the site was cleared of buildings in 2013. Currently, the Site is considered to have no significant intrinsic ecological value. Three semi-mature lime trees on the pavement adjacent to the Site are considered to be of value.
- 14.2.2 Bat surveys undertaken in 2011 and 2012. No bats were recorded on or adjacent to the site. Buildings included in the survey are no longer present on site due to site clearance. Bats may pass through the site occasionally. The bat resource is considered to be of no significant ecological value. Buildings identified as having some potential for common nesting birds during the site walkover survey have been demolished. Therefore, there is no currently significant bird resource on site.

### 14.3 Assessment Construction

- 14.3.1 Given that the habitat on site now is of no ecological value, no significant effect of construction is anticipated. The roots of three semi-mature limes on the pavement of Seven Sisters Road, adjacent to the site may extend into the site or across access routes to it. They are therefore likely to become damaged as a result of soil compaction and directly from plant use on site. Any damage to these trees would be considered to be of some significance.
- 14.3.2 Following the recent demolition of buildings on site there are no features suitable for nesting birds or roosting bats on site. The potential night time security lighting on the site may result in the displacement of very small numbers of bats passing through the site and this is unlikely to cause a change in the local bat population. No significant effect during construction is anticipated on bats or nesting birds.

### Operation

- 14.3.3 The provision of green roofs on the proposed substation building and residential-led mixed use buildings would increase the habitat resource in the local area. The design would be in line with guidance from Islington Borough Council. This is likely to result in a significant beneficial effect at the local level.

- 14.3.4 The green roofs are likely to support invertebrates and attract foraging birds and bats to the site. However, this is unlikely to result in discernible increases in the populations of these species. Therefore, no significant effect during operation is anticipated on bats and nesting birds.

## 14.4 Cumulative effects

- 14.4.1 Developments under construction during the construction of the proposed scheme are unlikely to interact with ecological receptors associated with the Site due to their distance and isolation from the Site. Therefore, no likely significant cumulative effects on ecological receptors have been identified.

## 14.5 Mitigation and enhancement

### Construction

- 14.5.1 Mitigation for effects include tree protection measures for the lime trees adjacent to the site to prevent damage to tree roots, and lighting control measures during construction to minimise impacts on passing bats. No enhancement measures are proposed during construction.

### Operation

- 14.5.2 As no adverse effects were identified, no mitigation during operation has been recommended. Recommended enhancement measures include the provision of species-rich lawns and soft landscaping within the landscape scheme and the provision of swift, house sparrow and bat boxes within the proposed development. This would comply with and contribute to national and local planning policy.

## 14.6 Residual Effects

### Construction

- 14.6.1 With mitigation measures in there would be no significant residual effect on the lime trees adjacent to the site.

### Operation

- 14.6.2 Although the provision of habitats within the landscape scheme would be beneficial as it would increase the overall effect of the green roofs. The provision of bat boxes is likely to result in an increase in populations of bats. Therefore, there would be a significant beneficial residual effect at the local level for both habitats and bats. The provision of bird boxes would be beneficial but is unlikely to result in a discernible change to bird population. Therefore, there would be no significant residual effect on birds.

## 15 Electric and Magnetic Fields

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### 15.1 Introduction

- 15.1.1 All equipment that generates, distributes or uses electricity produces electric and magnetic fields (EMFs); the equipment located within this substation is no exception. The Government sets guidelines for safe exposure to EMFs in the UK on advice from the Health Protection Agency (HPA). These guidelines are set independently of industry after careful consideration of the science to protect members of the public against EMF exposure. In addition to these exposure guidelines there are also precautionary policies providing appropriate protection against the possibility of effects of EMFs at lower levels than the guidelines, including, specifically, the possibility of a risk for childhood leukaemia. This National policy on EMF has been documented in the Department of Energy and Climate Changes (DECC) National Policy Statement EN-5<sup>1</sup>. How to apply this guidance to the electricity system and how to apply the precautionary policies that Government adopted are set out in two Codes of Practice<sup>2,3</sup> published by DECC. National Grid is committed to following these policies and the assessment of EMFs contained in the Environmental Statement was performed in line with the DECC Codes of Practices.
- 15.1.2 This assessment considered the EMFs produced by the proposed substation and associated circuits and its compliance with these Government guidelines and policies on EMF management.

### 15.2 Baseline

- 15.2.1 The proposed development is located within an urban area which has existing electricity distribution wiring, in addition to household wiring and appliances, all of which produces their own EMFs. The EMFs produced by these sources will produce a 'background field' which will be present independently of the proposed substation. In UK houses, background or typical magnetic fields will be in the range of 0.01 – 0.2  $\mu\text{T}$ <sup>4</sup>, with localised higher values close to electrical appliances. However highly urbanised areas and apartment blocks, such as in the neighbourhood of this proposed substation, can often have higher levels of background fields due to the density of wiring.

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<sup>1</sup> Department of Energy and Climate Change (2011) National Policy Statement for Electricity Network Infrastructure (EN-5)

<sup>2</sup> Department of Energy and Climate Change (2012) *Power Lines: Demonstrating compliance with EMF public exposure guidelines. A voluntary Code of Practice*

<sup>3</sup> Department of Energy and Climate Change (2012) *Optimum Phasing of high voltage double-circuit Power Lines. A voluntary Code of Practice*

<sup>4</sup> Swanson, J. & Renew, D.C., (1994) *Power-frequency fields and people*, Engineering Science and Education Journal, pg 71-79

## 15.3 Assessment

- 15.3.1 The proposed Highbury substation contains high-voltage equipment which is a gas-insulated switchgear (GIS) design with electricity entering or exiting the substation via underground cables in deep tunnels. Both underground cables and gas-insulated substations have conductors which are enclosed in a metal outer layer which screens the electric field. Therefore no external electric fields will be produced as a result of the proposed substation.
- 15.3.2 Magnetic fields will be produced by the substation and cables, which depend on the current flowing. Calculations of the magnetic field were performed taking into account the maximum current that the cables can carry giving a worst case situation. These calculated maximum magnetic fields at the boundary of the substation site were a small fraction of the UK Government guidelines set out in the National Policy Statement<sup>1</sup> and also below the level<sup>5</sup> where the potential for interference with pacemakers, defibrillators, and any other active implanted medical devices<sup>1</sup> occurs. The magnetic fields reduce quickly with distance from the substation and at the closest home will be even lower than at the boundary.
- 15.3.3 All equipment which produces magnetic fields can potentially interfere with other electrical equipment, such as televisions. National Grid's equipment has been tested to ensure that it meets the requirements of a European Union Directive<sup>6</sup>. This means that the proposed substation is unlikely to cause any interference to TV or radio reception under normal operating conditions.

## 15.4 Mitigation

- 15.4.1 The proposed Highbury substation has been designed to ensure that it complies with Government exposure guidelines at the boundary and anywhere outside it, and specifically at the closest residential property. National Grid has also used good design practice to ensure that EMFs are reduced even further where reasonably possible. No further mitigation is considered necessary.

## 15.5 EMF Advice

- 15.5.1 National Grid takes the concerns of the public seriously, and operates a team of EMF Advisers to answer questions and address any concerns. The EMF Unit can be contacted on 0845 702 3270. Members of the public can speak to an EMF adviser directly on this number, and if necessary a home visit can be arranged to discuss queries and take measurements of magnetic fields. The company also maintains a website with further information on all aspects of EMFs: [www.emfs.info](http://www.emfs.info).

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<sup>5</sup> EU Council (1999) Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields (0 Hz to 300 GHz) (1999/519/EC)

<sup>6</sup> Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of the Member States relating to electromagnetic compatibility

## 16 Socioeconomics

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### 16.1 Introduction

- 16.1.1 This section summarises the likely short term and longer term socio-economic effects of the proposed scheme during construction and operation.

### 16.2 Baseline

- 16.2.1 The borough of Islington as a whole has some strong economic characteristics, including a high and increasing working age population; an adult population that holds a high level of educational attainment; and high average weekly wages.
- 16.2.2 However, Islington is also socioeconomically polarised, with stark contrasts in adjacent areas in terms of deprivation and a contrast between part of the populace that use the borough as a residential base for higher order employment in Central London, and those that service this population and/or live and work in the borough in perhaps lower order employment functions.
- 16.2.3 Statistics relating to Jobcentre Plus notified vacancies and Claimant Counts (2012) show that there are a greater number of claimants seeking construction trades (60) than construction trade vacancies (5) in the area. This may be a reflection of the current economic climate and indicates that there is a high availability of people seeking construction work.

### 16.3 Assessment

- 16.3.1 The construction of the proposed development is expected to support a total of approximately 236 Full Time Equivalent (FTE) net additional jobs across the UK, of which around 177 FTE net additional jobs within London, South East and East of England. Of this 177 FTE jobs, almost 81 FTE jobs are expected to be net additional direct construction jobs and an estimated 96 FTE area expected to arise through indirect and induced effects based on the net additional direct construction jobs.
- 16.3.2 The employment generated by the construction phase of the proposed development, whilst temporary in nature, is significant beneficial. It also provides new employment and training opportunities at a time when private sector job creation remains challenging and unemployment persistent.
- 16.3.3 The on-going operation of the electricity substation is not expected to result in any additional employment by National Grid and routine visits will be carried out within the overall current rotation. The Red Rose Public House and associated building was vacant prior to demolition works with no plans to re-open, thus the proposed scheme is not displacing any employment activity. The former car wash facility will be displaced and has recently been removed as part

of the demolition works. It is assumed that on site displacement of this use will equate to five FTE jobs at the local level.

- 16.3.4 Based on government guidance, the retail / commercial element of the proposed development is expected to support around 35 FTE net additional jobs across London, of which around 17 FTE can be expected to be located within Islington. Of these 17 FTE jobs, around 14 FTE are expected to be supported through direct means and three FTE through indirect and induced means. The commercial/retail employment effect has slight beneficial significance.
- 16.3.5 Whilst the proposed scheme will result in the loss of some existing residential accommodation, the proposed development will provide a total of 44 residential units including 22 affordable units of which 15 will be social rented and 7 will be intermediate, resulting in a net increase in housing provision.

## 16.4 Mitigation

- 16.4.1 The construction employment effects of the development are considered to be slight beneficial. Therefore, no mitigation is required.
- 16.4.2 Operationally, the site provides for a net increase in employment taking into account the loss of current employment uses. Therefore, no mitigation is proposed.
- 16.4.3 The loss of housing to the western end of the site will be mitigated through a net increase in housing provision.

## 16.5 Residual Effects

- 16.5.1 Assuming the construction phase utilises a significant proportion of labour and sub-contractors from the wider region, the construction phase will result in a temporary effect of moderate beneficial significance on the local economy. Given the recent adverse economic climate and, in particular, the challenges facing the construction sector, this development may help to support the local construction sector at a time when it is needed.
- 16.5.2 Operationally, the employment creation will result in an impact of slight beneficial significance on the local economy, and the replacement and additional housing will result in a slight beneficial effect.



## 17 Sunlight and Daylight

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### 17.1 Introduction

17.1.1 The following assessment have been carried out:

- Effect of the development on the sunlight and daylight availability for the surrounding properties
- Effect of the development on itself for sunlight and daylight availability.
- Effect of the proposed development on spill lighting.

### 17.2 Assessment

17.2.1 The assessment of sunlight and daylight has been evaluated in the context of the Building Research Establishment (BRE) published in 2011.

17.2.2 The assessments have been carried out with simulation software and in the case of the average daylight factor with a simplified formula as recommended by the guidelines.

17.2.3 The light spillage assessment has been based on the proposed scheme and in the context of the urban environment in which the site is located.

17.2.4 The following metrics were used to assess the effect for sunlight and daylight:

- Vertical Sky Component (VSC), a measure of daylight availability;
- Average daylight factor analysis (ADF), a more detailed assessment of daylight availability;
- Annual and Winter Probable Sunlight Hours (APSH, WPSH), a measure of sunlight availability; and
- Studies to determine the amount of shadow falling on an amenity space.

17.2.5 The light spillage assessment was based on the requirements of the proposed scheme and the type of urban environment in which the site is located. Guidelines categorise certain types of development on how urban or rural they are. The amount of acceptable lighting at night depends on what “zone” category the site lies within.

17.2.6 The results of the assessment have been considered locally and then in terms of percentages of total results on windows of apartments that meet or do not meet the guideline criteria: the localised effects of the proposed development have been determined based on the difference between baseline and proposed condition. A significant scale has been proposed based on the degree of difference. The global significance of the effect of the proposed development on the surrounding areas has been calculated with a weighted average of

the localised effects. The scoring system is biased to highlight adverse effects, to which a negative value is associated that is typically 10 times more influential than the one associated to a positive effect.

### 17.3 Mitigation

- 17.3.1 No mitigation measures are proposed to mitigate the effect of sunlight and daylight availability on the surrounding properties.
- 17.3.2 The future development lighting designs will be implemented according to the industry requirements. This will allow the retention of the general character of the area. In order to achieve this goal a series of mitigation measures are discussed.

### 17.4 Residual Effects

- 17.4.1 The localised effect of the proposed development on the surrounding building can be summarised statistically as follows:

Significance of the effect for Daylight Availability (vertical skylight component)	Percentage of locations
Major beneficial	0%
Moderate beneficial	0%
Minor beneficial	0%
Negligible effects	79%
Minor adverse	11%
Moderate adverse	3%
Major adverse	7%

Significance of the effect for Annual Probable Sunlight	Percentage of locations
Major beneficial	0%
Moderate beneficial	0%
Minor beneficial	0%
Negligible effects	89%
Minor adverse	8%

Significance of the effect for Annual Probable Sunlight	Percentage of locations
Moderate adverse	0%
Major adverse	3%

Significance of the effect for Winter Probable Sunlight	Percentage of locations
Major beneficial	0%
Moderate beneficial	0%
Minor beneficial	0%
Negligible effects	89%
Minor adverse	0%
Moderate adverse	0%
Major adverse	11%

Significance of Sunlight Availability for amenity areas	Percentage of locations
Major beneficial	0%
Moderate beneficial	0%
Minor beneficial	0%
Negligible effects	100%
Minor adverse	0%
Moderate adverse	0%
Major adverse	0%

17.4.2 The localised effect to sunlight and daylight availability to the proposed development itself can be summarised as follows:

Significance of the effect for Daylight Availability (Average Daylight Factor)	Percentage of locations
Major beneficial	42%

Significance of the effect for Daylight Availability (Average Daylight Factor)	Percentage of locations
Moderate beneficial	28%
Minor beneficial	6%
Negligible effects	14%
Minor adverse	6%
Moderate adverse	4%
Major adverse	1%

Significance of the effect for Annual Probable Sunlight	Percentage of locations
Major beneficial	73%
Moderate beneficial	0%
Minor beneficial	0%
Negligible effects	0%
Minor adverse	0%
Moderate adverse	0%
Major adverse	27%

Significance of the effect for Winter Probable Sunlight	Percentage of locations
Major beneficial	73%
Moderate beneficial	0%
Minor beneficial	9%
Negligible effects	18%
Minor adverse	0%
Moderate adverse	0%
Major adverse	0%

Significance of Sunlight Availability for amenity areas	Percentage of locations
Major beneficial	50%
Moderate beneficial	0%
Minor beneficial	0%
Negligible effects	0%
Minor adverse	0%
Moderate adverse	0%
Major adverse	50%

- 17.4.3 The local significance of the effects for sunlight and daylight availability are collected with a weighted average in the global effects.

The following tables summarise the effects overall:

Effect of the proposed development on the surrounding buildings and areas				
	Daylight availability for surrounding properties	Sunlight availability for surrounding properties	Sunlight availability for amenity areas	Spill lighting
Degree of significance	Minor Adverse	Minor Adverse	Negligible	Negligible

Effects on the proposed development itself				
	Daylight availability for proposed development	Sunlight availability for proposed development	Sunlight availability for amenity areas	Spill lighting
Degree of significance	Negligible	Minor Adverse	Moderate Adverse	Negligible

## 18 Waste

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### 18.1 Introduction

- 18.1.1 An assessment of solid waste generation associated with the construction of the proposed development was undertaken. This is in relation to the types and quantities of solid waste that would be generated, the quantity of residual waste requiring disposal to landfill and the available capacity of waste management infrastructure to manage the residual waste fraction.
- 18.1.2 One of the key objectives of sustainable resource and waste management is to reduce the quantity of waste requiring final disposal to landfill. Not only is landfill capacity within the UK increasingly scarce but the Waste Hierarchy advocates the use of landfill disposal only as a last resort. This is due to a range of potential adverse effects associated with its use, such as resource depletion, methane production and nuisance effects (e.g. dust and odour).
- 18.1.3 The scope of the assessment does not include operational solid waste. This is unlikely to be generated in quantities that would result in likely significant environmental effects as a result of any subsequent landfill disposal.

### 18.2 Assessment Approach

- 18.2.1 Due to the absence of a recognised assessment methodology, the described approach is based on professional judgement and considers relevant legislation, waste management and land use planning policies applicable at national, regional and local level.
- 18.2.2 The quantity of solid waste forecast to be generated by construction activities is based on a mixture of information provided by National Grid, published waste generation rates and scheme information for the proposed development. The assessment assumes that 90% of the total quantity of solid waste arising during the construction phase would be diverted from landfill. This is in line with National Grid's commitment on landfill diversion performance for the construction projects.
- 18.2.3 The quantity of solid waste requiring disposal to landfill has then been assessed in relation to the projected quantity of inert, non-hazardous and hazardous landfill disposal capacity that would be available in the local, regional and wider regional areas during the proposed construction period. Cumulative environmental effects of the proposed development and other schemes have been assessed qualitatively, based on professional judgement.

## 18.3 Baseline

- 18.3.1 The site baseline assumes a clear level site for works associated with the proposed development. The baseline in terms of solid waste generation at the site is therefore assumed to be zero.
- 18.3.2 There is currently no available landfill capacity in the local area (London Borough of Islington) but inert, non-hazardous and hazardous landfill capacity is available in the regional (Greater London) and wider regional (South East of England and East of England) areas. This situation is expected to continue throughout the proposed construction period 2014 to 2018. This is with the exception of inert landfill capacity, for which there is a projected deficit in Greater London from 2014 onwards and in the East of England from 2015 onwards.

## 18.4 Effects

- 18.4.1 It has been estimated that 24,227 tonnes of solid waste would be generated during the proposed construction period 2014 to 2018. Based on National Grid's commitment to achieve 90% diversion of solid waste from landfill during the construction phase, just 2,423 tonnes would require disposal to landfill.
- 18.4.2 Potentially all of the solid waste requiring landfill disposal could be managed with the regional (Greater London) area. This is with the exception of solid waste that may be classified as inert. It is projected that inert landfill capacity in Greater London will have run out by 2014, in which case inert landfill disposal requirements would need to be accommodated in the wider regional area of the East of England (until around 2015) and the South East of England.
- 18.4.3 Based on the estimated quantity of solid waste that would require landfill disposal, (2,423 tonnes), the projected availability of landfill disposal capacity throughout the regional and wider-regional areas during the proposed construction period, and the 'temporary' nature of the construction works, the likely significant environmental effects of solid waste generation associated with the proposed development would be negligible.

## 18.5 Mitigation

- 18.5.1 Mitigation measures have been specified that would be effective in minimising solid waste generation and / or maximising diversion from landfill. These include:
- Management of materials and waste in line with National Grid's environmental management policies and procedures;
  - Implementation of a Site Waste Management Plan, Construction Environmental Management Plan and Green Procurement Plan; and

- Compliance with Islington's Code of Practice for Construction Sites (September 2006).<sup>7</sup>

18.5.2 These mitigation measures would require development and implementation of appropriate site waste management and materials handling procedures. Requirements for waste management objectives, targets and procedures would be secured via the procurement process for the Principal Contractor and other construction-related contractors.

## 18.6 Residual Effects

18.6.1 With the aforementioned mitigation measures in place to meet the specified landfill diversion target, it has been judged that the residual effects of solid waste generation and management during construction would be negligible.

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<sup>7</sup> Islington Council (2006) Code of Construction Practice for Construction Sites [online] available at <http://www.islington.gov.uk/services/parks-environment/noise/constructionnoise/Pages/default.aspx> (accessed March 2013).



## 19 Waste Heat Effects

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### 19.1 Introduction

- 19.1.1 An assessment has been undertaken to determine the likely urban heat island effect of the proposed development. This section sets out the microclimate conditions around the proposed site and provides a summary of the assessment of the impact of heat emissions from the substation development on existing neighbouring residential buildings, the proposed mixed use development and on the wider environment through the urban heat island effect.

### 19.2 Baseline

- 19.2.1 The proposed site has been cleared and buildings previously located on site have been demolished including a four storey apartment block, car wash/valet service and the former Red Rose public house and function hall. Therefore the existing situation generates low heat emissions.
- 19.2.2 The urban heat island effect is currently felt within the London Borough of Islington, the temperature difference between a reference rural temperature and temperatures measured across London, showed a significant Urban Heat Island. The highest temperature difference in the centre was about 6°C, with temperature difference in areas such as Islington typically around 4°C.

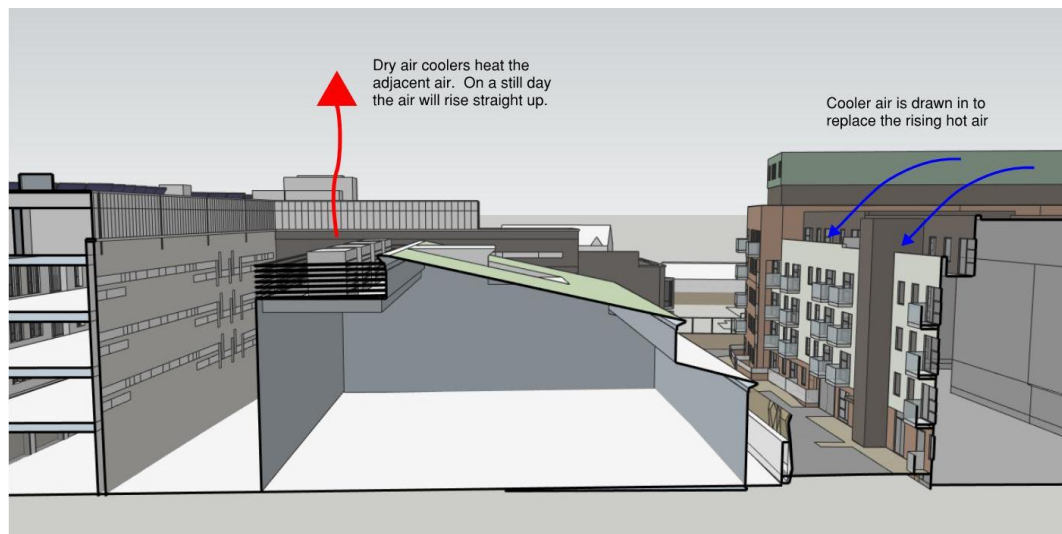
### 19.3 Assessment

- 19.3.1 To inform the impact assessment, a comparison between the likely heat output of the substation and that of a commercial and residential development, which might be suitable development for the proposed site was undertaken. This concluded that the expected peak heat output from the substation in normal operating mode is estimated to be around 200kW before 2025 and may increase to as high as 500kW in the 2030. The typical mixed use development would have a heat output of 300kW, mainly from cooling equipment needed for the commercial space on the ground floor. This comparison shows that the heat output from the substation is not that different compared with other typical urban developments.
- 19.3.2 The impact of heat from the substation has been tested for two scenarios: a still day where the hot air will rise directly from the cooling system on the substation roof and a windy day where the heat would get mixed with the wind.
- 19.3.3 On a still day it can be assumed that the air around the substation would be heated up by the dry air coolers and the associated rise in temperature could be evaluated based on air

moving slowly through the site. Where, in the short term, the peak heat output is no more than 200kW an increase in the air temperature in the area by no more than 0.5°C would be expected. Long term the load on the substation could increase creating a peak heat output of up to 500kW; in this case the temperature of the air could increase by 1.2°C. This is a small amount of heat compared to the typical background rates in the area.

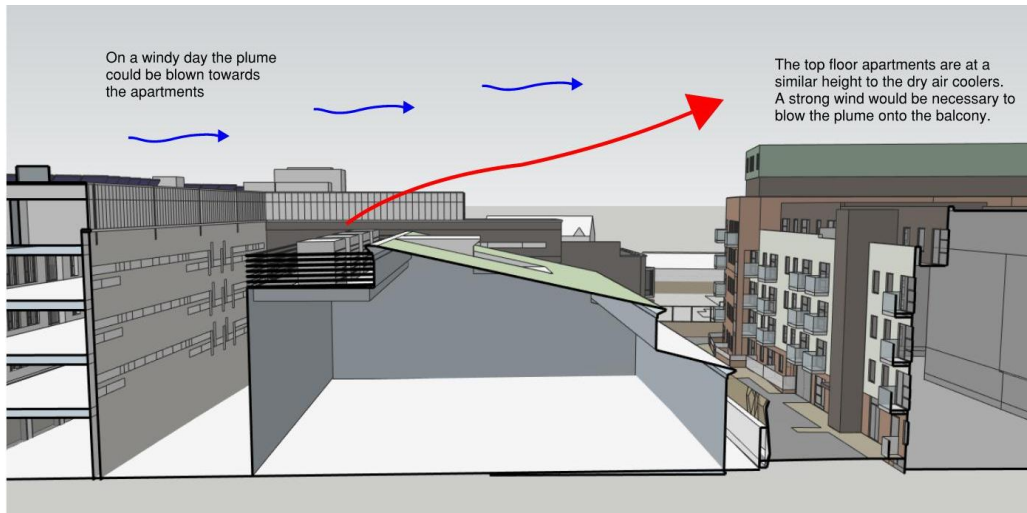
19.3.4 The figure below shows how the air will move on the site on a still day with limited wind. (Figure 4

19.3.5 **Figure 4 – Still Day Scenario**



19.3.6 On a windy day the hot air would mix with a wind as it moves quickly past, however the air could be blown toward the adjacent residential building. That said, the highest apartment is at a similar height to the cooling system on top of the substation, so a strong wind would be required to blow the heat directly towards these apartments. The extra wind would reduce the impact of the heat by increasing the amount of air mixing which will reduce the heat impact. (Figure 5)

19.3.7 **Figure 5 – Windy Day Scenario**



19.3.8 The heat impact on the immediate microclimate is expected to be at less than 1°C even in low wind conditions.

19.3.9 The impact on adjacent existing residential development has also been considered; the assessment concluded that the substation will have a negligible effect upon sensitive receptors within the adjacent existing residential properties. At the neighbourhood and city scale the thermal impact will be substantially reduced as the heat emissions become dispersed and diluted. This means the development is expected to have a negligible effect on the wider urban heat island.

## 19.4 Mitigation

19.4.1 Mitigation measures have been incorporated into the scheme including:

- **Electricity substation** has been designed passively improve the local microclimate. Roof space has been designed to incorporate extensive green roofs which contribute to local biodiversity, water attenuation and reduce surface heat emissions. The total area of the green roofs is 640m<sup>2</sup> representing 46% of the total roof area.
- **Mixed-use development** has been designed to incorporate passive design features which emphasises the importance of controlling heat gain and delivering passive cooling before mechanical cooling measures are considered. The measures include:
  - All dwellings are above ground floor, leading to increased air flows near residential facades and windows.
  - The dwellings have very solid walls, which help keep the apartments cool due to lower night time temperature.

- To reduce heat gain from the sun, windows will be provided with built in solar reflection and additional shading will be provided via balconies and the winter gardens.
- Heat is also reduced by including low energy equipment, appliances and light fittings.
- Opening windows will provide additional ventilation as necessary to maintain reasonable internal temperatures.

## **19.5 Residual Effects.**

- 19.5.1 It is assessed that the mitigation measures would remove or manage the identified risks and the residual effect of the proposed development on sensitive receptors would be negligible.

## 20 TV and Radio Interference

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### 20.1 Introduction

- 20.1.1 The scope of this study is the assessment of the potential impact of the proposed scheme, 107-129 Seven Sisters Road in Islington on the reception of terrestrial and satellite television and radio services in the surrounding area.
- 20.1.2 There are currently four ways in which users receive TV services in the UK: cable, satellite, terrestrial and IPTV.

### 20.2 Baseline

- 20.2.1 There are two transmitters that provide digital terrestrial services in the North London and Central London Area namely, Crystal Palace transmitter located about 10 miles South-East of the site and the Alexandra Palace transmitter located about 2 miles North-West of the site.
- 20.2.2 FM BBC radio signals are also transmitted from Crystal Palace transmitter. Digital Audio Broadcast (DAB) radio is transmitted from both Crystal Palace and Alexandra Palace transmitters with a number of relay transmitters used to extend the DAB radio service around the London area.
- 20.2.3 BSkyB's satellite television signals are received from the Astra 2 satellite in London.

### 20.3 Assessment

- 20.3.1 The study is based on the location of the proposed development in relation to the location of the main television and radio transmitters; the Design development documentation; and the principles of electromagnetic wave propagation.
- 20.3.2 Objects in the line-of-sight of any TV/radio transmitter create a shadow behind them and within a signal shadow the received strength of a signal will be reduced.
- 20.3.3 The significance of the impacts on TV reception is assessed by considering the size of the area, the number and types of properties affected, the type of television service commonly employed in the affected area, as well as the predicted effect on signal reception.

### 20.4 Impacts

- 20.4.1 This section summarises the impact of the proposed development on the different type of TV and radio reception as follows:
- Based on the study, the proposed development is unlikely to cause any significant interference to DAB radio reception and thus there will be no significant effect.

- Owing to the small number of properties potentially affected, the likely significant effect of the Seven Sisters development on satellite TV services is likely to be negligible.
- The likely effect of the proposed development on digital terrestrial TV broadcast from the Crystal Palace transmitter and the Alexandra Palace transmitter signal shadows would have a slight adverse effect.

## 20.5 Mitigation

20.5.1 The need for taking mitigation measures arises only when television users, i.e. mainly residential households, notice that their reception has deteriorated and when they are also able to prove that this deterioration is caused by the proposed development. The mitigation investigations can be carried out whenever a problem is reported be that during or after construction. The possible mitigation measures are outlined below:

- Satellite TV: Where the satellite TV reception is affected, the problem may be overcome by relocating the satellite dish or in extreme cases, it may be necessary to install a Cable TV service.
- Terrestrial TV: The mitigation measures that can be introduced in the affected area to overcome the adverse effects due to the signal shadowing caused by the proposed development are: improving the receiving antenna, installing a mast-head amplifier, relocating or redirecting the receiving antenna or making use of relay transmitters.

20.5.2 With the mitigation measures mentioned above for Terrestrial TV in place, there may be a small number of residences where their preferred primary source of television is still not available. Viewers in this situation may have to receive TV from an alternative service namely, a digital cable television service or digital satellite television service. The choice of the alternative service shall be based on the service availability and the cost of implementation.

## 20.6 Residual Effects

20.6.1 Given the nature of the potential impacts, with the outlined mitigation measures in place it is anticipated that all residences in the area should be able to receive an adequate television service (either by terrestrial, satellite or cable). Hence, the residual effect of the proposed development in operation would be not significant.

20.6.2 Whilst the proposed development may impact adversely on TV reception in a given area, other (planned or real) large buildings and structures both in and outside the impact area are also likely to impact on TV reception in the same area. Thus, cumulative impacts occur, and their study in any given instance is difficult to assess and not practical due to the complexities involved.