

17. Electronic Interference

Environmental Statement

Volume I

17 Electronic Interference

Introduction

- 17.1 This chapter of the Environmental Statement (ES) reports the findings of an assessment of the likely significant electronic interference effects upon the reception of wanted radiowave signals as a result of the proposed Peel Centre Hybrid Planning Application (hereafter referred to as the 'Proposed Development') in the London Borough of Barnet (LBB).
- 17.2 The potential for electronic interference effect interactions and combined effects ('Type 1' effects) and combined cumulative electronic interference effects ('Type 2' effects) of the Proposed Development with other development schemes are discussed in **Chapter 18: Effect Interactions and Cumulative Effects**.
- 17.3 This chapter of the ES specifically presents the findings of an assessment of the potential effects to terrestrial and satellite television (TV) reception associated with the Proposed Development. Consideration has also been given to the potential effect of the Proposed Development on radio reception, mobile telephone signals, wireless networks and emergency service communications.
- 17.4 In addition to presenting the planning policy context for the assessment of effects to TV reception, the chapter also presents the methodologies used and the assumptions made in the assessment of potential effects. Areas of likely effect are quantified and mitigation measures are proposed where appropriate.
- 17.5 This assessment and ES chapter has been produced by Tom Paxton, a specialist electronic interference consultant.

Legislation and Planning Policy Context

National Planning Policy and Guidance

National Planning Policy Framework (2012)

- 17.6 The National Planning Policy Framework (NPPF) (Ref. 17-1) states in paragraph 44 that "*Local planning authorities...should ensure that: ...they have considered the possibility of the construction of new buildings or other structures interfering with broadcast and telecommunications services.*"

National Planning Practice Guidance (2014)

- 17.7 The National Planning Practice Guidance (NPPG) was launched on the 6th March 2014 (Ref. 17-2) and provides a web-based resource in support of the NPPF.
- 17.8 Following its launch, a number of previously published planning guidance documents have been cancelled and are detailed within the Written Ministerial Statement titled 'Making the planning system work more efficiently and effectively', also dated 6th March 2014.
- 17.9 There is no guidance relevant to TV reception or electronic interference.

Regional Planning Policy

The London Plan – Spatial Development Strategy for Greater London (2011)

- 17.10 The Greater London Authority's (GLA) The London Plan – Spatial Development Strategy for Greater London (Ref. 17-3), is the statutory strategic planning framework for London. Policy 7.7 states that "*tall buildings should not affect adversely their surroundings in terms of ...telecommunication interference.*"

Revised Early Minor Alterations to the London Plan (October 2013)

- 17.11 The Revised Early Minor Alterations (REMA), published in October 2013 (Ref. 17-4) set out minor alterations to the London Plan policy to ensure consistency with the NPPF. This revision does not include any alterations relevant to TV reception or electronic interference.

Draft Further Alterations to the London Plan (2014)

- 17.12 On 15 January 2014, the Mayor published Draft Further Alterations to the London Plan (Ref. 17-5) for a twelve week period of public consultation. The further alterations have been prepared primarily to address key housing and employment issues emerging from an analysis of census data released since the publication of the London Plan, and which indicate a substantial increase in the capital's population. This revision does not include any alterations relevant to TV reception or electronic interference.

Local Planning Policy

- 17.13 There are no policies that relate specifically to broadcasting interference due to tall buildings within the LBB Core Strategy Development Plan Document (2012) (Ref. 17-6), the LBB Local Plan Development Management Policies (2012) (Ref. 17-7) or the Colindale Area Action Plan (2010).

Other Relevant Policy, Standards and Guidance

Tall Buildings Study of London Borough of Barnet (2010)

- 17.14 There is no guidance that relates specifically to broadcasting interference due to tall buildings within the Tall Buildings Study of London Borough of Barnet (2010) (Ref. 17-9).

Assessment Methodology and Effect Significance Criteria

- 17.15 This section of this ES chapter presents the following:

- Identification of the information sources that have been consulted throughout preparation this chapter;
- Details of the consultation undertaken with respect to electronic interference;
- The methodology behind the assessment of electronic interference effects, including the criteria for the determination of sensitivity of receptor and magnitude of change from the existing or 'baseline' condition;
- An explanation as to how the identification and assessment of potential electronic interference effects has been reached; and
- The significance criteria and terminology for assessment of the residual effects from electronic interference.

- 17.16 The assessment methodology will be considered in the context of the Detailed Components of the Proposed Development and the Outline Components of the Proposed Development.

- 17.17 The following sources of information that define the Proposed Development have been reviewed and form the basis of the assessment of likely significant effects on electronic interference:

- Detailed part of the Proposed Development:
 - Detailed plans and elevations; and
- Outline part of the Proposed Development:
 - Parameter Plans.

- 17.18 The assessment methodology has not differed between the assessments of the Detailed Components of the Proposed Development and the Outline Component of the Proposed Development because it is the massing of the various elements, and therefore their ability to block transmissions, that are the most important features. This level of information is available for both the detailed and Outline Components of the Proposed Development.

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Assessment Methodology

Methodology for Determining Baseline Conditions and Sensitive Receptors

- 17.19 Principles of radiowave propagation from transmitting to receiving antennae have been used to assess the effect of the Proposed Development on terrestrial and satellite TV reception in the area surrounding the Site. The assessment of effects has been based on first applying geometrical optics to broadly identify the areas around the Proposed Development that are likely to be affected. Principles of radiowave propagation are then used to narrow down and identify the potential areas which are likely to be affected (the predicted shadow area) which has then been the focus of a site visit to identify dwellings with terrestrial aerials and satellite dishes.
- 17.20 Terrestrial TV signals are transmitted in digital format (Freeview). The only relevant interference mechanism affecting digital terrestrial TV signals is attenuation due to buildings physically blocking (and absorbing) the signals. This is because these signals use frequencies that travel more or less in straight lines and hence can be blocked by the introduction of new buildings. This same mechanism affects satellite TV signals. If the desired signals are too weak, the picture very quickly deteriorates into random 'blocks' and then disappears altogether. This disruption will, even for the tallest buildings, only extend for 3 or 4 kilometres and often less. It is therefore considered to be of a local scale.
- 17.21 Where areas of reduced signal strength are identified (in addition to the number of dwellings within those areas) it cannot be predicted with absolute certainty whether or not the signal degradation will subjectively create 'annoyance' to the viewers as only general assumptions can be made about their receiving systems. A conservative assessment has therefore been undertaken for those properties that fall within the predicted shadow / area of potential effects. For the purposes of this assessment, it is assumed that the properties that fall within the predicted shadow / area of potential effects may be adversely affected as although an above-average system may well have sufficient signal margin to allow loss of some signal without reception being subjectively affected, other systems may not.
- 17.22 In order to calculate the possible impacts to TV reception (both terrestrial and satellite), it has been assumed that each dwelling located within the predicted shadow areas that has a rooftop TV aerial has one main TV set, fed by that aerial (being of the correct type) and connected by a good quality down lead. Only main TV sets have been considered in the assessment. Receptors are considered to be domestic dwellings where TV is watched as an amenity. Places where TV is part of a commercial offering, such as hotels, offices and shops, are not considered to be receptors. The sensitivity of the receptors will vary with their use of TV services but experience shows that many high-use receptors will be highly sensitive.
- 17.23 Radios use signals at lower frequencies than TV signals that can bend to a greater extent around obstructions. Combined with an ability to make constructive use of reflected signals, radios are able to operate successfully in urban environments. There is therefore considered to be no significant risk to radio reception (both analogue and digital) from the construction or operation of the Proposed Development and it is therefore not considered further in this assessment.
- 17.24 Network Rail use a communication system that transmits the signals along the rails and is therefore impervious to interference from tall buildings. It also has its own mobile telephone system, using many transmitters, most of which are located alongside the track. This makes it very robust and, in this case, the Proposed Development cannot interfere with this system. It is therefore not considered further in this assessment.
- 17.25 The reception of mobile telephone signals, wireless networks and emergency service communications should not be compromised unless their transmitting aerials are sited on top of nearby buildings at heights less than those of the Proposed Development. Should that be the case, the affected transmitting aerials may have to be relocated. Metropolitan Police aerials were noted from a search of the Office of Communications (Ofcom) database (Ref. 17-10) and a visual inspection around the area during the site visit, both at the Peel Centre and the Headquarters on the retained Metropolitan Police site. The Metropolitan Police were invited to comment on the possibility of the Proposed Development having any adverse effects upon the operation of their communications. They have responded that they have decommissioned the main transmitting aerials

and any others that they are operating will not, in their view, be liable to adverse effects from the Proposed Development. As such it is considered unlikely that there will be any impact on this receptor and this issue is therefore not considered further.

- 17.26 No other communication masts were noted from an inspection of the database or from a visual inspection.
- 17.27 In summary, the following require further consideration:
- Shadowing of terrestrial TV signals, which calculations predict could extend to the north-west for up to 1km; and
 - Shadowing of satellite TV signals, which calculations predict could extend to the north-west for up to 40m beyond the Site.
- 17.28 *Methodology for Determining Demolition, Construction and Refurbishment Effects*
- 17.29 Interference caused by temporary structures such as cranes and scaffolding used during demolition and construction is difficult to predict and equally difficult to rectify due to its temporary nature. Any mitigation that may be applied might only work in the short-term because, as soon as cranes or scaffolding change shape or position, the interference would also change. Consequently, interference caused by temporary structures has not been quantitatively assessed. Rather, it has been noted that any such effects will fall within the range of zero and the maximum predicted adverse effects when construction is complete. That is, either the interference will stop once the cranes have changed position or else the interference will remain once the cranes have changed position. In the latter case any affected dwellings would receive mitigation as described in paragraph 17.55.

Methodology for Determining Operational Effects

- 17.30 In order to define those areas where TV reception is likely to be at risk, the proposed changes in the physical form or mass of buildings on the Site as a result of the Proposed Development have been placed on a 1:10,000 scale map and, by calculation, illuminated by the TV transmitters that serve the area. The shadows cast have been marked on a map (Figure 17-1). Calculations have been carried out using International Radio Consultative Committee / International Telecommunication Union (CCIR / ITU) criteria, specifically the Appendix A3.1 Parameters (Ref. 17-11). Predicted TV signal strengths for the area have then been calculated.
- 17.31 The potential for the Proposed Development to cause interference to terrestrial and satellite TV reception has been assessed by a combination of desk-based calculations (as discussed above) and an on-site inspection of domestic aerial installations. The assessment has been carried out based on the:
- Location of the Site;
 - Details regarding the design of the Proposed Development;
 - Location of the Proposed Development with respect to key transmitters; and
 - Principles of radiowave propagation.
- 17.32 Within these theoretical predicted shadow areas of potential interference to TV reception, a physical survey of domestic TV aerials has been undertaken (conducted on 20th June, 2014). The type and positioning of the aerials has provided an indication of the strength and quality of the available signals. The presence of cable and satellite usage was also noted, so as to ascertain whether or not particular households are depending solely on terrestrial signals.
- 17.33 The tallest element of the Proposed Development is 122.75 metres (m) Above Ordnance Datum (AOD).
- Significance Criteria**
- 17.34 To determine the significance of the effects to terrestrial and satellite TV reception, professional judgement has been used to define the following criteria which have been applied throughout this assessment:
- **Adverse** – The Proposed Development is likely to cause a noticeable permanent deterioration in reception;

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- **Beneficial** – The Proposed Development is likely to result in a noticeable permanent improvement in reception; or
 - **Negligible** – The Proposed Development is likely to result in no noticeable effect on reception.
- 17.35 Where adverse or beneficial effects have been identified, the magnitude is described as:
- **Negligible** – The Proposed Development is likely to affect reception for up to 20 dwellings (insignificant);
 - **Minor** – The Proposed Development is likely to affect reception for more than 20 and up to 100 dwellings (insignificant);
 - **Moderate** – The Proposed Development is likely to affect reception for more than 100 and up to 500 dwellings (significant); or
 - **Major** – The Proposed Development is likely to affect reception for more than 500 dwellings (significant).
- 17.36 As stated above, any effects are likely to be at a local level and the sensitivity of receptors i.e. the ability to view television programmes, is likely to be very high amongst frequent users.

Consultation

- 17.37 The OFCOM database was inspected to ascertain transmission characteristics for relevant terrestrial transmitters and locations of mobile telephone and emergency services transmitters.
- 17.38 The Metropolitan Police have been contacted to ascertain their view on the potential for the Proposed Development to cause an adverse effect to their communications systems.

Limitations and Assumptions

- 17.39 Portable TV sets within dwellings cannot be considered as it is not possible to make robust assumptions about the following factors: location within the dwellings; the signal attenuation due to the walls; the signal gain (if any) of the set-top aerials; and the existing quality of the reception.
- 17.40 All mitigation measures described are expected to provide TV reception of at least the same quality as that enjoyed by those affected households prior to the completion and occupation of the Proposed Development (i.e. in the baseline scenario).

Baseline Conditions

- 17.41 Terrestrial TV signals in the vicinity of the Site are provided by the Crystal Palace transmitter, located approximately 22.1km south-east of the Site.
- 17.42 The Proposed Development would cast a series of terrestrial TV shadows to the north-west of the Site. Terrestrial TV shadows show where existing properties that are dependent on TV signals from the Crystal Palace transmitter are at risk. These residential terraces and blocks located to the north-west of the Site outside the Application boundary largely range from two to four storeys in height.
- 17.43 The Proposed Development would cast a small satellite TV shadow to the north-west of the Site. There are some existing two storey dwellings within this shadow.
- 17.44 Cable television is available throughout the shadow areas. The survey revealed that satellite dishes are present on about 92% of the housing within the terrestrial TV shadow areas.

Assessment of Effects and Significance

Effects during Demolition and Construction

- 17.45 The level of effect in relation to electronic interference to the existing properties predicted to be adversely affected by the Proposed Development will vary throughout the demolition and construction phases, depending on the level of obstruction caused. The existing buildings that will be demolished are either too low to be causing any interference to TV reception or are too far away from dwellings to cause interference. Therefore there will be no effect on TV reception during demolition.

- 17.46 The likely effect on TV reception during the construction phase will steadily increase in magnitude as the superstructure of the proposed new buildings are built and then clad. As the superstructures and cladding are progressed, the predicted effects will be a subset of those of the completed development. The magnitude of the effects will therefore be less than the likely effects of the completed development, as construction will increase the extent of the massing of the Proposed Development over time. Therefore, the effects of the completed development provide a worst-case scenario.
- 17.47 To avoid disruption to services carried by communication cables (copper and fibre) to neighbouring properties (such as accidental cutting of cables during demolition and construction phases), the developer will obtain information from the service providers on any cable routes that run across the Site. This information can then be used to avoid any potential disruption.
- 17.48 This could represent a potential **permanent minor adverse** effect.

Effects Once the Proposed Development is Completed and Occupied

Detailed Components of the Proposed Development

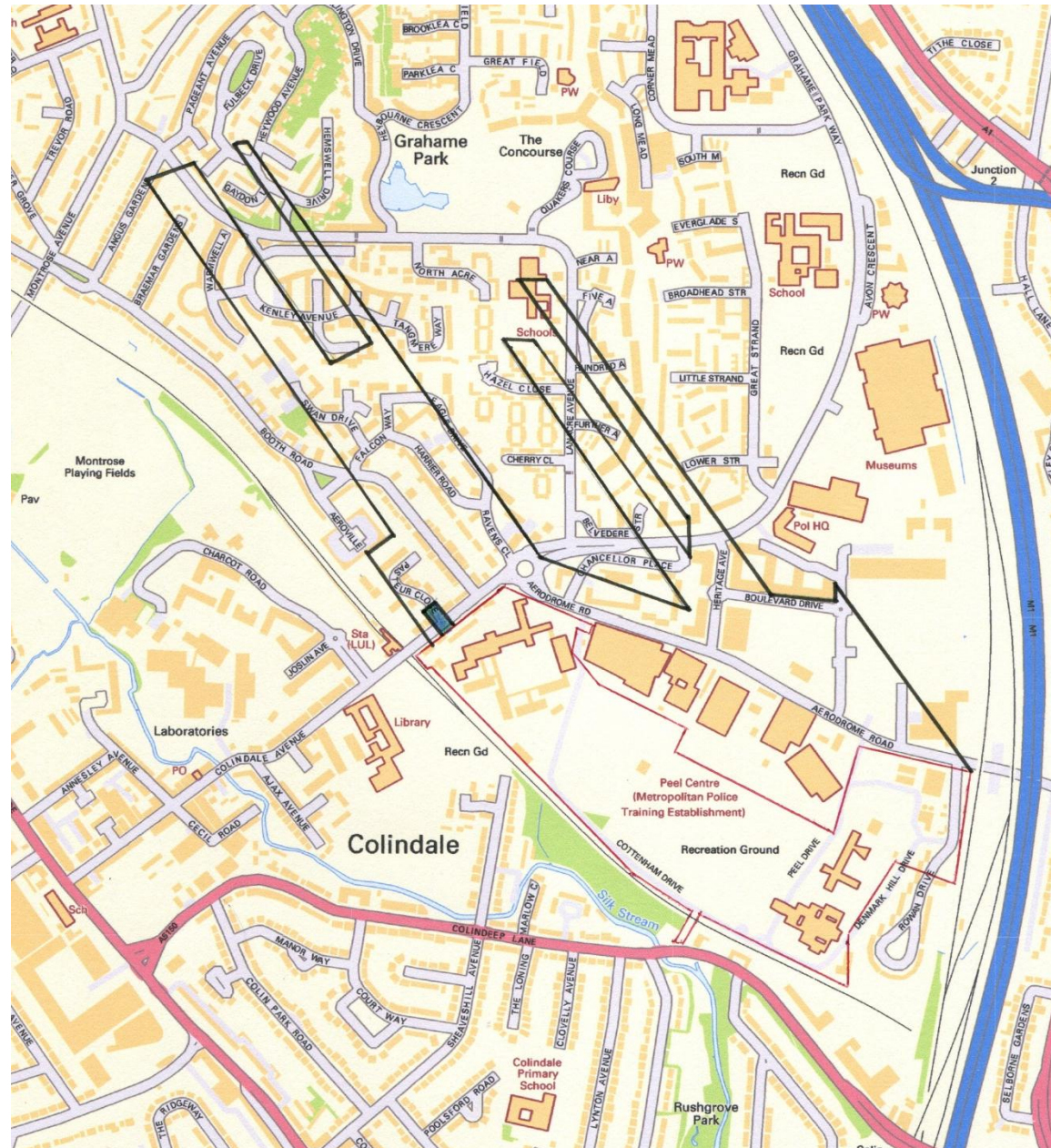
- 17.49 Areas where terrestrial TV reception has the potential to be adversely affected are in the 'shadows' cast by the Proposed Development, defined by a contour in Figure 17-1. Areas where satellite TV reception has the potential to be adversely affected are defined by the blue area inside the black contour. The red line boundary defines the Site.
- 17.50 Within the predicted Crystal Palace terrestrial TV shadow from the Detailed Components of the Proposed Development there are 45 terrestrial aerial installations that are identified as being at risk of experiencing adverse effects to TV reception should they be depending on terrestrial reception. Only four of these 45 terrestrial aerial installations depend solely on terrestrial signals, the other 41 having satellite dishes as well. These four terrestrial aerial installations represent a potential **permanent negligible adverse** effect.
- 17.51 Domestic satellite dishes are oriented to the southeast and therefore the satellite TV shadows cast by the Proposed Development will lie to the northwest, but the shadows are so small that they will not extend beyond the Site boundary and therefore cannot adversely affect any existing satellite TV reception. This represents a **permanent negligible** effect.

Outline Components of the Proposed Development

- 17.52 Within the predicted Crystal Palace terrestrial TV shadow from the Outline Components of the Proposed Development there are 152 terrestrial aerial installations that are identified to being at risk of experiencing adverse effects to TV reception should they be depending on terrestrial reception. Only 12 of these 152 terrestrial aerial installations depend solely on terrestrial reception, the other 140 having satellite dishes as well. These 12 terrestrial aerial installations represent a potential **permanent negligible adverse** effect.
- 17.53 Domestic satellite dishes are oriented to the southeast and therefore the satellite TV shadows cast by the Proposed Development will lie to the northwest, as shown in Figure 17-1. Six satellite TV installations were observed within the predicted shadow area. This represents a **permanent negligible** effect.

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Figure 17-1 Areas of Potential TV Reception Interference



The red line boundary defines the Site.
 The black line contour defines the area within which Crystal Palace terrestrial TV reception has the potential to be degraded.
 The blue-shaded black line contour defines the area within which satellite TV reception has the potential to be degraded.

Reproduced from OS Street View map 1:10000 scale. By permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown copyright. All rights reserved. Licence number 100042534.

Additional Mitigation

Additional Mitigation during Demolition and Construction

The mitigation measures proposed for the completed development will also be applicable during the temporary construction period.

Additional Mitigation Once the Proposed Development is Complete and Occupied

- 17.54 For any adversely affected terrestrial TV aerials, suitable mitigation would include upgrading those aerials by increasing their height and/or gain, or supplying a non-subscription satellite service such as Freesat (owned by BBC and ITV) or the 'Sky' equivalent, for a one-off cost.
- 17.55 For any adversely affected satellite dishes, as they are near to the extreme end of the predicted shadow, suitable mitigation would be to re-site the dishes on a part of the roofs that have a good satellite signal or to raise the dishes on poles.

Residual Effects and Conclusions

- 17.56 Whilst the combined effects from both the Detailed and Outline Components represents a **minor adverse** effect, after mitigation has taken place the effects should be of **negligible** significance.

Detailed Components of the Proposed Development

- 17.57 Prior to mitigation, it is predicted that there is the potential for permanent minor adverse effects to the reception of terrestrial TV services for 4 existing aerial installations. However, suitable mitigation measures will be made available as described in paragraph 17.54 (i.e. the effect is reversible). Therefore, following mitigation, residual effects to terrestrial TV reception are considered to be of **negligible** significance.

Table 17-1 Summary of Residual Effects for the Detailed Components

Description of Effect	Residual Effect Significance	Nature of Effect	Geographic Scale
Demolition and Construction			
Effect of adverse TV reception on local residents from demolition and construction activities.	Negligible	Permanent	Local
Completed and Occupied Development			
Effect of adverse TV reception on local residents from the completed and occupied development.	Negligible	Permanent	Local

Outline Components of the Proposed Development

- 17.58 Prior to mitigation, it is predicted that there is the potential for permanent moderate adverse effects to the reception of terrestrial TV services for 12 existing aerial installations. However, suitable mitigation measures are available as described in paragraph 17.54 (i.e. the effect is reversible). Therefore, following mitigation, residual effects to terrestrial TV reception are considered to be of **negligible** significance.
- 17.59 Prior to mitigation, it is predicted that there is the potential for permanent negligible adverse effects to the reception of satellite TV services for six existing aerial installations. However, suitable mitigation measures are available as described in paragraph 17.55 (i.e. the effect is reversible). Therefore, following mitigation, residual effects to satellite TV reception are considered to be of **negligible** significance.

Table 17-2 Summary of Residual Effects for the Outline Components

Description of Effect	Residual Effect Significance	Nature of Effect	Geographic Scale
Demolition and Construction			
Effect of adverse TV reception on local residents from demolition and construction activities.	Negligible	Permanent	Local
Completed and Occupied Development			
Effect of adverse TV reception on local residents from the completed and occupied development.	Negligible	Permanent	Local

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Overall Hybrid Planning Application Residual Effects Summary and Conclusions

17.60 It is predicted that, for both the Detailed (four terrestrial installations) and Outline (12 terrestrial installations and six satellite installations) Components of the Proposed Development, once they are complete and occupied, is considered to be of **negligible** significance.

17.61 There is some minor overlap of TV reception shadows between the Detailed and Outline Components. As the Detailed Components will be built before the Outline Components, the overlap dwellings have been allocated to the Detailed Components. Following the implementation of mitigation measures, effects to terrestrial and satellite TV reception is considered to be of **negligible** significance.

References

- Ref. 17-1. Department for Communities and Local Government (DCLG), (2014); 'The National Planning Policy Framework'.
- Ref. 17-2. Department for Communities and Local Government (DCLG), (2014); 'The National Planning Practice Guidance'.
- Ref. 17-3. GLA, (2011); 'The London Plan: Spatial Development Strategy for Greater London'.
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