

## 5. KEY ENVIRONMENTAL ISSUES

5.1 The key environmental effects of the proposed development are considered below. Circular 2/99 (paragraph 82) recommends that the role of EIA is to examine “*the ‘main’ or ‘significant’ effects to which a development is likely to give rise*”. The purpose of scoping is to determine, from a review of all possible effects, those that are likely to be significant and to ensure that resources and time are focussed on an examination of only those effects that are likely to give rise to significant effects. Schedule 4 of the EIA Regulations provides guidance by listing the elements of the environment which might be affected by the development including: population; fauna; flora; soil; water; air; climatic factors; material assets; landscape and the inter – relationship between them.

5.2 Having regard to the above, and following consideration of the potential effects likely to arise from the propose development, the environmental issues to be considered in the ES have been categorised under the following headings:

- Human Beings;
- Transport;
- Air Quality and Greenhouse Gas Emissions;
- Noise and Vibration;
- Soils, Geology and Ground Contamination;
- Water Resources;
- Ecology;
- Landscape, Townscape and Visual;
- Archaeology and Cultural Heritage; and
- Waste Management

5.3 This section provides the following information under each of the above headings:

- Summary of the existing environment;
- Preliminary identification of effects; and
- Breakdown of the proposed EIA methodology.

### Human Beings

5.4 This section provides a preliminary assessment of the baseline socio-economic conditions and predicted changes. The findings are set out below.

## Existing Environment

- 5.5 RAF Uxbridge is currently operational and its principal role is as an administrative and technical base for the Queens Colour Squadron, the HQ Music School and Central Band, the Personnel Services Wing and the London Transit Centre. The site accommodates single living accommodation as well as sports facilities, including an indoor hall / gymnasium, outdoor athletics track and several sports pitches. There are also several features of historic interest on the site, including an underground operations room, which dates from the Battle of Britain. The occupants and facilities at RAF Uxbridge will relocate to RAF Northolt in 2010.
- 5.6 The site falls in the Uxbridge North ward of the London Borough of Hillingdon. A brief overview of the socio-economic characteristics of Uxbridge North Ward and the London Borough of Hillingdon taken from the 2001 Census is detailed below:
- The population of Uxbridge North at 2001 was 11,671 people, made up of 4,557 households, with the majority being owner occupied (70.8%). Over a third of homes within the Uxbridge North ward are detached (30.49%). The ward has an economically active population of 6,150 and unemployment stands at 2.2% (2001 Census). A substantial number of employees work in professional and technical occupations (20.27%). Over 82% of households had access to one or more cars / vans.
  - The population of the London Borough of Hillingdon as a whole was 243,006. The borough contains 96,643 households, with the majority being owner occupied (72.1%). Over a third of homes in Hillingdon are semi detached properties (36.23%). Average house prices in London Borough of Hillingdon in October 2008 were £268,164 which is significantly above the England and Wales average of £164,529 (Land Registry, 2008).
  - The borough has an economically active population of 122,590, with low levels of unemployment (2.2%). The majority of employees work in administrative and secretarial occupations. 78% of households had access to one or more cars / vans.

## Preliminary Identification of Potential Effects

- 5.7 Effects on human beings are likely to occur during construction, in relation to noise and air pollution, access to jobs and housing, and visual effects requiring mitigation. Operational impacts are likely to include provision of and accessibility to services and housing, education, community facilities, open space and sports facilities. There is also the potential for demographic changes. If such effects are found to be significant, then appropriate mitigation measures will be identified in the ES to minimise adverse effect upon sensitive receptors.

## Proposed Methodology

- 5.8 The ES will provide baseline information in relation to potential areas of effect and will consider changes to the baseline position as a consequence of the proposals. These changes will be assessed (where appropriate) and the significance of these changes evaluated.
- 5.9 The ES will consider the effects of the proposed development on the following:
- The population/demographic characteristics of the local population and trends in population change;
  - Provision of and accessibility to housing in the local area;
  - Composition of employment (numbers and sectoral information), economic activity rates, available skills, unemployment levels and travel to work patterns; and
  - The proximity, type and accessibility to retail, leisure and community facilities/services available in the local area.
- 5.10 The completion of the socio-economic section of the ES will be a largely desk based exercise, having regard to a wide range of information sources, including those listed below:
- Census and other relevant ONS research / publications;
  - Relevant Development Plan Documents; and
  - Land Registry.

## Transport

### Existing Environment

- 5.11 RAF Uxbridge lies between Vine Lane to the east, Hillingdon Road (A4020) to the west and residential areas to the north and south. At present the site is accessed via a priority junction off Hillingdon Road, approximately mid-way along the site frontage. There are a number of other accesses which are currently gated for security reasons. These are located off Hillingdon Road opposite the Greenway, off St Andrew's Roundabout and Vine Lane.
- 5.12 The A4020, a four lane dual carriageway, is the principal non-trunked, east-west link in the area. The road runs between the M4 (Junction 1) and Shepherds Bush. Vine Lane is a lower order, residential road. Both roads have direct frontage access.

### Traffic flows

- 5.13 As a minimum the following junctions are expected to be potentially sensitive to the redevelopment of the RAF Uxbridge site. Accordingly these locations will be subject to full, classified, turning count

surveys in the network peak periods. This information will be used as the base for assessments of transport-related impacts, in this chapter, and of noise and air quality-related impacts considered elsewhere in this report.

- Oxford Road Gyratory
- Trumper Way / Cross Street Gyratory
- Park Road / Belmont Road
- Park Road / Honeycroft Hill
- Honeycroft Hill / Vine Hill
- Park Road / Chippendale Way
- Hillingdon Road / High Street
- Existing Site Access north of Manor Way
- Hillingdon Road / Manor Way
- Hillingdon Road / The Greenway
- Hillingdon Hill / Kingston Lane
- Hillingdon Hill / Vine Lane
- Harlington Road / Uxbridge Road
- Harefield Road / Park Road / A40

## Public Transport

- 5.14 The site has a high level of access to public transport services by being located on a high frequency bus corridor as well as a large proportion of the site falling within recognised walk distances of the central bus and underground stations.
- 5.15 The site does not benefit from direct access to the overground rail network.
- 5.16 Table 5.1 below summarises the bus services in Uxbridge.

**Table 5.1: Bus services in Uxbridge**

Bus Route	Routes Served	Approximate Peak Hour Frequency
U1	Ruislip – Ickenham Road – Uxbridge – Hillingdon Hill	15 min
U2	Uxbridge – Hillingdon Circus – Oak Farm Library – Hillingdon Hospital	8 -12 min
U3	Uxbridge – Hillingdon Hospital – West Drayton – Bath Road – Heathrow Airport Central	12 -15 min
U4	Uxbridge – Hillingdon Hospital – Sycamore Avenue –	7 -9 min

Bus Route	Routes Served	Approximate Peak Hour Frequency
	Dawley Road – Bourne Avenue	
U5	Uxbridge – Hillingdon Hospital – West Drayton – Hayes & Harlington	10 -12 min
U7	Uxbridge – Hillingdon Hospital – Hayes Police Station – Charville Lane Estate	30 min
U9	Uxbridge – Harefield High Street– Uxbridge	20 min
U10	Uxbridge – West Ruislip – Ruislip – Ickenham Road – Hill Lane	hourly between 9.30 and 14.30
A10	Uxbridge – Hillingdon Hill – Lees Road – Heathrow Airport Central	15 min
A40	High Wycombe – Uxbridge – Heathrow Airport	hourly
58	Britwell – Slough – Langley – Uxbridge	30 min
222	Uxbridge –West Drayton – Bath Road - Hounslow Bus Station	6 -10 min
331	Uxbridge – St Marys Road – Northwood – Ruislip	20 min
427	Uxbridge – Hayes by-pass – The Viaduct – Acton High Street	6 - 10 min
607	Uxbridge – Ealing Broadway – Shepherd's Bush Station – Shepherd's Bush Green	8 -10 min

5.17 The table below (Table 5.2) summarises Uxbridge's London Underground service.

**Table 5.2: London Underground Services from Uxbridge**

Underground Line	Routes Served	Approximate Peak Hour Frequency
Piccadilly	Hillingdon, Sudbury, Hammersmith, Piccadilly Circus, Kings Cross, Manor House, Cockfosters	15 min
Metropolitan	Hillingdon, West Harrow, Wembley, Baker Street, Kings Cross, Liverpool Street, Aldgate	5 – 7 min

### Pedestrian / Cycle Access

5.18 The site is well served for pedestrian and cycle access; pedestrian and cycle links are available throughout the local residential streets. Dedicated cycle lanes exist on Hillingdon Road, while the traffic calming measure in place on Vine Lane make this a relatively attractive route to pedestrians and cyclists.

### Preliminary Identification of the Impacts and Mitigation

5.19 As outlined above, the RAF Uxbridge site has a high level of access to public transport services. It is expected that access will be enhanced by bringing one or more bus services into the site. Given the site's proximity to an existing principal distributor road and existing traffic movements associated with the current activities, the site is considered to have low sensitivity to transport related

environmental impacts. However, the redevelopment proposals are likely to result in a net increase in vehicle movements which, without mitigation, could lead to unacceptable levels of congestion. Accordingly, the mitigation strategy envisaged will focus on local capacity improvements at affected junctions and public transport enhancement schemes designed to suppress car use, with implementation of a site-wide Travel Plan.

### Proposed Methodology and Additional Surveys Required

- 5.20 The ES Transport Chapter will consider the resultant impacts of the proposed development and the measures proposed to mitigate them by providing public transport, cycling, walking provision and highway infrastructure improvements. The Transport Assessment will be appended to the ES providing detailed analysis undertaken to determine the need and effectiveness of the mitigation proposals.
- 5.21 The methodologies adopted to determine a number of key areas, such as relevant policies, predicted traffic generation and distribution, etc. will be addressed in a separate Scoping Report prepared for the Transport Assessment.
- 5.22 It is proposed that the ES Transport Chapter will follow the assessment methodology set out in the 'Guidelines for the Environmental Impact Assessment of Road Schemes' publication produced by the Institute of Environmental Assessment (IEA).

### Assessment Methodology

- 5.23 In terms of assessing the environmental impact of traffic generated by the development, the IEA identifies the following impacts that should be considered:
- Noise (to be considered elsewhere within the EIA);
  - Vibration (to be considered elsewhere within the EIA);
  - Visual effects (to be considered elsewhere within the EIA);
  - Severance
  - Driver Delay
  - Pedestrian Delay
  - Pedestrian Amenity
  - Fear and Intimidation
  - Accident and Safety
  - Hazardous Loads
  - Air Pollution (to be considered elsewhere within the EIA);

- Dust and Dirt (to be considered elsewhere within the EIA);
  - Ecological Effects (to be considered elsewhere within the EIA); and
  - Heritage and Conservation Area (to be considered elsewhere within the EIA).
- 5.24 The impacts of this scale of development are potentially significant during both construction and the operation of the site. Accordingly both will be considered in the Transport Chapter of the ES.
- 5.25 The ES Transport Chapter will consider the Existing Baseline Conditions. This will serve as a comparison with predicted conditions, where the magnitude and significance of the impact will be considered, and set the benchmark for mitigation and enhancement measures. This three stage approach will form the structure of the ES Transport Chapter.

### Assessment Criteria

- 5.26 Taking from the list of IEA criteria, the following briefly describes the approach proposed for assessing the impacts that will be considered in the ES Transport Chapter:
- **Severance** is defined in the IEA guidelines as the perceived division that can occur within a community when it becomes separated by a major traffic artery. It is proposed to adopt the Manual of Environmental Appraisal (MEA) approach which sets out a range of indicators for determining the significance of severance as slight for a 30% change in traffic, 60% moderate and 90% substantial.
  - **Driver Delay** will be determined through interrogation of junction model outputs contained within the Transport Assessment. This information will be available in average vehicle or total junction delays.
  - No specific thresholds are provided within the IEA guidelines for assessing **Pedestrian Delay**. For this criteria a qualitative assessment will be carried out which considers the impact of changes in traffic volumes, the significance to pedestrian and details of crossing opportunities.
  - **Pedestrian Amenity** is broadly defined as the relative pleasantness of a journey. It is proposed to adopt the IEA recommendation of the application of the MEA threshold which judges the significance of the changes in Pedestrian Amenity where traffic flow is halved or doubled.
  - **Fear and Intimidation** is considered, within the IEA, to be dependant on the volume of traffic, its Heavy Goods Vehicle (HGV) component, its proximity to people or the lack of protection caused by such factors as narrow pavement widths. In the absence of any commonly agreed threshold the IEA recommends the thresholds shown in Table 5.3 below. It is proposed to adopt these thresholds in the EIA; Transport Chapter.

**Table 5.3: Vehicle Thresholds**

Degree of Hazard	Average Traffic flow over 18 hour day Vehicles / Hour	Total 18 Hour Heavy Goods Vehicle Flow	Average Speed over 18 Hour day mile / hour
Extreme	1800+	3000+	20+
Great	1200 -1800	2000 – 3000	15 – 20
Moderate	600 – 1200	1000 – 2000	10 - 15

- 5.27 The traffic components can be weighted to give an overall score of fear and intimidation corresponding to particular combinations of traffic flow, speed and composition.
- 5.28 A detailed assessment of *Accidents and Safety* will be carried out by examination of road traffic accident for the most recent five year period available. The detail of this will be included in the Transport Assessment which will look at patterns / clusters and consider whether the development proposals will exacerbate any existing problem areas, if any.
- 5.29 It is not anticipated that *Hazardous Loads* will be transported during either the operation or redevelopment of the site. This will be confirmed in the full EIA.

## Air Quality and Greenhouse Gas Emissions

### Introduction

- 5.30 This section of the assessment would consider the potential effects of the proposed development on air quality, regional air pollution and climate change.
- 5.31 Local air quality is primarily of concern to human health and is assessed by comparing ground level concentrations of pollutants against human health based criteria. Air pollution can also have negative environmental impacts over a regional scale, most notably through acidification, excess nitrogen deposition and the generation of tropospheric ozone. Several air pollutants are linked to global warming and climate change (such as carbon dioxide (CO<sub>2</sub>)).
- 5.32 This section outlines proposals for the collation of baseline data, together with the methodologies that will be employed for predicting future air quality.

### Existing Environment

- 5.33 For the purposes of this scoping study, scheme proposals have been reviewed, together with the 'Air Quality Review and Assessment Report' produced by the London Borough of Hillingdon (LBH).
- 5.34 Review of the Application Site and the surrounding land use indicates that the main sources of air pollution are likely to be regional pollution from the London conurbation and local pollution from



traffic on the A4020 and B483. The A40 is one of the largest sources of air pollution within the borough of Hillingdon, but is located over 1.2 km to the north of the Application Site, and is therefore unlikely to affect air quality in the vicinity of the proposed development. Information obtained from Ordnance Survey (OS) maps and the Local Authority Review and Assessment Report indicates that there are no industrial premises present within the vicinity of the site.

- 5.35 The main air pollutants associated with road traffic are nitrogen dioxide (NO<sub>2</sub>) and particulate matter smaller than 10 microns in diameter (PM<sub>10</sub>).
- 5.36 Complying with its statutory duties, LBH has completed all 4 stages of the Review and Assessment Process. In September 2003, an Air Quality Management Area (AQMA) was declared across a large area extending from the A40 corridor to the southern edge of the borough, including the area of land to be developed in this proposal. The AQMA was declared because of failure to meet the annual mean air quality objective for NO<sub>2</sub>.
- 5.37 It should be noted that not all planning applications for developments inside or adjacent to AQMAs should be refused, even if the development would result in a deterioration of local air quality. Locations designated as AQMAs are not intended to cause the refusal of the development outright. Local Planning Authorities, transport authorities and pollution control authorities are required to explore the possibility of securing mitigation measures that would allow the proposal to proceed.

### Preliminary Identification of the Impacts and Mitigation

- 5.38 There is the potential for impacts to occur from emissions to air during the construction and operation of the proposals. The following potential impacts will be considered:
- Construction activities may give rise to dust, which if unmitigated could cause nuisance when it forms a noticeable deposit on a surface or causes disruption when suspended in the air;
  - Operation of the proposals may cause a change in traffic flow, and therefore vehicular emissions, that could be significant in terms of local air quality, regional air pollution and climate change; and
  - Operation of the proposals may have an impact directly and indirectly on regional air pollution and climate change due to gas space/water heating and electrical power consumption respectively.

### Proposed Methodology and Additional Surveys Required

- 5.39 Existing air quality will be assessed fully through:
- Consideration of LBH's Air Quality Review and Assessment documents; and
  - Assessment of existing air quality in the area through a review of available local air quality monitoring data.

- 5.40 Total concentrations are made up of two components; the background component, which is related to total national and regional emissions; and the local contribution due to local emissions. Changes in traffic flows on the local network might have a significant effect on local emissions and roadside concentrations but will have a negligible impact on background concentrations.
- 5.41 Site specific background predictions for key traffic pollutants will be obtained from the UK Air Quality Archive ([www.airquality.co.uk](http://www.airquality.co.uk)). This data will be compared with the results of local background monitoring to establish appropriate background concentrations for the impact assessment.
- 5.42 Local contributions to concentrations will be assessed through a review of Local Authority monitoring data in the vicinity of the Application Site and in locations of a similar character.
- 5.43 The local air quality impact assessment will involve the following key elements:
- Semi-quantitative assessment of the effect of the construction phase in terms of the likelihood of nuisance dust impacts occurring; and
  - Quantitative assessment of the operational impact on local air quality based on traffic data.
- 5.44 The assessment of the construction phase will focus on likely effects of airborne and deposited dust in the vicinity of the Application Site. The assessment will take a semi-quantitative approach based on receptor numbers and distances; significant dust impacts are not expected at distances of more than 150m from construction activities. Consideration of construction traffic effects will be qualitative.
- 5.45 The assessment of significant traffic impacts will cover the same area and roads covered in the Transport Assessment and/or all roads where the vehicle trip generation in the local area will result in annual average traffic increases of 1000 or more on individual road links with more than 10000 vehicles per day.
- 5.46 LBH was contacted (21/10/08 and 05/11/08) with respect to the appropriate method that should be adopted to assess the traffic impacts of the proposal on air quality. To date no response has been received. Because the Application Site is located within an AQMA, operational impacts will most likely be predicted using the United States Environmental Protection Agency (USEPA) approved air quality dispersion model Cal3QHCR (Breeze Roads). This model uses detailed information regarding traffic flows on the local road network together with local meteorological conditions to predict pollution concentrations at specific locations selected by the user. The model will be used to predict annual mean concentrations of NO<sub>2</sub> and PM<sub>10</sub> in the vicinity of the Application Site.
- 5.47 Emission factors for NO<sub>2</sub> and PM<sub>10</sub> will be derived using the Casella Stanger Emission Factors toolkit version 2e, which is based on the same emission factors contained in DMRB (Design Manual for Roads and Bridges) Screening Method. Both tools are based on the 2002 version of speed-related vehicular emission factors available from the National Atmospheric Emissions Inventory (NAEI).

- 5.48 There is no information at the current stage of the proposal as to whether there will be biomass or combined heat and power units installed on site. Installation of these units would require further air quality assessment in addition to the method outlined above. Air quality impacts would most likely be predicted using the ADMS detailed dispersion model.
- 5.49 Sensitive receptors will be selected where public are regularly present and likely to be exposed over the averaging times of air quality objectives for NO<sub>2</sub> and PM<sub>10</sub>. Sensitive receptors will be selected at the façades of:
- Existing residential properties in the vicinity of the Application Site; and
  - Proposed residential properties within the Application Site.
- 5.50 The impact assessment will consider the cumulative effects of all developments in the surrounding area. The scenarios modelled will therefore take into account the traffic impacts of other committed developments within the vicinity of the site under consideration.
- 5.51 Predicted concentrations will be compared to national air quality objectives.
- 5.52 Impacts on regional air pollution and climate change are dependent on the total amount of pollution in the atmosphere, rather than concentrations at particular locations. The proposals can help to increase or reduce total amounts of pollution in the atmosphere through affecting vehicle kilometres travelled and building energy consumption.
- 5.53 The assessment will make a qualitative review of the contribution of the proposals to reducing the total amount of pollution in the atmosphere.

### Determination of significant impacts

- 5.54 A 'significant effect' in terms of nuisance dust would be defined (for the purposes of this assessment) as the potential for emissions to result in Statutory Nuisance.
- 5.55 A 'significant effect' in terms of air quality would be defined based on guidance given in Planning Policy Statement 23 (PPS23) and guidance from National Society for Clean Air (NSCA) on dealing with air quality concerns within the development control process. PPS23 states that air quality is likely to be particularly important:
- Where the development is proposed inside, or adjacent to, an AQMA as designated under Part IV of the Environment Act 1995;
  - Where the development could in itself result in the designation of an AQMA; and
  - Where to grant planning permission would conflict with, or render unworkable, elements of a Local Authority's air quality action plan.

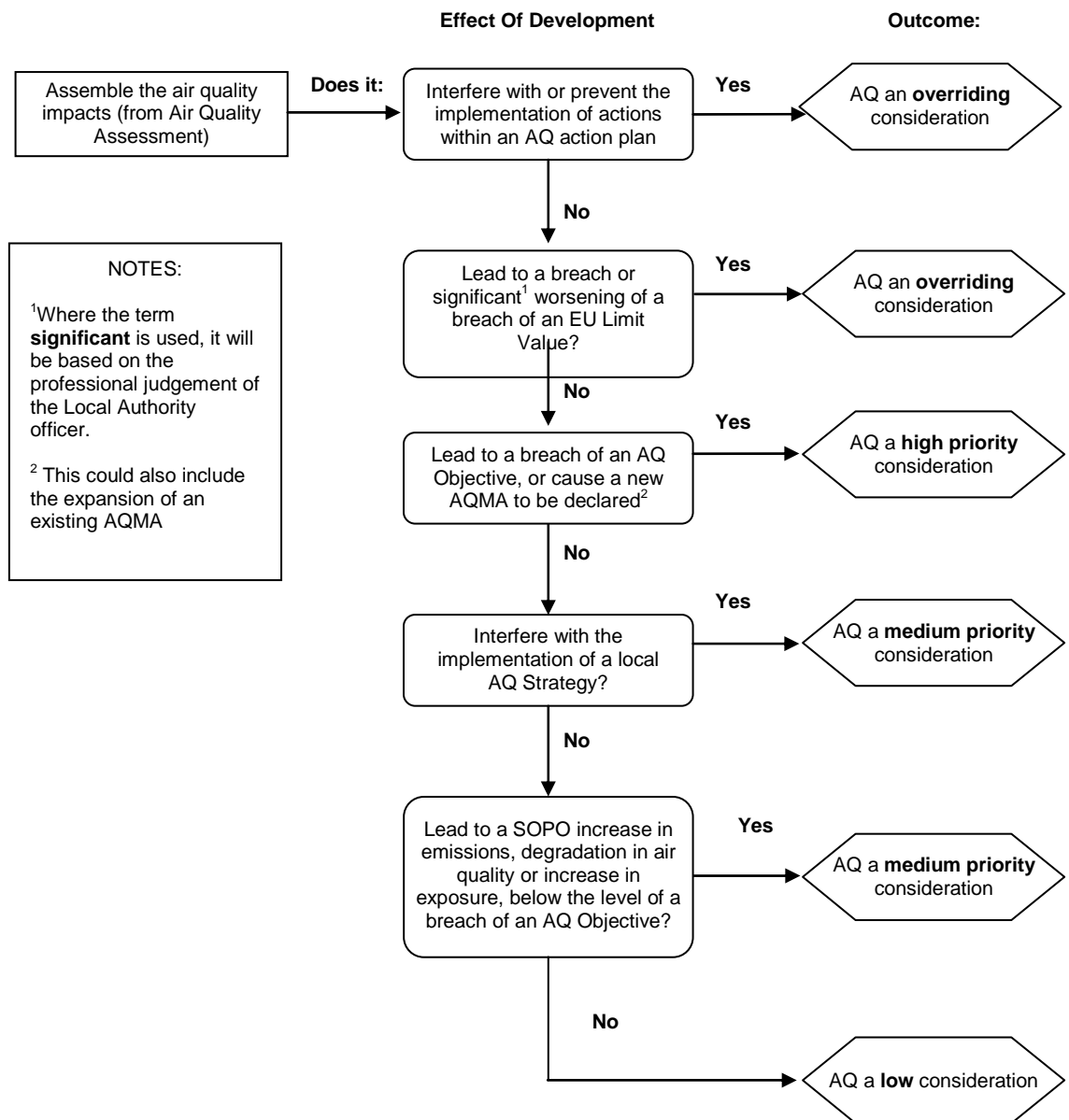
- 5.56 Assessing whether or not a development is 'significant' in air quality terms is dependent on the type of development as well as existing air quality. It is difficult to define numerically based criteria with confidence, therefore this assessment would reference the flow chart method for assessing significance as proposed by NSCA and described below.
- 5.57 The exercise of professional judgement is an important part of the assessment of significance. The flow chart shown in Diagram 5.1 (below) denotes key stages where professional judgement should be exercised in the decision making process.
- 5.58 Air quality is a '*material consideration*' in all planning applications. However, the weight placed upon it, in relation to other material considerations, depends both on the proposed development and its environment. Therefore the significance of an impact depends very much on the context of the development.
- 5.59 There are no standards against which to evaluate the results of the regional air pollution assessment including the predicted change in CO<sub>2</sub> emissions. However The Government's policy on climate change is set out in Climate Change: The UK Programme 2006<sup>1</sup>. The Programme details how the UK plans to achieve its legally binding Kyoto Protocol target to reduce emissions of a 'basket' of six greenhouse gases<sup>2</sup> by 12.5% below 1990 levels by 2008-2012. The Government also has a national goal to cut CO<sub>2</sub> emissions by 20% below 1990 levels by 2010 and, in the long term, reduce emissions by 80% by 2050. Section 2 of the Programme sets out the strategy to reduce UK greenhouse gas emissions and includes measures that can be taken in a number of sectors including transport, energy supply, domestic and business.

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<sup>1</sup> Climate Change: The UK Programme 2006. Defra. 2006.

<sup>2</sup> The basket of greenhouse gases consists: carbon dioxide; methane; nitrous oxide; hydrofluorocarbons; perfluorocarbons; and hexafluoride – each weighted by their Global Warming Potential (GWP).

**Diagram 5.1** National Society for Clean Air guidance on assessing the significance of air quality impacts



## Noise and Vibration

### Introduction

- 5.60 Preparation of this section has included the review of the preliminary master plan and aerial photography of the site and surrounding area. Initial consultation has been undertaken with the London Borough of Hillingdon (LBH) to discuss the intended scope of assessment and identify any current planning requirements specific to noise and vibration.
- 5.61 Review of available information has identified that data from the 'London Road Traffic Noise Map' is available. However, it is considered that current site specific noise and vibration surveys are required to allow an appropriate level of assessment within the ES. Proposals for these surveys are detailed later within this section.

### Existing Environment

- 5.62 A desk based review of the site and surrounding area has been undertaken using Ordnance Survey plans, and aerial photography. The review indicated the primary existing noise sources to be a combination of road and rail noise. The review does not highlight any significant industrial or commercial uses bordering the site.
- 5.63 Existing noise sources include road traffic noise from the A4020 on the West and south-west border of the site. The A40 lies approximately 1.1km to the north, the A408 lies approximately 600m to the west and A437 lies approximately 900m to the east. Uxbridge Underground Station and the tube line into Uxbridge lies approximately 100m to the north of the site. The station forms the terminus of the Piccadilly and Metropolitan London Underground lines, which run over ground in a south-west to north-east direction. The north and eastern site boundaries are adjacent to residential areas and local roads. The Uxbridge College campus lies to the north of the site, on the other side of the tubeline, and a golf course butts up to the south-eastern border of the site, neither of which are expected to be significantly noise generating.
- 5.64 The site is outside of the 57dB noise exposure contour for Heathrow Airport (2007) and outside of the 57dB noise exposure contour for Northolt Aerodrome (2001). Air traffic is therefore not expected to influence the noise climate of the site significantly, although the measurement survey(s) would include any air traffic.
- 5.65 Within the vicinity of the development site, there are a number of potentially sensitive receptors to existing sources of noise and vibration including:
- residential properties adjacent to the west of the development site along the A4020 Hillingdon Road and the B483 Park Road;

- residential properties to the north-west of the development site on Grays Road, Thompson Road, St Luke's Road, Jackson Road and Jackson Close.
- residential properties adjacent to the north of the site on Honeycroft Hill, Hyacinth Drive, Dowding Road and Keith Park Road;
- residential properties adjacent to the east of the development site on Gossage Road, Saunders Road, St Andrews Road, Bowling Close, Yew Tree Road, Birch Crescent, Patch Close, Vincent Drive and Bandon Close;
- residential properties on the south side of the development site on Valley Road, Dawe's Road and Dawe's Close; and
- The Golf Course located alongside the south-eastern border of the development site.

5.66 LBH was contacted<sup>3</sup> in order to obtain any available baseline noise or vibration data for the site or immediate surrounding area. However, it has been confirmed that there was no such available data and therefore proposals for baseline data collection are presented later within this section. Data availability would be checked again at the start of the EIA.

### Preliminary Identification of the Impacts and Mitigation

5.67 There is potential for noise to arise from activities during both the construction and operational phases of the development. The construction phase, as with other major projects, would be subject to a wide range of activities and potential impacts. However, the principal noise impacts are considered likely to arise from demolition of existing structures on site, earthwork activities for site preparation and installation of site services, installation of site and connecting roads infrastructure, construction of new buildings and construction traffic using the local road network.

5.68 During operation of the development, the principal impact on the existing environment around the development is likely to be as a result of changes in road traffic noise from potential increases in local traffic generated by the development. There is also the potential for existing noise and vibration sources, as identified above, to impact on future occupiers of the site. There is also potential for impacts on new noise sensitive development from adjacent new noise generating development (e.g. bars and restaurants etc). The potential for noise impacts on both existing and future residents from any new building services, waste management facilities and goods delivery's will also be considered.

### Proposed Methodology and Additional Surveys Required

5.69 The scoping exercise has identified the following key tasks to be undertaken to assess noise and vibration impacts within the ES:

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<sup>3</sup> Telephone conversation between Margaret Grant of Halcrow and Mike Rickaby of LBH on 10<sup>th</sup> October 2008 and e-mail correspondence from Stephen Timms of LBH on 3<sup>rd</sup> December 2008.

- Consultation with the Environmental Health Department (EHD) at LBH in order to agree the scope of the assessment, methodologies to be adopted and baseline measurement program;
- Collection of daytime and night-time ambient noise level data through noise surveys on the site, in order to define the existing baseline noise climate at existing off-site receivers and future on-site potentially sensitive receptors;
- Quantitative and/or qualitative prediction and assessment of noise levels at potentially sensitive receptors during the construction phase of the development;
- Quantitative and/or qualitative prediction and assessment of noise levels at local existing potentially sensitive receptors that could be affected by a change in road traffic noise levels following the development;
- Quantitative and/or qualitative assessment of measured and predicted noise levels on future users of the development site;
- Determination of the potential significance of impacts associated with the construction and operational phases of the development;
- Provision of proposals for mitigation measures, where appropriate, in order to minimise any potential negative impacts from and on the development site; and
- Prediction of any residual impacts, which may remain following implementation of mitigation measures.

### Consultation with Local Authority

- 5.70 Consultation<sup>4</sup> was undertaken between Halcrow and the DHE at LBH in October 2008 in order to discuss suitable assessment methodologies and possible measurement locations for the baseline noise survey.
- 5.71 It was confirmed during the discussion that assessment of noise and vibration sources affecting the development site would take account of the advice within Hillingdon Council's Supplementary Planning Document (SPD) (April 2006) on noise.
- 5.72 In the assessment of new residential development the SPD refers to the use of PPG 24, 1994: '*Planning and Noise*' and further describes residential noise standards that are derived from British Standard 8233, 1999 "Sound insulation and noise reduction for buildings – Code of practice" (BS 8233) and World Health Organisation (WHO) 'Guidelines for Community Noise' as reproduced in Table 5.4 below.

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<sup>4</sup> Telephone conversation between Margaret Grant of Halcrow and Mike Rickaby of LBH on 10<sup>th</sup> October 2008 and e-mail correspondence from Stephen Timms of LBH on 3<sup>rd</sup> December 2008.



**Table 5.4: Residential Noise Criteria**

		Recommended Noise Level (dB)
Daytime Noise (0700 – 2300)	Outdoor Living Areas	As low as practicable, and <50 LAeq,T* (free field)
	Indoor Living Areas	< 35 LAeq,t*
Night-time Noise (2300 – 0700)	Outside Bedroom Windows	<45 LAeq,T* (façade) <60 LAmax,Fast (façade)
	Inside Bedrooms	<30 LAeq,T* <45 LAmax,Fast
* Time base T should be appropriate for the circumstances, typically 1-hour day and 5-minutes night.		

5.73 In the assessment of Schools and Hospitals the SPD recommends a desirable upper limit of 60 L<sub>Aeq,t</sub> dB for major new schools and hospitals, and provides suitable internal criteria for schools also derived from BS 8233 and WHO Guidelines, and also Building Bulletin 93 (BB93) “Acoustic Design of Schools”. The criteria presented in the SPD are reproduced in Table 5.5 below.

**Table 5.5: School and Offices Internal Noise Criteria**

Type of Development	Area	LAeq,1-hr (dB)
Schools	Lecture Theatre	30 – 35
	Classroom	35 – 40
	Library	40 – 50
	Outdoors Playground	< 55
Offices	Executive Officer, Meeting Room	35 – 40
	Cellular Office	40 – 50
	Open-plan office	45 – 50

### Summary of General Guidance Documents and British Standards

5.74 The following key guidance documents will be referenced where appropriate during the assessment.

- Planning Policy Guidance (PPG) 24, Planning and Noise, 1994

5.75 This document sets out the Government’s policies on noise-related planning issues in England. The document gives guidance to local authorities in England on the use of their planning powers to minimise the adverse impact of noise without placing unreasonable restrictions on development.

- BS 8233 Sound Insulation and Noise Reduction For Buildings – Code Of Practice 1999

5.76 This British Standard provides recommendations for the control of noise in and around buildings.

- BS 4142 Rating industrial noise affecting mixed residential and industrial areas

- 5.77 This British Standard describes a method of determining the level of a noise of an industrial nature, together with procedures for assessing whether the noise in question is likely to give rise to complaints from people living in the vicinity.
- Guidelines for Community Noise, World Health Organisation (WHO), 1999
- 5.78 This document also makes recommendations for internal and external noise levels. It is commonly referred to when determining appropriate noise limits for situations that fall outside the scope of BS8233.
- Calculation of Road Traffic Noise (CRTN), Department of Transport (Welsh Office), 1988
- 5.79 Calculation of Road Traffic Noise (CRTN) provides the methodology for assessing noise levels due to road traffic. The prediction method takes into account factors such as the traffic flow, composition and speed, the alignment and distance of the road relative to receiving property, the nature of the intervening ground cover between the road and reflections from the façade in order to calculate the  $L^{10(18\text{ hour})}$  dB(A) noise level.
- BS 5228: Noise and Vibration Control on Construction and Open Sites (Part 1: 1997)
- 5.80 British Standard 5228 is the accepted methodology for the prediction of construction noise. This Standard provides guidance and recommendations on how to predict and measure the impact of noise from construction and open sites on the local amenity. Quantitative assessment of potential noise impacts at up to four of the closest potentially sensitive receptors during construction is proposed based upon the methodologies and guidance provided in BS 5228: Part 1, where appropriate levels of detail are available. Prediction will be undertaken using either noise mapping software or spreadsheet calculations.
- Building Bulletin 93
- 5.81 BB93 provides a framework for the acoustic design of schools in support of the building regulations. It provides supporting advice and recommendations for planning and design of schools, and provides a comprehensive guide for those involved in the design of new school buildings. The baseline noise survey(s) will establish external noise levels at the location of the proposed school, and the results will be discussed against the performance standards provided in Section 1 of BB93.

### Assessment of Construction Noise

- 5.82 The extent to which changes in noise levels due to construction activities constitute significant effects on existing receivers will be dependant on the absolute levels of ambient and construction noise, as well as the magnitude, duration, time of occurrence and frequency of the noise change.
- 5.83 An absolute figure that is often quoted as being an acceptable level of noise from construction or demolition sites is 75 dB  $L_{Aeq}$  measured at the external façade of an occupied building over the

normal working day. This figure was first quoted in the 1963 Wilson Report "Committee on the Problems of Noise – Final Report"

- 5.84 The Department of Environment (DoE) Advisory Leaflet 72 Noise control on building sites (which is now out of print) reproduces this figure, suggesting that for an urban or suburban area close to main road traffic or industrial noise, a facade level of 75 dB is appropriate between 07.00hrs and 19.00hrs. This is usually taken to be in terms of  $L_{Aeq, 12hr}$ .
- 5.85 Using BS 5228 and detailed construction information (where available) an assessment of construction noise levels will be undertaken at a number of, potentially most affected, receivers close to the development site. The significance of the predicted noise levels would be determined through comparison against the baseline measured levels as well as against the absolute criteria of 75 dB  $L_{Aeq, 12hr}$ .
- 5.86 Where detailed construction information is not available, qualitative assessment will be undertaken and recommendations for appropriate mitigation measures in accordance with Best Practicable Means will be made, as necessary.

### Assessment of Operational Noise

- 5.87 Changes in road traffic noise levels have been identified as the likely key impact of the operational phase of the development on existing receptors in the vicinity of the development site. As with construction noise, the extent to which changes in noise levels constitute significant effects will be dependant on the absolute levels of baseline and operational noise and the resultant magnitude of predicted noise level change.
- 5.88 Noise due to changes in road traffic movements off-site will be assessed, where traffic flows in the local area are likely to change significantly. The level of any assessment will be dependent upon the availability of detailed traffic flow data.
- 5.89 Where detailed traffic flow data are available, predictions based upon the principles of CRTN will be undertaken, on the basis of the following primary traffic data:
- 18-hour Annual Average Weekday Traffic (AAWT) flow data for the period between 06:00 – 24:00hrs;
  - Annual average speeds; and
  - Annual average percentage HGVs.
- 5.90 Assessment is again proposed to be undertaken at a number of existing individual receivers or comment would be made regarding the potential noise changes at groups of properties located along roads predicted to experience significant changes in traffic flow. Assessment would consider traffic noise levels in the do-minimum (without the scheme) and do-something (with the scheme)

scenarios in the proposed 'opening' and/or 'design' year of the development, again depending upon available data.

- 5.91 With respect to noise impacts on proposed future residential receivers, a PPG24 noise assessment will be undertaken based upon measured baseline data in order to determine initial suitability of the site for residential development. Consideration will also be given to future ambient noise levels due to potential changes in road traffic movements using available traffic data; predictions will again be undertaken based upon the principles provided within CRTN. The measurement and prediction results would also be considered against the 'Residential Noise Criteria' presented in LBH SPD for Noise, as reproduced in Table 5.4.
- 5.92 Noise impacts from road traffic on the proposed commercial premises that are proposed for this site will be assessed using BS8233. The assessment will be based upon measured baseline data in order to determine the initial suitability of commercial properties upon the proposed site. Consideration will be given to future ambient noise levels due to potential changes in road traffic movements using the available traffic data. Predictions of potential road traffic noise will be undertaken based upon the principles provided within CRTN. The assessment of any future offices will consider the 'School and Offices Noise Criteria' presented in LBH SPD for Noise, as reproduced in Table 5.5.
- 5.93 Noise impacts on the proposed future school and healthcare facilities will be based on measured baseline data in order to discuss the initial suitability of the locations. The proposed school location will be considered against the performance standards provided in Section 1 of BB93. The proposed school and healthcare facilities will both be discussed in consideration of the 'School and Offices Noise Criteria' presented in LBH SPD for Noise, as reproduced in Table 5.5. It is not intended that the EIA will provide a detailed assessment of internal building acoustics.
- 5.94 The potential for noise impacts from any proposed noise generating parts of the development (e.g. bars, restaurants etc) on the proposed residential parts of the development will be discussed with reference to the potential for noise nuisance from such activities. Potential impacts from any new building services, or deliveries to new commercial facilities, will be considered with reference to BS 4142.

### Impact Assessment

- 5.95 The two principal considerations during prediction of impact significance are:
- The magnitude of the impact; and
  - The sensitivity of the receptors.
- 5.96 The assessment will therefore combine these criteria in order to predict the significance of the noise impacts arising from the proposed development.

- 5.97 Additional detail will be provided within the assessments with respect to the duration of the impact and whether impacts are cumulative.

### Additional Surveys

- 5.98 In order to quantify the existing baseline conditions in the vicinity of the site, it will be necessary to undertake baseline noise monitoring. The noise surveys will be undertaken over a typical mid-week period to determine the current daytime and night-time baseline noise levels at up to eight locations within and around the development area. It is considered that the western boundary of the site alongside the A4020 will have the highest current baseline noise levels. Two measurement positions are therefore proposed along the western boundary. One measurement position is proposed on the northern border of the site, one measurement position at the location of the proposed school and at the approximate location of the proposed healthcare facility. One measurement location is proposed at the eastern boundary, in the area of St Andrews Road. One or two measurement positions would be selected towards the centre of the site, to provide an indication of how baseline noise levels vary across the site.
- 5.99 Where secure locations are available, unattended 24-hour surveys are proposed to maximise the level of data collected, however, this is dependent upon equipment security. Where secure locations are not available, shortened measurements will be undertaken in order to obtain representative noise level data during both the daytime (0700 – 2300hrs) and night-time (2300 – 0700hrs) periods.
- 5.100 Appropriate locations will be determined to be representative of both existing and proposed future receptor locations, and where possible the data collected will be representative of groups of receptors. The surveys will be designed such that they take account of a selection of the potentially most sensitive/closest receivers to existing road and rail traffic noise sources.
- 5.101 Noise measurements will be undertaken in line with BS 7445:2003 'Description and Measurement of Environmental Noise' and all appropriate parameters will be measured and reported. Observations will be made regarding the noise climate in the vicinity of the monitoring locations and details regarding prevailing weather conditions will be recorded.
- 5.102 As the railway line lies 100m or more to the north of the site boundary, with several rows of dwellings between, no baseline vibration monitoring is proposed on the development site.

## Soils, Geology and Ground Contamination

### Existing Environment

#### *Site History*

- 5.103 An extract of a previous report “RAF Uxbridge, Phase 1 Land Quality Assessment” prepared for Defence Estates by Enviro Ltd was reviewed, and the following site history surmised. The whole report was not available for review as part of the scoping study, and a full review is recommended as a part of the EIA for the Environmental Statement.
- 5.104 The earliest records (‘1636 Survey of Colham Manor’ Uxbridge Library) indicate that this site was originally part of a country estate. In 1717 Hillingdon House was constructed by the Duke of Schomberg on the site of an earlier residence. The estate was purchased by the British Government in 1915, and for two years was a Canadian Convalescent Hospital.
- 5.105 In 1917 the Royal Flying Corps established an armament and gunnery school at the site, and this use persisted until 1919. In 1920 it became the central depot of the newly formed Royal Air Force. Around 1924, ten, three storey barrack blocks were constructed around the parade square. The site continued in use as a Depot throughout the inter-war period and in 1936 became 11 Group, RAF Fighter Command. During World War Two, an underground (two storey) bunker was built within the grounds and this housed 11 Groups operations rooms and ancillary facilities. Although primarily underground, a standby generator (one of three originally) was located above ground, and was still in place in 2001. The operations room is now a museum. Other war time buildings include a Royal Artillery anti-Aircraft Operations Room.
- 5.106 The station remained in RAF use in the post war period and, in addition to training and depot use, was a communications centre. A small part was used by the United States Air Force. In the late 1970’s, the Uniter building was constructed. This is a hardened concrete structure designed to withstand a missile attack and formerly contained fixed telecommunications equipment and links. The, now disused, building contains two fuel storage tanks (55,000 and 2,000 litres). Other buildings constructed in the post war period were mainly for accommodation and storage. Current facilities include administrative offices, messes, medical centre, covered training, an armoury, communications facilities (including a mast), firing ranges, respirator training, and various sports facilities.
- 5.107 The main function of a military depot has traditionally been that of training new recruits and serving as a holding unit for personnel between postings. Contaminative risks would therefore tend to be on a small scale and related to support functions such as motor transport (MT), communications, firing ranges and waste disposal.

## Geology, Hydrogeology and Hydrology

- 5.108 A search was commissioned of the environmental database administrated by “Groundsure Ltd”. This revealed the following information regarding the environmental setting of the site.
- 5.109 The British Geological Survey 1:50,000 scale digital mapping indicates the site to be underlain with London Clay. Superficial deposits are absent over much of the site, however Black Park gravels are present in parts of the north and east of the site, the Boyn Hill gravel is present in the south, and Head and Alluvium deposits are present adjacent to the southern reach of the river channel. Areas of made and worked ground are recorded in the north, and noted as being artificial deposits or voids.
- 5.110 Superficial deposits are likely to be moderately to highly permeable, are classed as Minor Aquifers and as being vulnerable to leaching with little potential for retardation in overlying soils. The London Clay has a very low permeability and is classed as a non-aquifer. The Groundsure report states that there is a high risk of susceptibility to groundwater flooding (British Geological Survey). The site is not within 500m of a groundwater abstraction or within 2km of a public potable water supply abstraction. The site is not within a groundwater Source Protection Zone.
- 5.111 The River Pinn, which is classed by the Environment Agency as a Main river, flows through the centre of the site (from north to south). The water quality is classed by the Environment Agency as class (B (good) for both chemical and biological parameters. The watercourse would be sensitive to contaminants in surface water runoff from adjoining land, or from any contaminants in groundwaters contributing to baseflow. The RAF station has a discharge license for “trade discharges” into the River Pinn.
- 5.112 The site is not in an area of risk for radon, however should any radium sources be present, radon levels may be locally elevated as radon is a daughter product of radium decay.
- 5.113 The Groundsure report indicates that there are no sensitive ecological receptors (SSSIs, National or Local Nature Reserves, Special Areas of Conservation, Special Protection Areas, or Environmentally Sensitive Areas) within the site area or 500m of the site. A further check was made for similar sites using the multi-agency web resource ([www.magic.gov.uk](http://www.magic.gov.uk)) but with a 1km radius, as part of a screening for ecological receptors as set out in the Environment Agency Guidance on ecological risk assessment. No sites were recorded within this larger search area.
- 5.114 The Groundsure report identified a record of one pollution incident (November 2000) which resulted in a release of heating oil into soils and the River Pinn. This was reported to have been remediated with Environment Agency involvement. Any other earlier pollution incidents would not have been recorded when Crown Immunity was in force.

## Preliminary Identification of the Impacts and Mitigation

- 5.115 There are potential impacts for the design of buildings and substructures arising from the presence of swell-shrink susceptible London Clays under the site. Mitigation may include restrictions on tree removal and avoidance of significant changes to the hydrogeological regime. Locally there may be issues relating to compressible and collapsible deposits, and with running sands. The site is in area identified as at high risk of groundwater flooding because of the relative impermeability of the London Clay Formation.
- 5.116 Past and current uses of the site indicate that there are potential sources of contamination present at the site. These are summarised in Table 5.6, below.

**Table 5.6: Sources of contamination**

Current sources	Historic sources	Potential Contaminants
Above and below ground bulk fuel storage	Above and below ground bulk fuel storage  Leak from underground heating oil pipe (Nov 2000) – reported to have been remediated (Enviros)	Petroleum and Diesel range hydrocarbons; gas oil hydrocarbons; foam reportedly used to fill redundant tanks
	Demolished buildings	Asbestos
Underground cable runs; underground pipe runs	Underground cable runs; underground pipe runs	Possible oil filled cables; asbestos insulation
Electrical substations:	Electrical substations	PCBs; aliphatic hydrocarbons
MT garages and associated areas	MT garages and associated areas	Fuel, oil and grease range hydrocarbons; chlorinated solvents; lead; asbestos; MTBE; VOCs (resins and paints);
Communications repair and testing facilities	Aircraft parts and communications repair and testing facilities	Radium (dial illumination); lead/tin (solders)
Firing ranges – small arms	Firing ranges – small arms	Propellant and percussion cap residues, metals, phosphorous
	On-site incineration facilities/waste disposal	PAHs, dioxins, furans, carbazoles; heavy metals; radium
Hazardous materials store	Hazardous materials store	Wide range of potential contaminants, many of which would be complex organic compounds.
Underground drainage and oil interceptors	Underground drainage and oil interceptors	Fuel, oil and grease range hydrocarbons.

## Potential receptors

- 5.117 Potential receptors are summarised in Table 5.7 below.



**Table 5.7: Summary of receptors**

Receptor type	Specific receptors
Human	Residents Employees Visitors Trespassers Site workers (construction phase and post development)
Surface waters	River Pinn
Groundwaters	Groundwaters within Minor Aquifer under the site
Living property	Domestic animals Home grown produce
Property	Buildings (on or immediately off-site) Substructures (on or immediately off-site) Services – underground (running through or adjacent to site)

### Potential pathways

5.118 The potential pathways for the various receptors are summarised in the following table, Table 5.8.

**Table 5.8: Potential pathways**

Receptor	Pathways
Human	Ingestion; inhalation; dermal contact with soils Ingestion and dermal contact with groundwaters Inhalation of dusts and vapours Ingestion of home grown produce
Surface waters	Leaching and migration of dissolved phase contaminants Migration of free phase contaminants through soils or services corridors Migration of impacted groundwaters into surface waters Contaminated run-off from the site surface
Groundwaters	Leaching of dissolved phase contaminants Migration of free phase contaminants through soils or services corridors Migration of non-aqueous phase liquids at water table interfaces
Living property (domestic animals and produce)	Inhalation of dusts and vapours (animals) Ingestion of soils, dusts, ground and surface waters (animals) Dermal contact with soils, ground and surface waters (animals) Plant uptake from soils or groundwaters
Buildings, structures and services	Direct contact with impacted soils or groundwaters Permeation of contaminants through building elements or services

- 5.119 As a part of development, the risks associated with these contaminant sources will be assessed and any significant risks will be reduced by remedial measures or changes to the design of the development. This is likely to result in removal or remediation of some potential contaminant sources.

### Proposed Methodology and Additional Surveys Required

- 5.120 The preliminary assessment for this site has been made on the basis of limited third party information, supplemented by publicly available data and mapping. A more detailed review is required to provide a robust conceptual model and assessment of potential environmental risks associated with ground conditions, and the impact of the development upon those risks.
- 5.121 To achieve this, a thorough review and update of the existing desk study is required. This should be followed by an intrusive ground investigation to establish whether potential pollutant linkages are actually viable. This will enable a detailed Conceptual site model to be developed, and environmental risks to be assessed. Once this work has been done, the potential impact of the ground conditions on the proposed development may be considered in detail.
- 5.122 The interpretation and assessment of risks would be carried out in accordance with the latest Contaminated Land Exposure Assessment (CLEA) model and methodology (Department of the Environment, Food and Rural Affairs/Environment Agency) and Environment Agency hydrogeological assessment methodology. The ground investigation would also enable a geotechnical assessment to be undertaken. The results of the assessments would be used to inform the Environmental Statement.

## Water Resources (including flood risk)

### Existing Environment

#### *Hydrology*

- 5.123 The River Pinn runs through the site from north to south, originating in Pinner, approximately 9km to the north-east of the site. The river is classified as 'Main River' and maintained by the Environment Agency. The river is approximately 3 - 3.5m wide with banks generally low and shallow, although steeper in places in the south of the site. Throughout the site the river runs through wooded or tree-lined areas.

### Flood Risk Assessment

- 5.124 The main sources of flooding have been identified as the River Pinn, foul and surface water sewage, surface water runoff and ground water. The pathways that these flooding sources could take include the river floodplain, overland pathways, land drains, impermeable areas and the sewerage network.

The receptors for these include people, the built environment, recreation and the natural environment.

- 5.125 The site was affected by fluvial flooding in 1977 and 1988 from the River Pinn. A review of the flood map for these events shows the spring 1998 flood to be the more severe event which encroached on some of the site area. Since these dates the Environment Agency has implemented a number of flood alleviation schemes in the London Borough of Hillingdon as part of the £20 million Lower Colne Improvement Scheme. The schemes provide flood alleviation to properties within West Drayton, Uxbridge and Cowley. Due to such changes in the area it is unlikely that the historic flood records indicate any level of flood risk today. The Environment Agency is now reviewing the feasibility of sustainable flood alleviation measures for the River Pinn catchment. Groundwater flooding susceptibility has been assessed as high within 50m of the site which means that, given the geological conditions, the groundwater flooding hazard should be considered.
- 5.126 A Flood Risk Assessment (FRA) has been undertaken which identifies that part of the site lies adjacent to the River Pinn and is classified as within flood Zone 3b (Planning Policy Statement 25 (PPS25)), "high probability". This area is also designated as green belt and therefore there will be no development within the 1 in 200 year floodplain. The remaining area of site to be redeveloped is outside of the green belt and outside of the 1 in 200 year flood level and is therefore within Flood Risk Zone 2 "Medium Probability".
- 5.127 The site is an MOD site and it is likely that the surface water sewer network serving the site has an outfall into the River Pinn.

## Water Quality

- 5.128 The Environment Agency do not undertake any routine water quality sampling on the River Pinn. The nearest water quality monitoring point is at the confluence of the River Pinn and River Fray, south of Uxbridge. The Environment Agency take samples at regular intervals to monitor the chemical and biological quality of watercourses, along with measurements for nitrates and phosphates (previously known as the General Quality Assessment). Chemical and biological water quality is graded from A- very good to F- bad. Nitrates and phosphates are graded from 1 to 6 (very low levels to very high levels). Table 5.9 below shows the water quality at the nearest sampling point from 2003 to 2007.

**Table 5.9: Water quality at the confluence of the River Pinn and River Fray.**

River Name	Frays			
River Stretch	Colne-Pinn (7km)			
Year	Chemistry	Biology	Nitrates	Phosphates
2007	B	A	6	5
2006	B	A	6	5

River Name	Frays			
River Stretch	Colne-Pinn (7km)			
Year	Chemistry	Biology	Nitrates	Phosphates
2005	A	A	6	5
2004	A	B	6	5
2003	B	B	6	5

- 5.129 The results show that at the sampling point the water quality is generally Good to Very Good and thus the River Pinn is likely to be of a similar grade. Nitrate and Phosphate levels are considered to be Excessively High and High respectively. The site lies within a designated Nitrate Vulnerable Zone (NVZ).
- 5.130 Environment Agency data shows there was a significant pollution incident involving a sewage discharge to the River Pinn in 2001 to the immediate south of the site where the river flows under Hillingdon Road.
- 5.131 Records show a licensed discharge consent on site and a further two within 250m of the site which all discharge to the River Pinn. The discharge on site is from RAF Uxbridge for unspecified trade effluent. There are no groundwater or surface water abstraction licences within 500m of the site.
- 5.132 To protect water quality during construction, a Contractor's Environmental Management Plan (CEMP) will be prepared which will incorporate the water pollution prevention measures set out in the Environment Agency's Pollution Prevention Guidelines (PPG) and set out an emergency response plan in the case of a pollution incident. The guidelines relating to the proposed development include:
- EA PPG01 General guide to the prevention of water pollution;
  - EA PPG02 Above ground oil storage tanks;
  - EA PPG03 The use and design of oil separators (updated 2007);
  - EA PPG05 Works near or liable to affect watercourses;
  - EA PPG06 Working at construction and demolition sites;
  - EA PPG20 Dewatering underground ducts and chambers;
  - EA PPG23 Maintenance of structures over water;
  - Communities and Local Government PPS25: Planning Policy Statement (PPS) 25
- 5.133 The CEMP will also accord with the Construction Industry Research and Information Association (CIRIA) guidance document 'Control of water pollution from construction sites – a guide to good practice', which provides additional detail on reducing the impact of construction works on the water environment.

- 5.134 The CEMP will define the pollution prevention methods for preventing entry of contaminants into waterbodies and groundwater, and the management of river flow regimes during construction, as agreed with the Environment Agency. It will also require the preparation and maintenance of a pollution response plan to avoid and minimise the consequences of any accidental pollution incident.
- 5.135 During construction any oils stored on site must be within a secure bunded tank located at least 10m away from any watercourse and secured from vandalism and theft within the site compound, meeting the Control of Pollution (Oil Storage) Regulations 2001. As specified in the CEMP an emergency spillage kit should be available at all times and an incident response plan in case of a spillage.

### Hydrogeology

- 5.136 Aquifers are classified by the Environment Agency as either a “major aquifer” (highly productive and able to support large abstractions for public water supply and other purposes), a “minor aquifer” (will not produce large quantities of water for abstraction, though may be important for local supplies and in supplying base flow to rivers), or “non-aquifer” (negligibly permeable formations which are generally regarded as containing insignificant quantities of groundwater).
- 5.137 Source Protection Zones (SPZ) have also been defined by the Environment Agency in order to protect groundwater sources that are used for public drinking water supply or to supply water of an equivalent standard (e.g. for food processing or breweries etc.). SPZs provide an indication of the risk to groundwater supplies that may result from potentially polluting activities and accidental releases of pollutants. Generally the closer the activity or release is to a groundwater source the greater the risk. Four categories of zones are defined: Zone 1 (inner protection zone); Zone 2 (outer protection zone); Zone 3 (total catchment); and Zone 4 (zone of special interest). The level of risk to the water supply decreases only by moving from Zone 1 through to Zone 4.
- 5.138 The surface geology consists of clay, silt, sand and gravel of very low to very high permeability. Beneath the alluvium is London Clay of very low to moderate permeability. The site is classified as a Minor Aquifer with high leaching potential. The site does not lie within a Groundwater Source Protection Zone (SPZ) but an SPZ is located approximately 500m to the south west of the site. SPZ are designated to protect Public Water Drinking Supplies.

### Preliminary Identification of the Impacts and Mitigation

- 5.139 The proposed development will affect the drainage and rainfall-runoff relationship at the site. The creation of impermeable surfaces for roads, driveways, and roofs will increase the amount of runoff from the development area and will increase the speed at which the runoff enters the drainage network. Runoff from the site will be restricted where appropriate to ensure no increase in greenfield and existing site runoff rates. Sustainable Drainage Systems (SUDS) will be considered on the site where appropriate and will ensure there are no adverse impacts to the River Pinn or surrounding

environment in terms of water quality and quantity. Connection to the surface water sewer and/or the use of SUDS will ensure any risk of flooding in the River Pinn or downstream of the site is not exacerbated in any way. A drainage strategy will be produced to develop the design of the mitigation required. Design considerations and regulatory mechanisms to control peak water levels will ensure that there is no adverse risk of flooding as a result of the proposed development.

- 5.140 The floodplain associated with the River Pinn at this location will not be impacted by the proposed development. The works will not involve the raising of ground levels in the flood plain area and will have no impact on the flood storage volumes. The floodplain will continue to function effectively and would be used for its natural purpose. Parts of the site lie within areas that are at medium risk and mitigation will include raising floor levels 300mm above the 1 in 200 year flood level. With these mitigation measures there will be no adverse impacts upon the risk of flooding in the vicinity of the site.
- 5.141 The River Pinn is likely to be of medium to high quality in relation to water quality. This should not be affected by the development. The use of attenuation of flows from the developed areas and SUDS offers opportunities to incorporate measures to improve water quality through removing pollutants and offering pollution control measures (such as sluices and interceptors) before discharging surface water into the River Pinn. Appropriate drainage and sewerage for the site will be incorporated into the design and provisions made for the long term maintenance of this infrastructure.
- 5.142 In the short term, risks may be associated with potential pollution of surface waters and groundwater as a result of accidental exposure of waters to polluting or contaminated materials. These could include contaminated land/material on the site, or construction materials. Risks and mitigation associated with contaminated land is covered in that section of this report. In relation to construction processes and materials it will be important for all re-development activities to be undertaken within the scope of an appropriate CEMP, and as a minimum comply with all relevant Environment Agency PPGs. Particular care should be taken to prevent entry of potential pollutants into any drains which discharge into the River Pinn. All site drains should be isolated during works.

### Proposed Methodology and Additional Surveys Required

- 5.143 No further surveys are expected to be required, or additional data sources consulted for surface water quality. However, it would be considered prudent to engage the key stakeholders in relation to the proposed development. A Flood Risk Assessment has been carried out to deal with the surface water drainage from the site and the fluvial flood risk from the River Pinn. It is considered that there are unlikely to be any significant risks posed to controlled waters by the development provided that appropriate mitigation is identified and implemented to minimise any such risks encountered.

## Ecology

### Introduction

- 5.144 The scoping study is based upon information and evaluations from a previous extended Phase 1 survey in 2005 with an updated desk study and extended Phase 1 survey in 2007, plus detailed surveys for bats, great crested newts, reptiles, otter, water vole, kingfisher and badger. Numerous documents were utilised to inform this scoping study including the London Plan Spatial Development Strategy (policies 3D.12 and 4B.6), the West London Sub-regional Development Framework (policies 4E and 4F), the London Borough of Hillingdon Unitary Development Plan (policies OL26, EC1, EC2, EC3 and EC5), the London Borough of Hillingdon Site Allocations Development Plan Document, RAF Uxbridge Supplementary Planning Document Draft for public consultation September 2008, the UK Biodiversity Action Plan and the London Biodiversity Action Plan.
- 5.145 **Spatial Scope:** The spatial scope of the assessment will primarily focus on the immediate area of the application site as construction and land-take will not extend beyond the application site boundary, although an area up to 2km from the application site is considered sufficient for the desk study to include the likely zone of influence. There is the potential for impacts on the River Pinn during the construction and operational stages of the proposed development, as it flows through the site, and therefore the spatial scope will extend at least 1km downstream and 0.5km upstream of where the river, or sources of, are within, or adjacent to, the application site. While the above provides an indication of the spatial scope for this topic, its extent will be reviewed following identification of all potential direct and indirect impacts and consultations.
- 5.146 **Temporal Scope:** The assessment will consider impacts with and without development, prior to construction and once operational on the as-built site on day 1. In order to assess the potential positive impacts of habitat creation and mitigation up to 15 years following completion will also be considered.

### Existing Environment

- 5.147 The site lies within the Natural England defined London Basin Natural Area (Natural Area number 66). The London Basin is a large, trough-like basin which was formed around 50 million years ago, and is filled with mostly sands and clay sediments. About one-third of the area is covered by London and the wildlife of the Natural Area is characterised by islands of semi-natural habitats. These habitats include large areas of woodland, with extensive stands of mature beech woods, significant areas of lowland mixed deciduous woodland and numerous large wood pastures and parklands. Priority habitat types within the Natural Area include 'River valley habitats' and 'Wildlife habitats in urban and suburban areas'.
- 5.148 A baseline ecological appraisal has been undertaken in February 2007 (Halcrow, March 2007) in order to update an initial ecological assessment report of February 2005. An extended Phase I

survey (see Appendix A) was undertaken which adopted a technique at a level intermediate between the Joint Nature Conservancy Council (JNCC) standard 'Phase I' habitat survey and 'Phase II' more detailed survey (JNCC, 2004)<sup>5</sup>. A desk study covered a 2km radius from a central point on the site (considered to be sufficient to cover the likely zone of influence of the proposed re-development), which consulted the following:

- Greenspace Information for Greater London (GiGL), which includes all records for the London Bat Group;
- London, Essex and Hertfordshire Amphibian and Reptile Trust (LEHART) (no response to date);
- London Mammal Group
- Hertfordshire and Middlesex Badger Group (no response to date); and
- The 'Multi-agency Geographic Information for the Countryside' (MAGIC) website.

5.149 There are no statutory designated sites of conservation importance within the site boundary, the nearest being 1.9km to the north-west of the site, which is Fray's Farm Meadows Site of Special Scientific Interest (SSSI) (see Figure 4). There are no non-statutory designated sites of conservation importance within the site boundary, but there are 13 Sites of Importance for Nature Conservation (SINCs) within 2km of the site. These include three Sites of Metropolitan Importance (SMI), three Sites of Borough Importance Grade 1 (SBI1), six Sites of Borough Importance Grade 2 (SBI2) and one Site of Local Importance (SLI).

5.150 Habitats identified at the site are: buildings; hardstanding; amenity grassland; semi-improved grassland; trees; broadleaved woodland; river; pond; scrub; and ornamental shrub borders (see Figure 5). The predominant habitat types, that comprise the majority of the site, are buildings, hardstanding and amenity grassland, although the number and maturity of many of the trees is a distinctive feature. Trees scattered across the site include semi-mature and mature specimens of London plane *Platanus x hispanica*, horse chestnut *Aesculus hippocastanum* and pedunculate oak *Quercus robur*.

5.151 Other habitats include two relatively small areas of semi-improved grassland, one of which includes a number of wet grassland species including soft rush *Juncus effusus*, sedge *Carex* sp. and meadowsweet *Filipendula ulmaria*. Woodland is concentrated around the corridor of the River Pinn and there is no evidence to suggest that any of the woodland is ancient semi-natural. Much of the tree growth and ground flora is indicative of woodland that is relatively recent in origin. The pond is relatively small in area and isolated from other ponds; however, the River Pinn provides a significant wildlife corridor through the site, as well as linking the site, both upstream and downstream, to SINCs within 2km of the site. The habitats present are considered to be of value within the

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<sup>5</sup> JNCC, (2004), *Handbook for Phase I habitat survey - a technique for environmental audit*, Revised reprint 2003, JNCC, Peterborough.



immediate zone of influence only (site) to borough importance with the most valued habitat types being the trees and the River Pinn.

- 5.152 The ecological appraisal identified the potential for the application site to support bats, great crested newts *Triturus cristatus*, reptiles, otter *Lutra lutra*, water vole *Arvicola terrestris*, kingfisher *Alcedo atthis* and badger *Meles meles*. Surveys for these species have been undertaken and Table 5.10 shows the survey methodologies used and summarises the results and conclusions. In addition the potential for stag beetle *Lucanus cervus* (a London Biodiversity Action Plan listed species) being present at the site has also been identified.

**Table 5.10: Protected Species Surveys**

Survey	Survey Methodology	Survey Period	Summary of Results & Conclusions
Bat Roost Survey	A desk based study for records from the National Biodiversity Network within a 5km radius of the site within the past ten years.  An inspection of the external features of individual buildings in accordance with <i>'Bat Workers Manual'</i> (Mitchell-Jones & McLeish, 2004).	June 2007	Features within the site boundaries have potential to support bats due to the availability of suitable roosting sites (buildings) and foraging opportunities (woodland, river corridor). Further detailed surveys of all suitable buildings and trees within the site will be undertaken to search for potential for, and evidence of, roosting bats (in accordance with Mitchell-Jones & McLeish, 2004 <sup>6</sup> and Bat Conservation Trust, 2007 <sup>7</sup> ).
Great Crested Newt Survey	In accordance with the guidelines set out in the <i>'Herpetofauna Worker's Manual'</i> (Gent et al. 1998) and <i>'Great Crested Newt Mitigation Guidelines'</i> (English Nature, August 2001) i.e. four survey visits undertaken between mid-March and mid-May.	April-May 2007	No great crested newts, or evidence for the presence of the species, were recorded present.
Otter Survey	A slow walk down the channel (where possible) and from accessible banksides, examining the banks, bridge abutments, walls and vegetation for signs of spraints (faeces); footprints; slides and runs (where otters enter or exit watercourses); holts; feeding signs; and areas where otters may use to 'lie-up' (couches).	April 2007	No signs indicating the presence of otter.
Water Vole Survey	A slow walk down the channel (where possible) and from accessible banksides, examining the banks, and vegetation for signs of droppings/latrines; burrows; feeding signs/lawns; runs; and footprints.	April 2007	No signs indicating the presence of water vole.
Kingfisher Survey	A slow walk down the channel (where possible) and from accessible banksides, examining the watercourse, banks and vegetation for noting water quality; water flow; bank features/substrate; angle of the bank; the bankside habitat; and availability of bankside branches.	April 2007	Kingfisher was noted as present but with no evidence of nesting sites.
Reptile Survey	In accordance with recognised methods and guidelines as described in the <i>'Herpetofauna Worker's Manual'</i> (JNCC, 1998) and <i>'Froglife Advice Sheet 10'</i> (Froglife, 1999).	May-June 2007	The survey results indicate that there is a likely absence of reptile species.
Badger Survey	Search for setts, latrines, tracks and signs of foraging activity based on <i>'Surveying Badgers'</i> (Cresswell et al. 1989).	April 2007	Badger setts identified in the north of the site: A main sett with 5 holes (3 active); an outlier with 3 holes (1 active); two single hole outliers.

<sup>6</sup> Mitchell-Jones & McLeish. 2004. *Bat workers Manual 3<sup>rd</sup> Ed*, Joint Nature Conservation Committee, Peterborough.

<sup>7</sup> Bat Conservation Trust. 2007. *Bat Surveys Good Practice Guidelines*, Bat Conservation Trust, London.

## Preliminary Identification of the Impacts and Mitigation

5.153 Table 5.11 sets out the potential construction and operation impacts and effects on the resources and receptors that have been identified.

**Table 5.11: Potential Impacts and Effects**

<b>Construction Impacts</b>	<b>Effect</b>	<b>Key Receptors</b>
Pollution incidences during construction or damage to the River Pinn	Pollution and increased sedimentation of the River Pinn within the site and downstream	The River Pinn and downstream wetland in a SBI (River Pinn and Manor Farm Pastures)
Demolition/Construction traffic on access routes.	Risk of mortality	Mammals and birds
Dust pollution from demolition/ construction activities	Covering vegetation resulting in reduced growth rates and loss of vegetation within 100m of construction sites	Trees, River Pinn, woodland and grassland
Demolition/refurbishment of existing buildings	Disturbance	Roosting bats
Loss of trees	Loss of nesting/roosting, foraging and commuting habitat	Bats and birds
Lighting from construction compounds	Disturbance	Roosting, foraging and commuting bats and badgers
Construction noise and human activity	Disturbance and disruption to breeding and feeding activity	Bats, badgers, and breeding birds
<b>Operational Impacts</b>	<b>Effect</b>	<b>Key Receptors</b>
Permanent land take for development	Loss of semi-natural habitats and associated species	Trees, woodland, amenity grassland, badgers, bats and birds
Lighting during operational phase	Disturbance	Foraging and commuting bats and badgers
Operational noise from increased human activity	Disturbance and disruption to breeding and feeding activity	Badgers and breeding birds
Within site traffic	Risk of mortality	Badgers and birds

5.154 There are two SINC's, which are hydrologically linked to the application site via the River Pinn, namely Uxbridge Common Meadows SBI (approximately 0.2km north of the application site boundary and separated from the site by residential development and a railway line) and the River Pinn and Manor Farm Pastures SBI (approximately 1.0km south of the application site). However, it is considered that only the River Pinn and Manor Farm Pastures SBI is within the zone of influence of the proposed development being downstream of the site. It is important

- that the hydrological integrity of the River Pinn is maintained and protected throughout construction and operation with measures taken to prevent damage and disturbance and measures are put in place to prevent contamination of the river by dust, silt, oils and other potential pollutants.
- 5.155 The mature and semi-mature trees and woodland within the application site are valued in their own right as well as providing habitat opportunities for bats and other species. It is recommended that the proposed re-development should retain all existing woodland and trees within the site, particularly mature and semi-mature specimens, which should be subject to protective measures during the construction works. Where removal is essential the landscape scheme should include replacement planting.
- 5.156 Impacts to grassland habitat will be to amenity grassland which is of low ecological value. The areas of semi-improved and wet grassland will not be impacted by the proposals and should be protected from accidental damage by the use of fencing to demarcate working areas.
- 5.157 Bats have been identified as potentially present within the application site and further survey is required to confirm the presence/absence of bats, the species, populations and their usage of the site. Any activities likely to disturb roosting bats is likely to require a European Protected Species licence from Natural England, which will include mitigation measures to minimise disturbance and ensure the conservation of any resident bat population.
- 5.158 A badger population has been identified within the application site, although the setts will not be directly impacted by the proposals. A re-survey of badger activity will be undertaken prior to construction activities to ensure that if any new setts have been created they are not impacted by proposals, or that a Natural England licence is obtained to disturb badgers where relevant. Measures will need to be incorporated within the construction phase to prevent injury or harm to badgers using the site.
- 5.159 In addition to providing input to the information gathering exercise, consultation will be undertaken with the principal relevant nature conservation bodies where impacts are predicted, in order to discuss mitigation. This will include such bodies as Natural England, the London Borough of Hillingdon and the Environment Agency.
- 5.160 Mitigation will focus on modifications to design and construction practices and enhancement of existing key habitats within the site, as well as creation of new habitats (where necessary). Any new habitat creation will focus on local priorities highlighted in local and regional Biodiversity Action Plans (BAPs), and will be consistent with local policy documents. Where

mitigation is necessary, a range of measures will be considered where practicable and relevant to the construction and operation of the proposed re-development.

### Proposed Methodology and Additional Surveys Required

- 5.161 The assessment will take account of the '*Guidelines for Ecological Impact Assessment in the United Kingdom*' produced by the Institute of Ecology and Environmental Management (IEEM, 2006). The level of value of specific ecological receptors is assigned using a geographic frame of reference, i.e. international value being most important, then national, regional, metropolitan, borough, local and lastly, within the immediate zone of influence of the proposals only.
- 5.162 The IEEM guidelines recommend that a threshold of value for the ecological features is defined, above which any impact upon them could be considered significant and therefore requires more detailed assessment. Features to be subject to more detailed assessment should be both of sufficient value that impacts upon them may be significant and potentially vulnerable to significant impacts arising from the development. This approach is consistent with the Environmental Impact Assessment (EIA) Regulations, which only require investigation of likely significant effects. For the purposes of this assessment, the threshold level of value of a receptor below which it is considered that an impact would not be considered significant will be set at local. Therefore, impacts will be assessed in detail only for receptors of at least local value or subject to some form of legal protection (e.g. under the Wildlife and Countryside Act 1981, the Protection of Badgers Act 1992 and the Habitats Regulations 1994).
- 5.163 Local priorities and values will be considered and inform the appraisal. Particular attention will be given to local ecological priorities including those identified by:
- The London Plan Spatial Development Strategy for London, The Mayor of London 2004;
  - London Borough of Hillingdon Unitary Development Plan 1998;
  - The Mayor's Biodiversity Strategy, The Mayor of London 2002;
  - London Biodiversity Action Plan, London Biodiversity Partnership 2001; and
  - The Hillingdon Biodiversity Action Plan, to be produced by the Hillingdon Biodiversity Action Plan Partnership.
- 5.164 The assessment will take account of the various degrees of protection given to species and habitats under various legislation and policy including:

- The Wildlife and Countryside Act 1981 (as amended);
- The Natural Environment and Rural Communities Act 2006
- The Conservation (Natural Habitats &c.) Regulations 1994 (as amended);
- The Badger Protection Act 1992; and
- Planning Policy Statement 9 – Biodiversity and Geological Conservation.

5.165 Most ecological surveys considered necessary to inform the assessment have been undertaken, although there is a requirement for detailed bat surveys for buildings and a survey of bat roost potential within trees. Bat surveys will be undertaken in accordance with the 'Bat Workers Manual' (Mitchell-Jones & McLeish, 2004) and 'Bat Surveys Good Practice Guidelines' (Bat Conservation Trust, 2007) following consultation with Natural England. The Ecological Appraisal report (Halcrow, March 2007) recommended a National Vegetation Classification survey to identify the value of the semi-improved wet grassland. However, current proposals will not impact the wet grassland or immediately adjacent areas and more detailed survey is therefore considered not necessary, unless re-development proposals change to potentially impact this habitat.

5.166 The badger survey will be updated prior to the assessment as this is a highly mobile species known to be present within the application site (as per the initial badger survey methodology).

5.167 The extended Phase 1 survey will be updated to identify any potential change to habitats or site conditions that could influence the assessment or provide information that could require additional survey data. Otter, water vole and kingfisher currently do not require updated survey as the species' were found not to be a constraint, however, the updated extended Phase 1 survey due to take place in early Spring/Summer 2009, could show recent records or evidence for the presence of these species, in which case further survey may be required. An updated reptile survey is considered not to be necessary unless identified by the 2009 extended Phase 1 survey or there are changes to the proposals or construction requirements which would potentially impact semi-improved grassland, woodland or riparian habitats. If these habitats remain not affected, an updated reptile survey will not be necessary.

5.168 There are records of great crested newts within 500m of the site (although divided from the site by a railway line), and anecdotal evidence that the species does occur frequently within the borough. There are no known ponds within 500m of the on-site pond and no direct impacts to the pond will result from the proposals, therefore, it is considered that an updated great crested newt survey is not necessary unless the updated extended Phase 1 survey

- shows recent records or evidence for the species, in which case further survey may be required.
- 5.169 If statutorily protected species are found to be present following additional survey, mitigation strategies will be prepared to protect them in advance of construction works.
- 5.170 The Ecology chapter of the Environmental Statement will consider the potential impacts of the proposed re-development on the ecological resources with regard to natural and modified habitats, sites of importance for nature conservation and populations of key plant and animal species. This topic will also draw on outputs of other topics of the EIA, notably Air Quality, Noise and Vibration and Water Resources, to determine the nature and extent of possible impacts. There will also be cross-referencing to the landscaping proposals, particularly in relation to mitigation. However, the evaluation of the significance and severity of such impacts on ecological resources will be addressed under this topic.

## Landscape, Townscape and Visual

### Existing Environment

#### Introduction

- 5.171 The landscape, townscape and visual impact assessment will describe the baseline conditions including the physical landscape constraints relating to the site at RAF Uxbridge and will assess the potential impact of development on the landscape and townscape setting along with impact on the visual amenity of the area.
- 5.172 The assessment will establish the landscape sensitivity of the application site and its capacity to accommodate the proposed change across the site. It will also take into consideration the mitigation measures included in the scheme proposals and determine the significance of any subsequent temporary or residual effects.
- 5.173 The surrounding landscape / townscape will be considered in terms of the character and the study will assess visual amenity of the adjoining residents and from the publicly accessible points including highways and the adjacent town centre. These receptors will be considered in relation to the proposed development.

## Methodology

5.174 The assessment will be undertaken by experienced Chartered Landscape Architects and will apply current best practice, based on published guidelines including:

- Landscape Character Assessment (2002) – published by The Countryside Agency (Ref.9);
- Guidelines for Landscape and Visual Impact Assessment (Second edition, 2002) – published jointly by The Landscape Institute and The Institute of Environmental Management and Assessment (Ref.10); and
- Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity (2004) former Countryside Agency (now Natural England) (Ref.11).

5.175 The assessment will involve both desktop research and site investigation. The published information will be obtained from:

- The London Borough of Hillingdon UDP – Saved Policies 2007
- The London Borough of Hillingdon – Local Development Framework
- The London Plan (Consolidated with alterations since 2004) - 2008.
- The Countryside Agency Countryside Character of England - 1999

5.176 The site will be assessed in detail as a stand alone site by establishing a baseline condition in terms of landscape and townscape character which will include views in to and out of the site; landscape features including topography, vegetation and setting. The study will then assess the potential impacts of the proposed development against this baseline condition.

5.177 The level of impacts of proposed development will be assessed against the following four categories of impact:

**Table 5.12: Four categories of impact**

<b>Substantial</b>	Where the scheme would cause a significant adverse/ beneficial change in the existing landscape character or view and the new development would be the dominant visual element.
<b>Moderate</b>	Where the scheme would cause a noticeable adverse/ beneficial change in the existing landscape character or view and the new development would not be the dominant element but one of a number of elements in the overall setting.



<b>Minor</b>	Where the scheme would cause a perceptible adverse/ beneficial change in the existing character or view and the new development would be a minor element in the overall setting.
<b>Insignificant</b>	Where there is no discernible or an insignificant adverse/ beneficial change in the existing character or view.

- 5.178 The wider study area of will be determined through a combination of a computer-generated zone of visual influence based on topographical information and site visits to verify these findings. The landscape and townscape and visual impact assessment takes account of potential effects of the proposed development during different stages of the development, namely during construction (temporary effects); during the winter months of year 1 (operational - worst case) and during the summer months of year 15 (operation - following the full implementation of landscape mitigation / restoration measures). It is noted that if approved the site is likely to be phased and built out over a period of 10 years. Phasing will be considered within the assessment in broad terms.
- 5.179 The visual assessment will also consider the impact on the skyline and the relationship with local landmarks. An assessment of existing key views will also be considered (refer to paragraph 5.189).
- 5.180 The report will be supported by a series of visual materials including photographic records of the site and plans indicating the local character and zone of visual influence. The use of photo montages will provide a visual indication of the proposal in their proposed context and will also enable any mitigation to be assessed. Locations of photomontages, if required, would be agreed with the local authority.

## Baseline

- 5.181 The site is located in Uxbridge and is set within the suburban borough of Hillingdon in London. RAF Uxbridge is currently still in use however the MOD will be disposing of the site for a mixed use development in the future. The London Borough of Hillingdon is currently preparing a Supplementary Planning Document for the site which will set out land use requirements for the site. A more detailed description of the proposals is found in the introduction to the scoping report.
- 5.182 The site occupies the grounds of the former estate associated with Hillingdon House. It now comprises a range of buildings varying in age and dating from the 1920's through to more contemporary development. Hillingdon House, which was rebuilt in 1844 is a Grade II listed

- building and is located in the eastern part of the site. There are two other listed buildings on the site namely the 'Battle of Britain Bunker' (Grade I) and the cinema building (Grade II).
- 5.183 There are two areas of Special Local Character which lie adjacent to the site, namely that of Hillingdon Court Park to the east and part of the town centre to the north west.
- 5.184 Part of the site is covered by open space which is designated as Green Belt. The character of the open space varies and includes parkland, woodland and recreational space.
- 5.185 The River Pinn runs through the site and sits within a flood plain. The river provides a wildlife corridor through the site and connects to open space to the north and south of the site.
- 5.186 A public right of way runs across the site (east - west) in the northern part of the site.
- 5.187 The site is predominantly bounded by residential development. The exception to this is the golf course which lies to the south and Uxbridge town centre which lies to the north west.

### Preliminary Identification of Sensitive Receptors

- 5.188 Due to the current land use, the site is well contained and includes a strong perimeter boundary. The exception to this is in the vicinity of an area of residential properties which fall under the ownership of Annington Estates but which lie within RAF Uxbridge but outside the application site.
- 5.189 The following landscape and visual receptors have been identified as the most sensitive receptors according to their potential sensitivity and / or the effect that the existing site has on landscape and visual amenity:
- Views from the Listed Buildings within the site;
  - The character of the land adjacent to or associated with the Listed Buildings;
  - The character and views associated with the Green Belt within the site;
  - The character and views associated with the adjacent Green Belt;
  - The character and views associated with the surrounding residential areas, in particular from the two Areas of Special Local Character;
  - The character and views associated with the town centre; and
  - Impact on the public right of way.

5.190 The SPD currently being prepared for the site identifies four key views which should be assessed namely:

- From the western part of the site – Hillingdon House and its surrounds and the spire of the church on Hillingdon Hill;
- The opportunity for interesting vistas of the new development on the western side from Hillingdon House (currently over the Green Belt and river corridor);
- The 'gateway' of the site at the St Andrews roundabout (particularly when viewed from Uxbridge High Street); and
- The vista of the new development along the A4020.

## Archaeology and Cultural Heritage

### Introduction

5.191 This chapter provides an overview of the cultural heritage resource (in this case archaeological sites and monuments and built heritage) of the proposed RAF Uxbridge application area. A cultural heritage desk-based assessment (DBA) produced for the site by Halcrow in 2007 forms the basis for this chapter.

5.192 The DBA assessed the known and potential buried archaeological resource within the site, along with buildings of listed or otherwise important status. The potential impacts on the cultural heritage resource were assessed, and appropriate mitigation measures proposed. The following sources were utilised for the DBA study:

- Data from the Greater London Sites and Monuments Record (GLSMR) comprising archaeological sites and monuments data (find spots, monuments, historic buildings, archaeological events);
- The RAF Uxbridge Disposal Sites Information Pack;
- Historic mapping comprising pre-Ordnance Survey (estate maps, local plans etc) and historic Ordnance Survey mapping;
- Published and unpublished sources, accessible through Uxbridge Local Studies Library;
- Internet sources e.g. British History Online, the MAGIC website, specialist local and military websites.

- 5.193 Owing to the date of the DBA, fresh datasets were obtained for this document to detect additions to the cultural heritage resource since February 2007. These comprised a new GLSMR search and a National Monuments Record (NMR) search specifically for listed building data.
- 5.194 The search area for the data comprised a 1km radial area centre round a central point in the application boundary. The relevant data is listed in the 'Existing Environment' section below, along with the relevant GLSMR Museum of London (MLO) numbers and NMR reference numbers. Each site is spatially located on the supporting cultural heritage figures (Figures 6 and 7).
- 5.195 An initial phase of consultation was conducted with the Greater London Archaeological Advisory Service (GLAAS), which is the archaeological advisor for the London Borough of Hillingdon, and the results of that incorporated into the mitigation section below.

### Existing Environment

- 5.196 There are no Scheduled Monuments (SMs), Registered Battlefields, Historic Parks and Gardens or World Heritage Sites within, or adjacent to, the application boundary.
- 5.197 There are 3 listed buildings within the application boundary. These are:
- Hillingdon House (NMR 203049), a Grade II listing;
  - The Group Operations Room (NMR 501317) a Grade I listing;
  - A Cinema (NMR 501282) a Grade II listing.
- 5.198 Photographs of the buildings listed above have been included in the appendix of the Halcrow archaeological DBA.
- 5.199 Hillingdon House is an early-mid 19th century estate building set in former managed parkland surroundings and was purchased by the British government in 1915 and subsequently incorporated into the airbase. The Group Operations Room (GOR) is probably of 1930's construction and served as the Fighter Command/ HQ11 Head Quarters during the Second World War. The building was utilised to co-ordinate the aerial defence of London and the south-east during the Battle of Britain, and is therefore of a high historical value. The cinema was erected on the site in the 1920's when the base was the RAF Armaments School.

- 5.200 Two additional buildings (the Stand by Set House and Sergeant's Mess) are noteworthy on an architectural/ historical basis and, although not listed, have been included on a local list (Hillingdon Borough Council local designation).
- 5.201 Although not protected by national or local listing the barrack block buildings or 'Single Living Accommodation' (SLA) buildings are also noteworthy, being dateable to the inter-war period. However, it is also relevant to note that in 2000 the English Heritage listing team conducted a 'Survey of Military Aviation Sites and Structures' which was subsequently updated in 2003. This report proposed the listing of a number of barrack block / SLA worthy of retention on other MOD sites but not at RAF Uxbridge.
- 5.202 There are no known non-designated archaeological monuments within the application boundary. The absence of known archaeology is more a reflection of the fact that no archaeological intervention has hitherto been conducted on the site, owing to the restrictions on such activity by the military since the site was bought by the government in 1915. The DBA used the archaeological data from the 1 km radial study area in order to assess the potential for unknown archaeology within the site boundary.
- 5.203 The wider study area comprises the following known cultural heritage resource:
- 62 listed buildings;
  - 2 Archaeological Priority Areas (Uxbridge and Hillingdon);
  - 1 Conservation Area (Old Uxbridge/ Windsor Street);
  - 14 archaeological find spots;
  - 65 archaeological monuments, and;
  - 14 archaeological events (or interventions) have occurred in the same area, although where positive results were recorded, these are included in the monuments data above.
- 5.204 The background to the settlement at Uxbridge is summarised in the DBA, but in brief the historic centre of Uxbridge lies a short distance to the north-west of the application boundary. The settlement of Uxbridge is historically dateable to the later medieval period, although the area has seen activity since prehistoric times. The historic core of the town, where the majority of the archaeological data has been generated, still contains a large number of timber-framed buildings and properties within later medieval 'burgage' plot patterns on either side of the High Street. The town centre's historical origins are reflected in the Conservation Area and Archaeological Priority Area (as designated by Hillingdon Borough Council) designations.

- 5.205 Out of the total number of archaeological monuments in the study area, there have been 24 prehistoric sites (mostly findspots). The Romano-British and early medieval periods are poorly represented, with the majority of the monuments relating to later medieval, post-medieval and modern periods, mostly concentrated around the centre of historic Uxbridge. Most of these sites and the study area's archaeological events information is concentrated within or adjacent to the town centre.
- 5.206 Historic map regression in the DBA charted the application sites development from the 18th century, where it formed part of the Hillingdon Estate, comprising formal parkland and enclosed fields. The manor house and estate passed into the hands of the government in 1915, and the development of the base is charted on a series of Air Ministry maps in the inter-war years. The site's changing military functions (detailed in the DBA) saw rapid development and many changes during the 20th century. In the post Second World War period, it is evident that areas at the southern and eastern sides of the original site area have been sold off and developed for housing. A former section of the base fronting on to Vine Street was evaluated prior to development (MLO 63032, 63034 and 63035). The trial trenches located post-medieval buildings, field drains and pitting most likely associated with the Hillingdon House estate.
- 5.207 The site has a moderate level of archaeological potential. The River Pinn valley would have been exploited by human communities in the prehistoric period, and evidence of transient activity from this period may well survive in the buried environment in the central part of the site. The level of development around the edges of the site would most likely have reduced the chances of the survival of features and findspots from these periods. There would appear to be a low potential for Romano-British or early medieval archaeology within the application site, given the generally low potential in the wider study area. There is a high potential for later medieval, post-medieval and modern features within the application site. Evidence from the later medieval period would most likely be in the form of relict agricultural features such as ridge and furrow and former field boundaries, and would therefore be of limited archaeological significance. There is no known existing archaeological or documentary evidence that this area was utilised as anything other than agricultural or common land in this period. Activity in the post-medieval period would also likely be reflected in relict agricultural features, but also in garden features associated with the formal parkland of the Hillingdon estate. The buried remains of former outbuildings to Hillingdon House are also a possibility. Buried activity associated with the 20th century RAF Station is likely to be extensive given both the changes to the site during its existence and the likely range of buried features such as air raid shelters which are likely to exist across the site and have not yet been located.

- 5.208 In addition to the likelihood of buried archaeological remains, there is a high potential for the existence of palaeoenvironmental deposits relating to the floodplain and former courses of the River Pinn in the buried environment within the Pinn valley.

### Preliminary Identification of the Impacts and Mitigation

- 5.209 The proposed masterplan indicates that the west side of the application boundary (on the west side of the River Pinn) will entail the demolition of the vast majority of the present buildings on the site, altering the present layout of the site. The eastern side of the site, will see only very limited demolition and new build. The River Pinn valley will form the main element of an area of green, public open space occupying the majority of the eastern half of the application area. It is not known if any significant earth landscaping will be implemented in this green zone.
- 5.210 The majority of the military buildings occupying the site will be cleared, including the SLA Barrack blocks. This may include the Sergeant's Mess. Although perhaps not deemed worthy of preservation within the proposed site design, the majority of the buildings earmarked for clearance will likely require mitigation in the form of preservation-by-record. This would be achieved through standing building recording in accordance with English Heritage guidelines (EH 2006) to a level stipulated by the Greater London Archaeology Advisory Service (GLAAS) as archaeological advisor to Hillingdon Borough Council. Defence Estates may wish to undertake recording of the structures themselves using their own approved specialists.
- 5.211 Mitigation for the potential buried archaeological resource is not possible to determine at this time. To determine this, the buried environment is most likely to require investigation. Given the implementation of archaeological trial trenching in the vicinity of Hillingdon House in recent years, along with the proximity of the historic centre of Uxbridge, it is likely that GLAAS would request a programme of similar investigation in the application site. This is outlined below.
- 5.212 Given the lack of development in the public open space in the eastern half of the site, there would appear to be little need to mitigate impacts to the potential buried palaeoenvironmental resource.
- 5.213 The Conservation Area at Uxbridge, along with the associated listed buildings, including those around the edges of the site, would not appear to be a constraint to this application. The proposed design would be unlikely to affect the settings of any of these designations.

## Proposed Methodology and Additional Surveys Required

- 5.214 GLAAS may request a programme of trial trenching in which to ascertain the nature, extent and significance of buried archaeology within the application site in order to inform a final programme of mitigation. If implemented, trenching would most likely be concentrated in the areas of proposed development adjacent to Hillingdon House (Parcels 38 and 39) and in the area of proposed development in the western (Parcels 1 – 32) and northern (Parcels 33-37) parts of the site.
- 5.215 Given the current development within the site, it would perhaps be an impractical exercise to conduct trenching prior to the demolition and clearance of the existing military buildings. This programme of archaeological works would therefore be a likely requirement within a condition of planning consent.
- 5.216 Within the proposed areas of heaviest development, the trenching sample required may be 5% of the total area, in line with standard GLAAS requirements for archaeological evaluation. A methods statement (Written Scheme of Investigation) for the programme of trenching would be agreed with GLAAS ahead of commencement.
- 5.217 A final archaeological mitigation strategy would be dependent on the results of the archaeological trenching exercise. If nothing of significance is found, no mitigation may be applied. Conversely, if significant archaeology is detected, mitigation through preservation-by-record would be the most likely outcome. It is not anticipated that potential buried archaeology would be of sufficient significance to warrant preservation in situ and therefore a change to the scheme's design.

## Waste Management

### Existing Environment

- 5.218 This chapter of the scoping report deals with the potential impacts associated with the generation and management of solid waste which will be produced from the construction and operation of the proposed development. The focus of the impact assessment will be on the current waste management services and infrastructure in Hillingdon, London and the wider region.

### Site history

- 5.219 The broad use of buildings on RAF Uxbridge is illustrated in Table 5.13.



**Table 5.13 RAF Uxbridge existing buildings use**

Type of use	Total floor area (m2)
Single Living Accommodation	33,462
Welfare/indoor recreational facilities	7,126
Offices/Technical	15,345
Stores/Workshop and Plant	9,174
Site infrastructure	10,316
Other	453
<b>Total</b>	<b>75,876</b>

5.220 The living accommodation on the site consists of 13 three storey blocks, one two storey building. The site also has community and welfare facilities, including the Officers' Mess, a general store, a medical and dental centre, a nursery/playgroup and a church. The site also contains a number of sporting facilities. The office and technical buildings house administrative functions and the site also includes stores and workshops, including motor transport garages. There are currently approximately 440 personnel employed at RAF Uxbridge in a variety of functions.

5.221 As a result, the current site will generate a variety of waste streams including household, municipal and commercial wastes. The wastes are likely to be a combination of non-hazardous and hazardous wastes, including some healthcare and clinical wastes. However, at the time of writing there were no figures regarding the amount of different wastes generated on the existing site or how these wastes are managed.

### Proposed development

5.222 The proposed development is likely to comprise:

- Up to 2,000 residential units across the site;
- Up to 50,000 sqm mixed used development in the town centre (use classes B1, C1, C2, D1, D2, A1, A2, A3, A4 and A5);
- A two form entry primary school;
- A small scale neighbourhood centre in the southern part of the site incorporating A1, A3, A4, A5 and D1 uses;
- Re-use of the Grade II listed Hillingdon House and Cinema building;
- Potential facility close to the Grade I listed bunker to provide D1 and A3 uses;

- Open space comprising informal and formal spaces and children's play areas: and
  - Associated infrastructure, car parking and access roads.
- 5.223 The proposed development will result in an increase in the amount of waste arising on the site. This is due to the increase in the permanent population of the site and the introduction of new waste producers, such as the school and hotel. These new waste producers will be responsible for the production of a range of wastes including household, municipal, commercial, healthcare and clinical wastes. Most will be non-hazardous, although there will be some hazardous waste produced as a result of the proposed development.
- 5.224 These wastes will require collection and management in waste infrastructure located within Hillingdon, other parts of London and the wider South East region. VSM Estates are currently exploring the feasibility and possibilities of creating energy from waste as part of the RAF Uxbridge scheme.

### Preliminary Identification of Impacts and Mitigation

- 5.225 Controlled solid waste will be generated from all phases of the development, including:
- Site preparation and remediation, including demolition of existing buildings;
  - The construction phase including excavation, construction, formwork, fit out, decorating and landscaping;
  - The operational phase from households, commercial, educational and healthcare facilities; and
  - Decommissioning at the end of the development's useful life.
- 5.226 It is anticipated that waste types generated will include inert, non-hazardous, hazardous and radioactive. The management of these wastes are governed by a regulatory regime which clearly dictates the types of treatment, recycling, recovery and disposal required for each waste type. As a result wastes of different classifications will be managed via a range of waste management facilities in Hillingdon, London and the wider South East Region.
- 5.227 The Soils, Geology and Ground Contamination chapter of this scoping report has reviewed the historic land use of the site and identified potential sources of contamination. These potential sources of contamination will have an impact on the generation of solid wastes from the proposed development and are likely to give rise to hazardous wastes. The management of hazardous waste is governed by a particularly prescriptive regulatory regime. The potential sources of contamination and the potential contaminants are listed in Table 5.6.

5.228 The sources and types, including possible classification, of wastes from the proposed development are summarised in Table 5.14

**Table 5.14 Summary of the types of waste expected to be produced at stage of the proposed development**

Phase of development	Potential wastes produced and possible classifications(based on the Environmental Protection Act 1990 and EU Landfill Directive)
Site remediation/ preparation	Non-hazardous and inert wastes such as made ground and clay Contaminated soils, some of which may be hazardous if it contains sufficiently high levels of asbestos, heavy metals or hydrocarbons Metals, potentially contaminated with hydrocarbons and other hazardous materials
Demolition	Inert wastes including concrete, brick, other masonry and glass Non-hazardous wastes such as plastics, timber, metals, plasterboard Hazardous wastes, including asbestos and treated timber Radioactive wastes from old communication equipment
Site construction	Inert and/or non-hazardous wastes such as excavated soils, land raising materials and made ground Inert wastes including concrete, brick, other masonry and glass Non-hazardous construction wastes such as plastics, timber, metals, plasterboard, packaging materials Hazardous construction wastes, including treated timber, paint
Operational phase	Household waste, classified as non-hazardous Hazardous and non-hazardous commercial wastes Healthcare waste, including clinical waste, some of which may be classified as hazardous

5.229 The generation of waste from the proposed development will give rise to a number of impacts, most notably on the waste management infrastructure available to accept, treat and dispose of the various types of waste which will be generated, as follows:

- Existing waste management infrastructure in London and the surrounding area;
- Hazardous waste treatment infrastructure in London and the wider South East region;
- Current consented landfill void capacity for inert, hazardous and non-hazardous waste;
- Current capacity in construction and demolition waste management infrastructure;

- Current municipal waste management infrastructure – transfer stations, Materials Recovery Facilities, composting/Anaerobic Digestion, energy from waste facilities and landfills; and
- Clinical waste management infrastructure.

5.230 Table 5.15 gives a summary of the potential impacts associated with waste generation.

**Table 5.15 Summary of the potential impacts associated with waste generation**

Phase of development	Potential wastes produced	Potential impacts on waste infrastructure
Site remediation/ preparation*	Non-hazardous and inert wastes such as made ground and clay	Processing and re-use on site in landscaping
	Contaminated soils, some of which may be hazardous if it contains sufficiently high levels of asbestos, heavy metals or hydrocarbons	Remediation on site and re-use on site in landscaping Remediation off site and re-use in other applications
	Metals, potentially contaminated with hydrocarbons and other hazardous materials	Treatment off site to reduce contamination and recycling
Demolition*	Inert wastes including concrete, brick, other masonry and glass	Processing on site and re-use either on site or off site for engineering purposes
	Non-hazardous wastes such as plastics, timber, metals, plasterboard	Segregation procedures implemented on site and recycling off site
	Hazardous wastes, including asbestos and treated timber	Treatment and disposal off site in dedicated hazardous waste management infrastructure
	Radioactive wastes from old communication equipment	Treatment and disposal off site in dedicated radioactive waste management infrastructure
Site construction*	Inert and/or non-hazardous wastes such as excavated soils, land raising materials and made ground	Processing and re-use on site in landscaping
	Inert wastes including concrete, brick, other masonry and glass	Processing on site and re-use either on site or off site for engineering purposes
	Non-hazardous construction wastes such as plastics, timber, metals, plasterboard, packaging materials	Waste minimisation measures implemented on site, segregation on site and recycling off site
	Hazardous construction wastes, including treated timber, paint	Treatment and disposal off site in dedicated hazardous waste management infrastructure
Operational phase	Household waste, classified as non-hazardous	Provision of space in dwellings for multiple waste containers allow segregation of household waste for recycling Provision of facilities on the completed development to encourage segregation of recyclable materials
	Hazardous and non-hazardous commercial wastes arising from healthcare facility, commercial premises and school	Incorporation of sufficient space in the completed development for waste containers to encourage segregation of waste materials for recycling

Phase of development	Potential wastes produced	Potential impacts on waste infrastructure
	Healthcare waste, including clinical waste, some of which may be classified as hazardous	Provision of dedicated storage containers to ensure separate collection of clinical and other healthcare wastes for treatment and disposal off site

### Mitigation measures

5.231 The potential mitigation measures to address the impacts associated with the generation of solid controlled wastes from the proposed development are summarised in Table 5.16.

**Table 5.16 Summary of the potential mitigation measures for address impacts of waste generation**

Phase of development	Potential wastes produced	Potential mitigation measures
Site remediation/ preparation*	Non-hazardous and inert wastes such as made ground and clay	Processing and re-use on site in landscaping
	Contaminated soils, some of which may be hazardous if it contains sufficiently high levels of asbestos, heavy metals or hydrocarbons	Remediation on site and re-use on site in landscaping Remediation off site and re-use in other applications
	Metals, potentially contaminated with hydrocarbons and other hazardous materials	Treatment off site to reduce contamination and recycling
Demolition*	Inert wastes including concrete, brick, other masonry and glass	Processing on site and re-use either on site or off site for engineering purposes
	Non-hazardous wastes such as plastics, timber, metals, plasterboard	Segregation procedures implemented on site and recycling off site
	Hazardous wastes, including asbestos and treated timber	Treatment and disposal off site in dedicated hazardous waste management infrastructure
	Radioactive wastes from old communication equipment	Treatment and disposal off site in dedicated radioactive waste management infrastructure
Site construction*	Inert and/or non-hazardous wastes such as excavated soils, land raising materials and made ground	Processing and re-use on site in landscaping
	Inert wastes including concrete, brick, other masonry and glass	Processing on site and re-use either on site or off site for engineering purposes
	Non-hazardous construction wastes such as plastics, timber, metals, plasterboard, packaging materials	Waste minimisation measures implemented on site, segregation on site and recycling off site
	Hazardous construction wastes, including treated timber, paint	Treatment and disposal off site in dedicated hazardous waste management infrastructure
Operational phase	Household waste, classified as non-hazardous	Provision of space in dwellings for multiple waste containers allow segregation of household waste for

Phase of development	Potential wastes produced	Potential mitigation measures
		recycling** Provision of facilities on the completed development to encourage segregation of recyclable materials***
	Hazardous and non-hazardous commercial wastes arising from healthcare facility, commercial premises and school	Incorporation of sufficient space in the completed development for waste containers to encourage segregation of waste materials for recycling
	Healthcare waste, including clinical waste, some of which may be classified as hazardous	Provision of dedicated storage containers to ensure separate collection of clinical and other healthcare wastes for treatment and disposal off site

5.232 \*The proposed development will require a Site Waste Management Plan (SWMP) under the Site Waste Management Plans Regulations 2008. The SWMP will be required before construction work commences and will apply to all aspects of construction work including preparatory and enabling works, demolition and construction. This document will provide a structured approach to managing waste, identifying the amount and type of waste that will be produced and how it will be reduced, reused, recycled and disposed of. The purpose of the SWMP will be to reduce waste disposal costs, meet regulatory requirements for managing waste and help deal with any inquiries from environmental regulators.

5.233 \*\* The Building Regulations (2000, edited 2002) for Drainage and Waste Disposal<sup>8</sup> outline capacity, siting and design provisions for developing waste storage areas for domestic and non-domestic developments.

5.234 \*\*\* The site is subject to a site-specific allocation in the Site Allocations Development Plan Document (DPD) (Proposed Changes) (2006) which is the subject of Policy SA2: Development proposals should provide: xvii - Facilities for the recycling of waste.

5.235 In addition, the generation and management of waste on the site will give rise to local impacts such as noise, dust, transport and air quality. These impacts will also occur from other activities and operations on the site and are not solely associated with the production and management of waste. These impacts will be dealt with separately as part of the overall Environmental Impact Assessment and are therefore scoped out of the impact assessment of waste management.

<sup>8</sup> Office of the Deputy Prime Minister, 2000, 'The Building Regulations 2000: Drainage and waste disposal', Approved Document H (2002 edition).

5.236 The result of the potential mitigation measures will be to promote the positive impacts of the proposed development through:

- Encouraging the treatment, processing and re-use of excavation, demolition and construction waste on site;
- Facilitating the reduction, segregation and recycling of construction waste through the implementation of a Site Waste Management Plan; and
- encouraging householders and businesses to promote waste reduction; by providing facilities to promote the segregation and recycling of waste, including biodegradable waste to reduce reliance on landfill and to increase the amount of waste recycled.

### Proposed Methodology and Additional Surveys Required

5.237 The following methodology has been identified in order to assess the significance of the waste arisings from the different phases of the proposed development and to evaluate and propose appropriate mitigation measures:

- Review of National, Regional and Local policies and procedures;
- Baseline assessment of waste management infrastructure in Hillingdon, London and the wider South East Region;
- Baseline assessment of current municipal waste production and arrangements for collection, recycling and disposal in Hillingdon and the West London Waste Authority;
- Pre-demolition assessment to provide indicative volumes of excavated materials and demolition wastes and to identify remediation/treatment/disposal options using the Buildings Research Establishment (BRE) SMARTWaste tools;
- Construction waste audit to project the likely quantities, types and classification of wastes produced during the construction phase using BRE SMARTWaste tools and Waste and Resources Action Programme (WRAP) NetWaste tools; and
- Operational phase waste audit to project the likely quantities, types and classification of wastes produced during the operational phase based on current Masterplan densities and utilising data from the using BRE SMARTWaste tools.

5.238 The results of these assessments would be used to form the basis of the Environmental Impact Assessment (EIA) and the production of the Environmental Statement, including the assessment of residual effects.

5.239 The review of the policy context is described in more detail.

### Review of the policy context for waste management

5.240 The management of waste is driven primarily by legislation, much of which emanates from the European Union (EU), but also at national and regional levels. The EIA will provide a detailed review of the relevant legislation and other strategic drivers for waste management.

### EU and National context

5.241 Waste management strategies and principles are set out in two documents:

- "Waste Strategy for England 2007" (Defra 2007); and
- "Planning Policy Statement (PPS) 10: Planning for Sustainable Waste Management" (Department of Communities and Local Government) DCLG 2005).

5.242 The following legislation also needs to be considered in any assessment of the potential for treating and keeping contaminated soils on site and for assessing the classification of contaminated materials once they leave site in order to determine an appropriate landfill site:

- Council Directive 91/689/EC on Hazardous Waste;
- Council Directive 1999/31/EC on the landfill of waste;
- The Hazardous Waste (England and Wales) Regulations 2005 & The List of Waste (England) Regulations 2005;
- The Environmental Permitting (England and Wales) Regulations 2007;
- Site Waste Management Plans Regulations 2008; and
- The Landfill (England and Wales) (Amendment) Regulations 2004, as amended in 2005.

5.243 Stemming from the above legislation there are a number of additional guidance documents that have been issued to support the implementation of, and compliance with, the new regulatory framework. Relevant guidance notes and consultation papers are listed below:

- Regulatory Guidance Note 14: Landfill Directive Regulatory Guidance Note 14 (version 2.4) the Duty of Care and the European Waste Catalogue (Environment Agency, 2002);
- Guidance for waste destined for disposal in landfills Version 2 (Environment Agency 2006);



- WM2 “Hazardous Waste – Interpretation of the definition and classification of hazardous waste” (Environment Agency, 2005);
- Framework for the Classification of Contaminated Soils as Hazardous Waste (Environment Agency, 2004);
- Non-statutory guidance for Site Waste Management Plans (Defra, 2008);
- Environmental Permitting Core Guidance for the Environmental Permitting (England and Wales) Regulations 2007 (Defra, 2008);
- Environment Agency Guidance Remediation Position Statement No12 (Environment Agency, 2006).

### Regional and local context

5.244 Waste management policies also have a regional and local dimension and the following key documents will be reviewed as part of the baseline assessment:

- The Mayor of London’s Municipal Waste Management Strategy (2003);
- The London Plan (consolidated with alterations in 2008);
- Regional Planning Guidance for the South East (RPG9) (Government Office for the South East (GOSE) 2006);
- Hillingdon Unitary Development Plan;
- Hillingdon Waste Management Strategy; and
- West London Waste Authority - Draft Joint Municipal Waste Management Strategy.

### Cumulative Effects

5.245 The ES will consider the cumulative impacts of the proposed development at RAF Uxbridge and any other nearby development proposals as far as is reasonably practicable.

### Interaction of Factors

5.246 There may be instances where specific environmental effects will interact to result in a wider ranging or more significant impact as a result of the scheme. Full consideration will be given to these issues in the full ES and appropriate methods of mitigation will be identified.

## Summary of Potential Effects

5.247 The ES will contain a series of tables which will set out the key environmental issues associated with the proposed development at RAF Uxbridge.