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10. Place: Baseline

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Contents

Executive Summary

The Airports Commission is considering the case for, and best means of, providing additional airport capacity within the UK. In 2013 the Airport Commission received submissions on potential options for airport expansion for the UK. Following an assessment of these options three airport schemes were shortlisted to be taken and considered in more detail. These were:

- Gatwick Airport Second Runway (Gatwick R2) promoted by Gatwick Airport Ltd (GAL);
- Heathrow Airport Northwest Runway (Heathrow NWR) promoted by Heathrow Airport Ltd (HAL); and,
- Heathrow Airport Extended Northern Runway (Heathrow ENR) promoted by Heathrow Hub Limited (HH).

In April 2014, an Appraisal Framework was published by the Airport Commission which identified the methodology that was to be used to further assess the three shortlisted schemes. This report has been prepared in accordance with the Appraisal Framework and identifies the baseline information for the Place assessment. The potential environmental impacts from the three schemes are appraised relative to this 'do minimum' baseline in a separate assessment report (Place Assessment, Jacobs 2014a).

The sub-topics considered within the Place assessment are:

- Planning and land take;
- Landscape, townscape and waterscape;
- Heritage; and
- Waste.

Planning and Land Take

A baseline for land take and planning has been derived from an assessment of adopted and emerging Local Plans, Waste Plans and Mineral Plans produced by the local authorities affected by or adjacent to the shortlisted schemes. This assessment has demonstrated that development is anticipated around both Gatwick and Heathrow, regardless of the schemes. Some areas are more constrained than others and as a result it could be problematic for some boroughs and districts to find suitable land for development without a change to national or local policy.

Landscape, Townscape and Waterscape

The baseline for this area has been derived from a review of local and national landscape character areas as published by Natural England together with aerial photographs, Ordnance Survey mapping and Google Streetview.

Gatwick Airport sits within a largely rural landscape with two proximal urban areas: Horley to the north and Crawley to the south. Much of the local rural area is protected by National or Local designations although there is development pressure associated with the airport, the proximity to London and the main north-south road / rail corridor. It is expected that future development will be focussed on the existing urban centres to avoid impacting on the dispersed settlement nature of

the rural and woodland areas. Climate change is leading to changes in crops and woodland species mix.

Heathrow sits within a largely man-made landscape of a predominantly urban / industrial nature. The nearby River Thames corridor to the south and the Colne Valley Regional Park to the west are a focus for recreational open space and tranquillity, with historic parkland at Windsor, Richmond and Hampton Court; ancient woodland at Burnham Beeches; many former minerals workings restored as lakes; and the South West London Waterbodies Special Protection Area (SPA) and RAMSAR site. Pressure for future development remains high due to the proximity of London, major transport links and the airport.

Heritage

The Heritage baseline is derived from a review of existing designated sites within the proposed scheme footprints, a 300m buffer and a 2km buffer including:

- Listed Buildings;
- Conservation Areas;
- Historic Parks and Gardens; and
- Scheduled Monuments.

The designated sites were identified from a review of the National Heritage List maintained by English Heritage or from local authority lists of Conservation Areas.

For Gatwick Airport Second Runway there are 181 listed buildings within 2km of the scheme. These included five Grade I listed buildings and ten Grade II*. In addition, there are seven Conservation Areas and four Scheduled Monuments within this study area.

For Heathrow Airport Northwest Runway there are 225 listed buildings within 2km of the scheme including three Grade I and fourteen Grade II* listed buildings. There are also twelve Conservation Areas and four Scheduled Monuments within this study area.

For Heathrow Airport Extended Northern Runway there are 190 listed buildings within 2km of the scheme including four Grade I and six Grade II* listed buildings. There are also 11 Conservation Areas, three Scheduled Monuments and one historic park and garden within the study area.

Waste

A baseline for each airport has been prepared using publicly available waste data from the latest Heathrow Airport Ltd and Gatwick Airport Ltd sustainability reports, (Gatwick Airport Ltd 2010 and 2012), (Heathrow Airport Ltd, 2011). A bespoke model has been developed by Jacobs that applies waste per passenger estimates combined with passenger number forecasts to project annual total waste and recycling tonnages from 2025 to 2050.

This model demonstrated that airport waste arisings are declining due to sustainable waste management practices and waste minimisation. They will constitute only a small proportion of total waste arisings in the South East of England. However, a number of the industry reports draw attention to the fact that most biodegradable waste will appear in the residual waste stream, and that there should be specific consideration of residual waste treatment capacity in the UK.

Both the waste management companies SITA (SITA, 2014) and Eunomia (Eunomia, 2011) highlight in their independent assessments of UK capacity, the likelihood that by 2025 there will be a capacity deficit of residual waste treatment technologies and this should be recognised when considering long-term airport capacity increase.

1 Introduction

The Airports Commission is considering the case for, and best means of, providing additional airport capacity within the UK. In 2013 the Airport Commission received submissions on potential options for airport expansion for the UK. Following an assessment of these options three airport schemes were shortlisted to be taken and considered in more detail. These were:

- Gatwick Airport Second Runway (Gatwick 2R) promoted by Gatwick Airport Ltd (GAL);
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- Heathrow Airport Extended Northern Runway (Heathrow ENR) promoted by Heathrow Hub (HH).

In April 2014, an Appraisal Framework was published by the Airport Commission which identified the methodology that was to be used to further assess the three shortlisted schemes. This report has been prepared in accordance with the Appraisal Framework and identifies the baseline information for Place.

The sub-topics identified in the Appraisal Framework to be considered within the assessment of Place impacts are:

- Planning and Land Take;
- Landscape, Townscape and Waterscape;
- Heritage; and
- Waste

This report identifies the baseline 'do minimum' case which will be used to assess the three shortlisted schemes for the Place sub-topics. The Place baseline requirements are listed in Appendix A, Section 10 of the Appraisal Framework:

"The Commission's base case considers the future of an airport scheme's proposed location in the absence of any airport development, other than that currently planned";

"The base case will be based on Natural England's 'National Character Area' publications, which provide profiles of the UK's 159 areas, including their landscape and townscape settings and heritage assets."

The Appraisal Framework identifies sources of potential baseline information for each of the Place sub-topics including, but not limited to:

- National Land Use Database: Land Use and Land Cover Classification;
- National Character Areas, Natural England;
- National Tranquillity Mapping, Campaign to Protect Rural England;
- Dark Skies report, Campaign to Protect Rural England;
- National Heritage List, English Heritage.

Other relevant publically available information is also used to inform the baseline assessment where appropriate. These are detailed within each sub-topic section of this report.

The potential environmental impacts from the three schemes are appraised, relative to this do minimum baseline, in a separate assessment report (Place Assessment, Jacobs 2014a). The baseline takes into account proposed changes to the airports, as indicated in their respective current master plans, and this is uses to represent the future baseline without new runways. Hence the footprints for the three schemes take into account such proposals and these have also been considered in defining the study areas for each sub-topic within this module.

Each sub-topic requires a different assessment approach to identifying the baseline. Hence this report is structured to address each sub-topic in turn. The methodology applied to identify the baseline within each sub-topic area is detailed at the beginning of each section.

The structure of this baseline report is:

- Chapter 1 introduces the report and explains content of the Place baseline report.
- Chapter 2 – 5 details the baseline for each of the 'Place' topics.

2 Planning and Land Take Baseline

This section presents the baseline for the Land Take sub-topic within the Place module which has been derived from a review of the plans and policies of the relevant local authorities within a 15 km radius of the existing airports. This baseline considers planned development, as identified by these plans.

2.1 Introduction and Methodology

This high level planning baseline has been produced to understand the likely growth patterns and land take scenarios that could take place in the vicinity of Gatwick and Heathrow under a do minimum scenario. They are considered in the short, medium and long term. Policies in development plans which refer specifically to development at Gatwick and Heathrow will be considered when the proposals are assessed.

Any planning implications of surface access requirements would be addressed by the Highways Agency, Network Rail and Local Planning Authorities at the time of submission. They are not included specifically within this study.

This baseline has been produced as a desk based exercise. Adopted and emerging plans for Local Authorities neighbouring Gatwick and Heathrow have been reviewed to establish a baseline of proposed major housing and employment development within the vicinity of Gatwick and Heathrow (equal to approximately a 15km radius). Relevant Minerals and Waste Plans were also reviewed to inform the short and medium term baseline. The location, and where indicated the magnitude, of development is shown in the tables in Appendix A for the short and medium term.

The following Plans were reviewed for Gatwick:

Crawley Borough Council

- Core Strategy October 2008: 2007 (lasts to 2016) (Crawley Borough Council, 2008).
- Draft Submission Local Plan 2015 -2030 (Crawley Borough Council, 2014).

Horsham District Council

- Adopted Core Strategy 2007 General Development Control Policies (lasts to 2018) (Horsham Borough Council, 2007).
- Horsham District Planning Framework – Proposed Submission May 2014 (lasts to 2031) (Horsham Borough Council, 2014).

Mole Valley District Council

- Adopted Core Strategy 2009 (lasts to 2026) (Mole Valley District Council, 2009).

Reigate and Banstead District Council

- Core Strategy Adopted July 2014 (lasts to 2029) (Reigate and Banstead District Council, 2014).

West Sussex County Council

- West Sussex Waste Local Plan 2014 (lasts to 2031) (West Sussex County Council, 2014a).
- West Sussex Minerals Plan 2003 (lasts to 2006 new plan in early stages of preparation) (West Sussex County Council, 2003b).

Surrey County Council

- Surrey County Council Adopted Minerals Core Strategy 2011 (lasts to 2026) (Surrey County Council, 2011).
- Surrey Waste Plan March 2009 (lasts to 2019) (Surrey County Council, 2009).

The following Plans were reviewed for both Heathrow options:

Hillingdon Borough Council

- Hillingdon Borough Council Local Plan Part 1 – Strategic Policies November 2012 (lasts to 2027) (Hillingdon Borough Council, 2014).

Hounslow Borough Council

- Hounslow Borough Council Proposed Submission Version Local Plan March 2014 (lasts to 2030) (Hounslow Borough Council, 2014).

Spelthorne Borough Council

- Spelthorne Borough Council Adopted Core Strategy February 2009 (lasts to 2026) (Spelthorne Borough Council, 2009).

Slough Borough Council

- Slough Borough Council Adopted Core Strategy December 2008 (lasts to 2026) (Slough Borough Council, 2008).

West London

- West London Waste Plan Proposed Submission February 2014 (lasts to 2031) (West London Waste, 2009).

In terms of timescales the following approximate dates were used for the baseline study:

Short Term – Up to 2020
Medium Term – Up to 2030
Long Term – Up to 2060

Although it cannot be known at this stage what level of growth is likely beyond current development plans (most plans run to around 2030), it is still possible to use professional judgement on where future growth may occur based on existing development constraints. This is used in the narrative below on longer term growth patterns without the airport expansions.

It is reasonable to assume that the economic impacts of the airports on the areas surrounding Gatwick and Heathrow, and their general close proximity to London, means that there will be continued pressure in the long term for residential, employment and retail/service developments in these areas with or without the airport expansions.

Key transport infrastructure proposals for each scheme are highlighted in a separate transport studies:

- Heathrow Airport Third Runway, Airports Commission, Phase 2 – Surface Access Appraisal Report, (Jacobs 2014c);
- Heathrow Airport (Heathrow Hub Option), Airports Commission, Phase 2 – Surface Access Appraisal Report, (Jacobs, 2014d); and
- Gatwick Airport Second Runway, Airports Commission, Phase 2 – Surface Access Appraisal Report, (Jacobs, 2014e).

The London Plan has not been considered in this study as it sets the strategic, London-wide policy context, within which boroughs should set their detailed local planning policies (including site specific allocations).

2.2 Gatwick Planning and Land Take Baseline

Gatwick is situated within the northern part of Crawley Borough. The existing land use is shown in Land Take Figure 1 in the accompanying Place Figures Report. Table 2.1 provides a breakdown of the land use within the existing airport footprint, a 250m buffer area around it and the wider geographical area. This gives an indication of the type of land use in the Gatwick area and the proportion of different types of land use. The potential land take impacts from each of the proposed scheme are reported in Place: assessment report, (Jacobs, 2014a).

Table 2.1 Breakdown of existing land use – Gatwick Airport footprint and 250m study area

Land use type	Hectares
Agriculture and Fisheries	396
Community Services	96
Forestry	121
Industry and Business	89
Minerals	6
Recreation and Leisure	7
Residential	75
Retail	2
Transport	374
Unused Land	17
TOTAL	1183

Within the footprint of Gatwick airport and the 250m area around it a large proportion (44%) of the land is under agriculture and forestry use. This lies primarily to the north of the airport. Many of the green spaces in the borough are designated as Sites of Nature Conservation Importance or appear to be used for recreation, which means that they are unlikely to be available for development in

the future. Approximately 32% of the land is in transport use reflecting the existing airport land use. Less than 10% is in residential use with the relevant areas mainly to the south and the northeast.

The large open area to the north east of the borough (south of Gatwick) is already allocated for development in the adopted core strategy. Therefore there are likely to be very limited opportunities for finding additional suitable areas for further development in the longer term, particularly as a large area to the north of the borough (south of Gatwick) is allocated as 'Gatwick Safeguarding' in the adopted core strategy which lasts until 2016. It is noted however that this area is also designated a potential area of search for employment and residential development in Crawley's emerging local plan if the Gatwick expansion did not go ahead. This large area could be a suitable area for further growth in the long term.

Horsham District to the south west of Gatwick is less developed and constrained in comparison with Crawley. As described in the table in Appendix A, a large area west of Crawley is allocated for a mixed use development. As there are no key constraints such as Green Belt within the borough, for the purposes of this high level appraisal it is reasonable to assume that the district would accommodate growth in the longer term.

The majority of land to the north west of Gatwick in Mole Valley District is within the Metropolitan Green Belt, (i.e. the statutory Green Belt around London). Green Belt would severely constrain the expansion of urban district centres as national and local planning policies seek to protect the openness of the Green Belt, meaning a future change in planning policy would be required for their development. There is currently no indication from the Government that Green Belt restrictions would be relaxed although the debate does continue. The National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2012) does allow local authorities to amend Green Belt boundaries in their local plans but only in 'exceptional circumstances".

The land further west, is an Area of Outstanding Natural Beauty (AONB). The AONB would also be protected from inappropriate development, that is, development which would affect the landscape value of the area through visual intrusion or tranquillity impacts. Although this is not as severe a constraint as Green Belt, national and local policy does seek to safeguard the special characteristics of the AONB. Paragraph 115 of the NPPF states that '*Great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to landscape and scenic beauty*.''

The main urban areas of Mole Valley District are Leatherhead, Dorking, Ashstead, Bookham and Fetcham which are located further away from Gatwick. These urban areas are the most sustainable locations within the district for growth, so are the most likely to be the focus for development in the longer term.

Reigate and Banstead District is to the north east of Gatwick. The majority of the district is within the Metropolitan Green Belt and AONB. The town of Horley is on the north eastern edge of Gatwick and is allocated for growth in the District's emerging core strategy. The town is surrounded by Green Belt and an area designated as 'Countryside Beyond the Green Belt' by Reigate and Banstead Local Plan (potentially suitable for development if representing an urban extension). Similar to the situation in Mole Valley District, further development in

the longer term at the town could be significantly constrained unless there was a future change in planning policy. Other urban areas in the district include Reigate and Redhill which are also surrounded by Green Belt and AONB, therefore the same constraints apply.

2.3 Heathrow Planning and Land Take Baseline

Heathrow is located in the south of Hillingdon Borough. The existing land use is shown in Land Take Figure 6 in the accompanying Place Figures report. Table 2.2 provides a breakdown of the land use within the existing airport footprint and a 250m buffer area around it. This gives an indication of the type of land use in the Heathrow area and the proportion of different types of land use. The potential land take impacts from each of the proposed scheme are reported in Place: assessment report, (Jacobs, 2014a).

Table 2.2 Breakdown of existing land use – Heathrow Airport footprint and 250m study area

Land use type	Hectares
Agriculture and Fisheries	492
Community Services	201
Forestry	27
Industry and Business	80
Minerals	5
Recreation and Leisure	4
Retail	9
Transport	663
Unused Land	25
Residential	110
TOTAL	1616

Within the footprint of the Heathrow airport and the 250m area around it a large proportion (32%) of the land is under agriculture and forestry use. This lies primarily to the north and west of the airport. Approximately 41% of the land is in transport use reflecting the existing airport land use. Less than 10% is in residential use with the relevant areas mainly to the east and south of the airport.

Part of the development proposed in the borough's adopted local plan is within the London Plan growth area; the 'Heathrow Opportunity Area' just to the north of Heathrow. The local plan recognises the substantial impact Heathrow has on Hillingdon's economy. It is likely that Heathrow will continue to be a driver for further development in the borough in the long term, with or without an additional runway. Large areas of the borough, however, are within the Metropolitan Green Belt (i.e. the statutory Green Belt around London), including around the Heathrow Opportunity Area. This will act as a constraint to further development unless there is a change to planning policy. There are also three minerals safeguarded sites,

shown in the Local Plan Part 1, just to the north of Heathrow; these sites are protected through the planning system to restrict development which would prevent the future extraction of mineral resources of local and national importance. These designations will also constrain development in this area in the long term. If these were lost, replacement allocations would need to be found elsewhere to ensure the supply of minerals as required in the London Plan.

Heathrow has a large impact on the borough's economy and will continue to be a driver for development in the longer term with or without the expansion. The Green Belt and the developed nature of the borough means it may be a challenge to find suitable major development opportunities in the longer term. Any future development would most likely involve redevelopment of sites, the availability of which is not possible to predict.

Spelthorne Borough is on the south western edge of Heathrow. The area closest to Heathrow consists of the urban area of Stanwell, the Metropolitan Green Belt and three large reservoirs including the Wraysbury Reservoir Complex and the Queen Mother Reservoir. Further afield are the urban settlements of Ashford and Staines where development is proposed in the borough's adopted core strategy. Again, the presence of Heathrow impacts on the borough's economy and will be important in driving development requirements in the longer term. The borough is also heavily constrained by Flood Zone 3 (areas with a high risk of flooding), particularly to the south. Like the other London boroughs in the area, these constraints could make finding suitable areas for development difficult without policy changes. There is also a minerals safeguarding area to the south of Heathrow in Spelthorne Borough which it can be assumed will constrain development in this area in the long term.

Slough Borough to the west of Heathrow currently has a large 'strategic gap' allocated in its adopted core strategy between the main urban areas of the borough and Heathrow. The gap is intended to remain undeveloped and has been adopted to maintain a separation between Slough and the developed area of Greater London and to encourage redevelopment of brownfield land. The rest of the borough is heavily developed. A number of open spaces on the edge of the borough are designated as Green Belt, constraining development.

2.4 Conclusion – Planning and Land Take

Development is anticipated in the areas around Gatwick and Heathrow in the longer term regardless of the runway expansion proposals. Some areas are more constrained than others and as a result it could be problematic for some boroughs and districts to find suitable land for development without a change to national or local policy.

3 Landscape/Waterscape/Townscape Baseline

This section presents the baseline for the Landscape / Waterscape / Townscape sub-topic of the Place module. Two baselines have been established covering 5 km radius from the existing airports. The baselines have been derived from a desk based review of:

- National Landscape Character Areas as published by Natural England; and
- Local Landscape Character Areas and defined by relevant Country Councils or Unitary Authorities.

3.1 Introduction and Methodology

The process of Landscape and Visual Impact Assessment (LVIA) takes account of potential changes to physical elements within the landscape as well as the way in which people visually perceive the landscape. The landscape takes its character from a combination of elements, including landforms, land-use, vegetation cover, field patterns and boundaries, settlement patterns and types of buildings, roads, railways and rights of way. Landscapes vary considerably in both character and quality, and they are key components of the distinctiveness of any local area or region. The assessment of impacts on landscape therefore addresses changes in any of these components that would be caused by a proposed development. Further details about the landscape appraisal methodology can be found in Appendix B.

Townscape can be described as "…*areas where the built environment is dominant. Villages, towns and cities often make important contributions as elements in wider-open landscapes, but townscape means the landscape within the built-up area, including the buildings, the relationships between them, the different types of urban open spaces, including green spaces, and the relationship between buildings and open spaces*." (Landscape Institute and Institute of Environmental Management and Assessment, 2013)

Waterscape is broadly understood as a landscape in which an expanse of water is a dominant feature, but is not a recognised technical term in landscape guidance. In referring to an expanse of water, waterscape covers lakes and rivers which are addressed for landscape purposes under 'hydrological features'.

People also experience landscape and townscape as a visual phenomenon, and the quality of views in any given area can make a significant contribution to 'quality of life'. In some areas, views can also be important to the local economy. Visual Impact Assessment therefore seeks to identify where existing views would be altered by any proposed changes in the landscape, and to assess the significance of those changes, taking into account the quality and extent of existing views, the number of people affected and the nature of the change.

A study area for the determination of the landscape baseline has been defined as a 5km offset from the proposed schemes. It was anticipated that the most significant effects on landscape character and views from the proposed ground based elements of the schemes (such as buildings and runways), would only occur within an area of approximately 5km. Beyond 5km, even though some elements might be visible, they would be barely perceptible due to the distance away from the airport and the filtering effect of intervening vegetation.

The landscape designations and character areas present within the study areas have been identified from a review of data published by Natural England and the relevant county councils or unitary authorities. Tranquillity and Dark Skies information has been obtained through mapping published by the Campaign to Protect Rural England.

3.2 Gatwick Landscape, Townscape and Waterscape Baseline

3.2.1 Overview

Landscape Designations

The location of existing landscape designations has been shown in Landscape Figure 1 in the accompanying Place Figures Report. The Surrey Hills AONB lies approximately 3km to the north west of the study area at its nearest point. The High Weald AONB falls within the southern edge of the study area. The Kent Downs AONB is approximately 15km to the north east.

A locally designated landscape (or Area of Great Landscape Value) as identified within the relevant Local Plans, stretches throughout the countryside in the north, which is approximately 2km to the north of the study area at its nearest point.

There are various Country Parks and Registered Parks and Gardens scattered throughout the surrounding countryside. Buchan and Tilgate Country Parks lie at the southern edge of the study area.

There are various stands of Ancient Woodland throughout the study area with some blocks within the Gatwick Airport boundary. No information on Tree Preservation Orders or Important Hedgerows has been collated in the production of this baseline as this detail is not appropriate to an assessment at this strategic level.

Topography/ Hydrology

The shape of the landform is shown on Landscape Figure 2. Topography in the study area is generally gently undulating to flat and low lying, with heights varying between 60 and 100m AOD (Above Ordnance Datum). It rises towards the Surrey Hills AONB in the north and the High Weald AONB in the south.

The most significant hydrological feature within the study area is the River Mole, which flows within the site towards the River Thames in the north. There are several smaller streams within and in close proximity to the airport boundary, many of which are demarcated by narrow bands of vegetation.

Land Cover

The study area is predominantly in mixed pastoral and arable agricultural use. Fields are often small to medium and irregular, many bordered by hedgerows and hedgerow trees. Roads are often lined by hedgerows and trees and there are larger woodland blocks within the farmland. On the whole, there is a well wooded feel to the landscape and a sense of enclosure. Vegetation also serves to restrict views.

Layout, Density and Mix of Buildings

The main settlements in the study area are Crawley to the south and Horley to the north, with smaller villages and individual farmsteads scattered throughout the remaining rural area. Local materials include brick, weatherboard and tile, and many farmsteads contain large weatherboard barns.

Building layouts in the Ifield and Langley Green areas of Crawley, date back to the development of the original New Town which was designated in 1947 as part of the first wave of New Towns under the 1946 Act. The building form is two storey houses of varying styles along curving cul-de-sacs. Houses front onto the streets and have private gardens to the rear.

Manor Royal is an industrial estate to the north of Crawley made up of single or double height, brick, steel or glass buildings with large car parking areas connected by wide roads.

3.2.2 National Landscape Character Areas

Gatwick Airport lies within National Character Area NCA 121: Low Weald (Natural England, 2013b). It also lies approximately 3km from the boundary of NCA 122: High Weald (Natural England, 2013c). These two character areas are described in Table 3.1, along with detail regarding potential future trends and changes within the local landscape. Landscape Figure 3 shows the extent of national character areas around Gatwick.

Table 3.1 - Summary of key characteristics of the NCA for Gatwick 2R.

Low Weald	High Weald
The Low Weald NCA is a broad, low-lying clay vale which largely wraps around the northern, western and southern edges of the High Weald.	The High Weald NCA encompasses the ridged and faulted sandstone core of the Kent and Sussex Weald.
Predominantly agricultural, supporting mainly pastoral farming owing to heavy clay soils, with horticulture and some arable on lighter soils in the east, and has many densely wooded areas with a high proportion of ancient woodland.	The High Weald consists of a mixture of fields, small woodlands and farmsteads connected by historic routeways, tracks and paths. It is an area of ancient countryside and one of the best surviving medieval landscapes in northern Europe.
Around 9% of it falls within the adjacent designated landscapes of the Surrey Hills, Kent Downs and High Weald AONB and the South Downs National Park. Around 23% of the area is identified as greenbelt land.	The High Weald AONB covers 78% of the NCA. The NCA is also home to 56 historic parks and gardens covering 4,599 ha. The High Weald provides an example of one of the best preserved medieval landscapes in north-west Europe and has a strong sense of history. This is enhanced by many features such as Battle Abbey, numerous churches and chapels and an abundance of locally distinctive traditional buildings.
The area is generally wet and woody. It is dissected by flood plains and its impermeable clay soil and low-lying nature make many areas prone to localised flooding. Ponds are common, often a legacy of iron and brick-making industries.	Wild flower meadows are now rare but prominent medieval patterns of small pasture fields enclosed by thick hedgerows and shaws (narrow woodlands) remain fundamental to the character of the landscape.

Low Weald	High Weald
Gill woodland is a particular feature and a valuable habitat, scarce elsewhere in the south-east of England.	Some 26% of the NCA is covered by woodland, comprising wooded shaws, pits and gills, farm woods and larger woods. The majority of the woodland cover is ancient, managed in the past as coppice with standards surrounded with native woodland flora such as bluebells and wood anemones in the Spring.
Despite its proximity to London and continuing pressure for development, the Low Weald remains essentially rural in character with small-scale villages nestled in woodland and many traditional farm buildings, including oast houses, which are typical in the east.	The High Weald provides many services to communities living within the area's towns and villages and adjacent urban populations through the supply of drinking water, flood mitigation and carbon storage and a range of open-air recreational activities based around its distinctive character, from walking its ancient routeways to off-road cycling in Bedgebury Forest, water sports at Bewl Water and soft rock climbing at Harrison's Rocks. Future challenges include continuing high demands for housing in south-east England, and rural areas in particular, resulting in strong pressure for development within the NCA, and pressure to bring forward land for housing in and around larger villages, threatening the dispersed settlement character of the landscape and the sustainable development of smaller settlements.

Future baseline

a. Low Weald

The NCA profile for Low Weald describes recent changes and trends in local landscape character relating to trees and woodlands, boundary features, agriculture, settlement and development, semi-natural habitats, historic features, coast and rivers and minerals. 'Drivers of change' are also identified, and these include climate change, housing and infrastructure (including Gatwick Airport), woodland management and water abstraction.

The assessment of base case requires an understanding of these current trends and drivers for change and how local landscape character is likely to change in the absence of the proposed development. The trends and drivers that relate to Gatwick Airport and the surrounding area that might be affected are summarised in Tables 3.2 and 3.3.

b. High Weald

As for the Low Weald, the NCA profile for High Weald describes recent changes and trends in local landscape character relating to trees and woodlands, boundary features, agriculture, settlement and development, semi-natural habitats, historic features, coast and rivers and minerals. 'Drivers of change' are also identified, and these include climate change, housing and infrastructure (including Gatwick Airport), woodland management and water abstraction.

The assessment of base case requires an understanding of these current trends and drivers for change and how local landscape character is likely to change in the absence of the proposed development. The trends and drivers that relate to

Gatwick Airport and the surrounding area that might be affected are therefore summarised below, although in less detail than for the Low Weald and focussing on issues that may be affected by flight path changes.

Table 3.2 Low Weald NCA and High Weald NCA – Key features and trends

Feature	Trend	
	Low Weald	High Weald
Trees and woodland	Woodland character has been maintained recently and there is a significant increase in woodland management agreements. Native woodlands have been maintained although there has been a decline in Elm. Oak, which is also characteristic, particularly to the west of the area, is also declining in numbers and condition at the current time although this is not thought to be significant at this time.	Although there is rising uptake of Woodland Grant Schemes, some ancient woodlands are declining in quality due to poor management and clay extraction. There has also been a loss in traditional orchards and hop gardens.
Boundary features	There has been a decline in hedgerow and tree boundaries due to lack of management and farm diversification.	The decline of boundary features during the 20th century is being reversed through Environmental Stewardship schemes. However, there is ongoing pressure for larger fields.
Agriculture	The area of agricultural land has declined over the last decade. Although the loss of grasslands due to urbanisation and changing farming practices has recently slowed, dairy farming has lost 55 out of 139 farms with 19% reduction in cattle and also 32% reduction in sheep. Farmland is becoming more fragmented, particularly on urban fringes due to domestication and garden enlargement. Traditional hop gardens and orchards have declined and newer ones planted with non-traditional varieties, with a 15% reduction in fruit production.	The agricultural profile of the area has remained stable and predominantly pastoral with 77% of the area under grass or un-cropped land. The number of dairy farms has decreased, but yields from the area probably remain consistent.
Settlement and Development	Most of the study area lies outside of adjacent protected landscapes within commuting distance of London and there is constant demand for new building land. Development pressures are mainly focussed on towns and the boundary with High Weald.	There has been a decline in use of vernacular building materials in new developments and introduction of urban features such as lighting. The northern (Kentish) High Weald has been particularly affected. An increase in road traffic on the characteristically small roads, winding lanes and historic routeways has been an issue, leading to conflicts between motorised traffic, pedestrians, horse-riders and cyclists. Development around built-up areas throughout south-east England has impacted on rural character although the area does have a lower number of housing units built per 1000 households than protected landscapes, generally between 1985 and 2004.

Feature	Trend	
	Low Weald	High Weald
Semi-natural habitats	There have been recent initiatives to improve semi-natural habitats in the area, including hay meadows, ancient woodlands, riparian landscapes and butterfly habitats, which had all previously declined. No information is available on the success or otherwise of these initiatives.	
Historic Features	There is a high rate of barn conversions in the NCA. Unmanaged vegetation such as bracken and scrub is causing damage to archaeological remains and lorries are damaging historic lanes. In the last century approximately 56% of the area's historic parklands were lost. About 13% of the remaining parkland is covered by a Historic Parkland Grant, and about 21% is included within an agri-environmental scheme.	The area has a high rate of barn conversions. About 44%of listed historic farm buildings remain unconverted. Parklands are an important historic element of this landscape. In 1918 about 8% of the NCA was historic parkland. By 1995 it is estimated that 44% of this had been lost. About 23% of the remaining parkland is covered by a Historic Parkland Grant, and about 15% is included within an agri-environment scheme. Four Scheduled Monuments have been identified on the Heritage at Risk register along with one registered park and garden.
Rivers	Past agricultural intensification has caused a legacy of pollution in local rivers, although much of the land around these is now subject to stewardship agreements. Water voles have declined by 90% in the last 20 years, although otters, once locally extinct, are returning.	

Table 3.3 - NCA – Drivers of change

Driver	Effect	
	Low Weald	High Weald
Climate change	Climate change is expected to lead to changes in local landscape character. Drought stress, amongst other factors is likely to lead to reduced numbers of oak trees, and increased storms and drought are likely to lead to loss of important and veteran trees. Changing temperatures and warmer winters are likely to lead to altered compositions of native woodlands and a higher prevalence of drought resistant species such as hazel, field maple and hawthorn. Ash Dieback disease (*Chalara fraxinea*) also threatens local ash populations. Changes in precipitation could alter the flow regimes of local rivers with more potential for winter flooding and summer drought and lower water levels. This may also lead to demands for irrigation and domestic use. Pastures may be vulnerable to drought and set-aside land may become more frequent as a means of allowing pasture to recover. Crops may also change, including the increase of others such as vines.	Climate change is likely to result in increasingly unpredictable weather patterns with hotter drier summers, more intense rainfall and longer dry periods resulting in the need for agriculture and forestry industries to adapt to grow different crops and develop more flexible and responsive land management practices. Climate change adaptation, increased demand for locally produced food and niche markets, market economies and increased visitor activity may provide opportunities for further farm business diversification.
Infrastructure and housing	Crawley and Reigate are identified as regional hubs and centres of significant change, with around 15,000 new homes planned by 2026. There is also a recognised need to maintain the importance of Gatwick Airport as an international gateway, along with links to London and the South Coast. Around 13,000 new homes are planned in Horsham and 9,000 within Tonbridge and Malling and significant growth is also planned in areas just outside the NCA such as Ashford and Guildford. The area is also under increasing pressure as a location for renewable energy schemes such as wind farms.	Continuing high demand for housing in south-east England and rural areas in particular is resulting in strong pressure for development on the edge of or adjacent to the High Weald AONB boundary and pressure to bring forward land for housing in and around larger villages. This is threatening the dispersed settlement character of the landscape and the sustainable development of smaller settlements. Recreational use and access, both day visits and longer term tourism, are both increasing and changing in nature with emphasis on activity-based recreation, such as off-road cycling.
Biodiversity	Based on an analysis carried out in 1995, this NCA was identified as an 'outstanding' priority for woodland conservation, particularly in relation to coppice restoration and is also identified as a potential 'Forest District'.	-

Driver	Effect	
	Low Weald	High Weald
Water abstraction	Increased abstraction to meet industrial and domestic demands, has decreased the amount of water in rivers as well as ground water reserves. This has had adverse effects on the river habitat itself as well as on damp grassland and woodlands in the flood plains.	-
Minerals	Clay and sand extraction, which are of historical importance in the area, are still economically important to the area. Building sand is extracted from the narrow Lower Greensand outcrop close to the West Sussex boundary and Streat, near Plumpton in East Sussex.	-

3.2.3 County Landscape Character Areas

The following information has been taken from the existing West Sussex and Surrey county character assessments. The country character areas are shown on Landscape Figure 3. The airport site lies within or directly adjacent to two counties, West Sussex and Surrey. Both West Sussex County Council (WSCC, 2007) and Surrey County Council (SCC, 1997) have produced landscape character descriptions for their respective areas. The proposals overlap two character areas, as described below:

West Sussex: LW8 Northern Vales

The character area is comprised of flat to gently undulating, pastoral farmland with the floodplain and tributaries of the River Mole in the north east. Fields vary considerably in size and are often bordered by hedgerows. Tree cover is scattered throughout with some woodlands, copses and distinctive field trees. Crawley, Horsham and Gatwick Airport are dominant areas of development within the countryside and are connected by major road and rail corridors and pylon lines. Some areas near Crawley retain an enclosed rural character although in other parts there is visual intrusion from housing, retail and industrial areas and sand and gravel workings.

Surrey Low Weald: Open Weald

The landscape is made up of small, irregularly shaped fields in a strong pattern with hedgerow field boundaries and hedgerow trees. Rivers and roads are often sunken below surrounding land and enclosed by hedgerows, banks or riparian trees. Development is scattered except for modern, large scale buildings around Gatwick Airport. Church towers and farm buildings provide important landmarks.

Other county landscape character areas within the wider study area include:

West Sussex: LW4 Low Weald Hills

Rural landscape of undulating, low lying, small to medium pastoral fields with both sinuous and straight boundaries, with a strong pattern of shaws, hedgerows and hedgerow trees. Larger, more open fields are found towards the east. Densely wooded ridges run east to west with blocks and strips of interconnecting woodland and many blocks of Ancient Woodland. Narrow lanes run in a defined north south direction, often sunken. The North River and Boldings Brook meander through the narrow valleys forming secretive wooded gills. Settlement, comprising sandstone, brick, tile and weatherboard cottages and farms, is dispersed, with some ridgetop villages set on higher ground.

West Sussex: HW1 High Weald

The character area is made up of a wooded, enclosed, complex landscape of plateaux, ridges and deep valleys cut by gill streams, within the High Weald AONB. Small, irregular fields and pockets of heathland are present, surrounded by significant woodland cover and a network of shaws, hedgerows and hedgerow trees. Long views are possible over the Low Weald from the high ridges. Settlement, comprising traditional rural buildings of timber, stone, brick and tile, is dispersed across the higher ground and connected by twisting, sunken lanes and footpaths. Road and rail infrastructure such as the Brighton Railway Line also crosses the area.

West Sussex: HW2 High Weald Forests

A densely wooded, confined landscape within the High Weald AONB with extensive coniferous and mixed plantation woodland. The plateau like ridge is drained by the Rivers Mole, Ouse and Arun and there are long views from the ridge over the Low Weald to the downs. Amongst the woodland are large, regular and some smaller, irregular fields of both pastoral and arable agriculture with boundaries of shaws, hedgerows and fencing. The ridge is crossed by roads, lanes and footpaths and the area is bordered by the settlements of Crawley and Horsham and by the A23 and M23, although a secluded, tranquil nature remains in many parts of the forests. Settlement, comprising of traditional rural buildings of timber, stone, brick and tile, is dispersed over the ridge top.

Surrey Low Weald: Wooded Weald

A well wooded landscape with small, irregular, grazed fields enclosed by sinuous and winding woodland blocks, tall hedgerows and shaws. Substantial areas of forestry make up the woodland blocks. Villages are scattered throughout the area connected by narrow winding lanes enclosed by hedgerows or hedge banks. Rivers follow deep, inaccessible wooded gills.

3.2.4 District Character Areas

The following information has been taken from the existing Crawley, Horsham, Mole Valley, Reigate and Banstead and Mid Sussex district character assessments. The district character areas around Gatwick are shown on Landscape Figure 4. The site lies within or directly adjacent to the following district landscape character areas:

Crawley Borough Area 1 Upper Mole Farmlands (Crawley Borough Council, 2012)

A rural landscape comprised of a variable field pattern bordered by hedgerows. The built up area of Crawley and Gatwick Airport are strong influences that cause noise and visual intrusion. Land use in the character area varies from arable and pastoral farmland to industrial units, hotels, playing fields and a caravan park. The landscape is flat to gently undulating and crossed by the River Mole tributaries. Fields contain small woodland blocks and plantations, which help to confine views.

Crawley Borough Area 6 High Woodland Fringes (Crawley Borough Council, 2012)

A flat to gently undulating landscape containing the floodplain of the River Mole, with small to large, pastoral fields and a variable density of hedgerows. Tree cover is scattered with a range of woodlands, copses and distinctive field trees. Major road and rail corridors cross the character area as well as pylon lines. Crawley and Gatwick Airport are strong influences in the landscape.

Horsham K1 Upper Mole Farmlands (Horsham District Council, 2003)

A flat to gently undulating landscape comprised of small to medium scale, irregular, pastoral fields bordered by thick hedgerows. Occasional woodlands, copses and field trees are scattered within the farmland. A large golf course is present near Ifield and the urban edge of Crawley and Gatwick Airport are strong influences on the landscape.

Mole Valley 4A Open Weald (Mole Valley District Council, 2013)

A small scale, undulating landscape with small, irregularly shaped fields bordered by square cut hedges and regular hedgerow oaks. The relatively open landscape contains rivers and streams sunken below the surrounding land, and roads enclosed by hedgerows or hedge banks. Dispersed settlement occurs on higher ground with larger scale, modern development around Gatwick Airport.

Other district landscape character areas within the study area include:

Horsham I2 Warnham and Rusper Wooded Ridge (Horsham District Council, 2003)

A rural landscape comprised of undulating wooded ridges, secretive wooded gills with a distinct escarpment north of Horsham. Land cover is a strong pattern of small pastoral fields bordered by shaws and hedgerows. Ridge top villages and hamlets and dispersed farms and cottages are connected by narrow, sunken lanes running north to south.

Reigate and Banstead C1 Low Weald (Reigate and Banstead Borough Council, 2008)

A unified landscape comprised of irregular fields with gently changing topography from low, raised areas to shallow valleys. There are expansive views out from the character area with some views towards employment and industrial areas. Small blocks of woodland are dotted throughout the farmland, some of which are Ancient Woodland. Settlement is linear and follows the A23, except for the larger area of

Horley. There is a limited transport network of small back roads and some north south transport corridors.

Mid Sussex LCA7 High Weald Plateau (Mid Sussex District Council, 2005)

The character area is made up of a low plateau dissected by streams to the south and north east. Vegetation cover is dense with large woodland blocks, hedgerows and shaws creating a sense of enclosure. Farmland is a mix of small pastoral fields and larger, modern fields with some remnant heathland in places. Settlement, comprising of traditional rural buildings of timber, brick and tile, is dispersed and connected by busy lanes and roads, particularly the A264 at Copthorne and the B2038.

3.2.5 Local Townscape Character Areas

The following local townscape character areas have been described using information from the Crawley Baseline Character Assessment and the borough wide Reigate and Banstead character assessment. The local townscape character areas are shown on Landscape Figure 4.

Ifield Local Townscape Character Area (Crawley Borough Council, 2009)

Ifield is one of the original nine neighbourhoods planned as part of Crawley New Town in the 1940s, and is essentially a garden suburb based on irregular, curving perimeter blocks, cul-de-sac roads and houses with gardens to the rear. Houses are predominantly brick, two storey terraced, detached or semi-detached, although there are houses from the pre-New Town era that are different in style, with pitched roofs and brick walls and some use of sandstone, red tiling and timber cladding. There are also various landmark buildings such as the Listed Buildings St Margaret's Church, the Vicarage and Lychgate Cottage. On the whole, there is a coarse grain layout with little variation in style, place hierarchy or density. There are often large areas of amenity grassland with little function, which increases the coarse grain layout further.

Langley Green Local Townscape Character Area (Crawley Borough Council, 2009)

Langley Green was a brand new neighbourhood planned as part of the New Town in the 1940s and, as for Ifield, is essentially a garden suburb based on irregular, curving perimeter blocks, cul-de-sac roads and houses with gardens to the rear. Housing is monotonous in style, of two storeys, terraced or semi-detached, and in a coarse urban grain. There are several amenity grass areas around the housing with little function, and there is a central neighbourhood centre with a parade of shops and large car parking area. Building materials are predominantly brick and tile and roofs flat or shallow pitched.

Manor Royal Local Townscape Character Area (Crawley Borough Council, 2009)

Manor Royal is an industrial estate with wide main roads and large grassed verges and street trees. The main roads serve several plots developed on a plot by plot basis, with brick, glass or steel buildings of one to two storeys with a variety of pitched or flat roofs. Car parking is a dominant feature and the large expanses of hardstanding, buildings with large floor plans and the low density development

creates a very coarse grain layout. The mismatch of building styles reduces the sense of unity and the winding road network throughout the industrial estate decreases legibility.

Horley Local Townscape Character Area (Reigate and Banstead Borough Council, 2008)

Horley has a Victorian-Edwardian core with some pre-Victorian development surrounded by 1930s-1950s suburban housing, and some more recent suburban development, arranged along a straight road layout. The townscape is nucleated with good accessibility north and south, although the A23 and rail corridor restricts connections with residential properties in the east and within the town centre itself. Green space is limited to scattered areas throughout the north of the town.

3.2.6 Extent and Character of Views

Views towards Gatwick Airport are relatively limited by the built up areas of Horley to the north and Crawley to the south, and by rising topography up to the Surrey Hills AONB and the High Weald AONB. Much of the surrounding area is also well vegetated with woodland and mature hedgerows, which further constrains views. Due to the height of topography in the Surrey Hills AONB in the north and the High Weald AONB to the south there are elevated views over lower ground, including long distance views towards Gatwick Airport.

Away from urban areas such as Crawley and the buildings and runway of Gatwick Airport, views are rural in nature over pastoral fields bordered by hedgerows and hedgerow trees and larger woodland blocks. Vegetation constrains longer distance views but where available there are often views out to the higher ground of the Surrey Hills AONB in the north and the High Weald in the south. The urban edges of Crawley and Horley dominate views in places and act as visual detractors, as well as the buildings and infrastructure at Gatwick Airport. Major roads such as the M23 and A23 also act as detractors across the countryside.

3.2.7 Tranquillity and Dark Skies – Gatwick

The CPRE mapping for Tranquillity and Dark Skies provides the baseline information for this element of the assessment and is contained in Landscape Figures 6 and 8.

The tranquillity mapping shows that there are no areas of very high tranquillity close to the existing airport. The least tranquil areas are around the existing Gatwick Airport, Horley, Crawley and the M23. Tranquillity increases to the east and west of the airport with the area to the east of Gatwick being the most tranquil area close to the airport.

The Dark Skies mapping reflects the tranquillity mapping with areas of high level of light at Gatwick, Horley and Crawley and Junction 10 of the M23. The level of darkness increases away from these areas.

The current nature of overflight has been estimated from reference to the typical Gatwick radar flight tracks (based on Draft ERCD Report 1402 Noise Exposure Contours for Gatwick Airport 2013, (ERCD, 2014a)). For baseline purposes, this information has been overlaid onto the dark skies and tranquillity mapping shown in Landscape Figure 6 and Landscape Figure 10. These illustrate that arrivals are

directed to the south of the airport, with a dominance (due to prevailing wind direction) of flights around East Grinstead over the High Weald AONB. Departures follow more direct paths; only the southerly departure route overflies the High Weald, with the others tending to be routed in a corridor between the High Weald and Surrey Hills AONBs.

3.2.8 Conclusion - Gatwick Landscape, Townscape and Waterscape Baseline

Gatwick Airport sits within a largely rural landscape with two proximal urban areas: Horley to the north and Crawley to the south. Much of the local rural area is protected by National or Local designations although there is development pressure associated with the airport, the proximity to London and the main north-south road / rail corridor. It is expected that future development will be focussed on the existing urban centres to avoid impacting on the dispersed settlement nature of the rural and woodland areas. Climate change is leading to changes in crops and woodland species mix.

3.3 Heathrow Landscape, Townscape and Waterscape Baseline (both Heathrow NWR and Heathrow ENR)

3.3.1 Overview

Landscape Designations

The location of existing landscape designations has been shown on Landscape Figure 14 in the accompanying Place Figures Report. The Chilterns AONB lies over 15km away to the north west of the proposed Heathrow airport expansion schemes.

A locally designated Area of Landscape Importance is located to the south west edge of the 5km study area within Runnymede Borough Council. The Colne Valley Regional Park is located within and in close proximity to the west of Heathrow Airport.

There are various Country Parks and Registered Parks and Gardens scattered throughout the surrounding countryside. Thorney Park, Cranford Countryside Park, Stockley, Lake Farm, Minet and Langley Country Parks are located within the 5km study area to the north and Bedfont Lakes to the south.

There are isolated blocks of Ancient Woodland throughout the study area but the majority are further away from the proposed scheme. No information on Tree Preservation Orders or Important Hedgerows has been collated in the production of this professional opinion.

Topography/ Hydrology

The shape of the landform at Heathrow is shown on Landscape Figure 15. The study area is relatively flat and low-lying and varies between 20-30m AOD. There is a gentle slope southwards in the direction of the River Thames. Higher topography is located to the north-west beyond Slough and to the south west at Windsor and Runnymede. Man-made landform is visible in the form of road and rail embankments and around reservoirs and sand and gravel workings.

The River Colne and River Crane are significant watercourses in the study area, both of which drain into the River Thames. The River Colne joins the River Thames some 4km to the south of the airport and the River Crane joins 6km to the east. Two artificial waterways, Longford River and the Duke of Northumberland's River, run along the western and southern boundaries of the airport. There are many flooded sand and gravel pits, particularly along the Colne Valley in the Regional Park, and large reservoirs such as Wraysbury and Staines, which are dominant features in the landscape.

Land Cover

Vegetation is relatively sparse in the study area and focused around roads, rivers, lakes and reservoirs. The original land use of pastoral fields and market gardens has become fragmented and taken over by larger arable fields, reservoirs, lakes and recreational areas such as golf courses and parks. In general the landscape is open, which is accentuated by the flat topography. Around the lakes, reservoirs and rivers, the landscape is more intimate as vegetation cover helps to provide a sense of enclosure.

Layout, Density and Mix of Buildings

There are varying types and sizes of settlement within the study area and on the whole it is heavily influenced by built form, except to the west where the Colne Valley Regional Park is located.

Close to the north and east of the airport are the small villages of Longford, Harmondsworth, Sipson and Harlington, which are distinct settlements, surrounded by farmland. The majority of buildings are post-war in age and a mix of styles from two-storey detached to two-storey townhouses, flat blocks and bungalows. There is a historic core to Harmondsworth with the listed St Mary's Church and the Great Barn.

Beyond the small villages to the north and east, and to the south of the airport, settlement is more continuous, with a mixture of suburban housing, modern airport-related development and major roads. Housing is predominantly post-war, with a range of housing types from two storey detached, semi-detached, terraced and flat blocks. Local centres often comprise parades of shops with flats above (London Borough of Hillingdon, 2012 and 2014).

Local materials are predominantly brick and tile although painted render and pebble dashing is also common.

3.3.2 National Landscape Character Areas

Heathrow Airport lies within NCA 115: Thames Valley (Natural England, 2012) and within a kilometre of the boundary of NCA 111: Northern Thames Basin (Natural England, 2013a). These two character areas are described in Table 3.4, along with detail regarding potential future trends and changes within the local landscape. The extent of the national landscape character areas are shown in Landscape Figure 16.

Table 3.4 - Summary of key characteristics of the NCA for Heathrow NWR and ENR.

Thames Valley	Northern Thames Basin
The Thames Valley is a mainly low-lying, wedge-shaped area, widening from Reading, which includes Slough, Windsor, the Colne Valley and the southwest London fringes. There are a number of nationally important geological sites within the NCA, as well as Heathrow, the UK's busiest airport.	The Northern Thames Basin is a diverse area which extends from Hertfordshire in the west to the Essex coast in the east. It is separated from the North Sea and Thames Estuary by a narrow band of land that makes up the Greater Thames Estuary NCA. Included within this NCA are the suburbs of North London and also historic towns and cities including St. Albans and Colchester, as well as new and planned towns such as Welwyn Garden City, Hatfield and Basildon.
The River Thames provides a unifying feature through a very diverse landscape of urban and suburban settlements, infrastructure networks, fragmented agricultural land, historic parks, commons, woodland, reservoirs and extensive mineral workings. Hydrological features dominate the Thames Valley, and include the Thames and its tributaries, part of the Grand Union Canal and the reservoirs which form the South-West London Waterbodies Special Protection Area (SPA) and Ramsar site. These features provide essential water supply services for London and the surrounds, as well as being important areas for wildlife and recreation in an essentially urban landscape. Flows and water levels in the River Thames are managed by a series of locks and structures upstream of Teddington. Flood defence and water quality improvement measures, such as the restoration of wetlands for flood management, provide opportunities for biodiversity and recreation.	The Northern Thames Basin is an area rich in geodiversity, archaeology and history and diverse landscapes ranging from the wooded Hertfordshire plateaux and river valleys, to the open landscape and predominantly arable area of the Essex heathlands, with areas of urbanisation mixed in throughout.
Despite its urban character, the area is environmentally important and 6 per cent of it is covered by its 38 Sites of Special Scientific Interest (SSSI). It has significant amounts of broadleaved woodland, much of it ancient, including Burnham Beeches, Windsor Forest and Great Park, and the Richmond Park Special Area of Conservation (SAC).	This NCA includes many internationally and nationally designated sites including 72 Sites of Special Scientific Interest (20 of which are designated wholly or in part for their national geological importance), 6 Ramsar sites, 6 Special Protection Areas, 3 Special Areas of Conservation and 2 National Nature Reserves. The majority of these sites are estuaries and woodlands. The estuaries support migrating and overwintering birds as well as rare or locally important plants and invertebrates.

Thames Valley	Northern Thames Basin
There has been much development in this area in recent history, and continued pressures within the next 20 years provide scope for creating new landscapes with good green infrastructure links and increased broadleaved woodland. This will help to reduce noise and air pollution, and reduce the impact of urban fringe development. The closure and restoration of landfill sites and mineral workings provide additional opportunities. Centuries of wealthy and influential residents have left a legacy of historic houses and palaces in the Thames Valley, such as Windsor Castle and Hampton Court Palace, all of which are now valued for their heritage interest and attract thousands of visitors. Many are set within historic parkland, which is a particular feature of the NCA. Opportunities exist to improve the management of the 6,950 ha of registered parkland and to protect the veteran trees surviving within it. There are also opportunities for the improvement of small but valuable areas of heathland like Wimbledon Common SAC. The Royal Botanic Gardens at Kew (a UNESCO World Heritage Site) fall within the Thames Valley NCA and provide engagement opportunities, as well as being a centre for biodiversity.	Urban expansion has put increased pressure on the area in terms of extra housing developments, schools and other necessities for expanding populations, with a consequential reduction in tranquillity. Tranquil areas can still be found in parts of Hertfordshire and Essex in areas that have a more dispersed settlement pattern broken up by arable land and semi-natural habitats.
Although there is virtually no undisturbed land in the NCA, parts are valued for their relative tranquillity. The area's natural beauty and royal history have created a haven on the doorstep of central London, a place to escape, relax, exercise, explore and have fun. Its 1,000 km of rights of way – including the Thames Path National Trail – three National Nature Reserves (NNRs), waterbodies and green space, all provide recreation opportunities and access to nature for a population of around 1.4 million, as well as to visitors from inner London and beyond.	There are a wide variety of semi-natural habitats in the area and these support many important species. However, the habitats have become fragmented over time and a landscape-scale approach is needed to connect them so that they can be sustained and provide beneficial functions including; increasing pollinating insects, acting as flood defences and water storage areas, preventing soil erosion and helping to improve soil and water quality as well as maintaining the area's sense of place and history.

Future baseline

a. Thames Valley

The NCA profile for the Thames Valley describes recent changes and trends in local landscape character relating to trees and woodlands, boundary features, agriculture, settlement and development, semi-natural habitats, historic features, coast and rivers and minerals. 'Drivers of change' are also identified, and these include climate change, housing and infrastructure (including Heathrow Airport), woodland management and water abstraction.

The assessment of base case requires an understanding of these current trends and drivers for change and how local landscape character is likely to change in the absence of the proposed development. The trends and drivers that relate to Heathrow Airport and the surrounding area that might be affected are summarised in Table 3.5 and 3.6.

b. Northern Thames Basin

As for the Thames Valley, the NCA profile for Northern Thames Basin describes recent changes and trends in local landscape character relating to trees and woodlands, boundary features, agriculture, settlement and development, semi-natural habitats, historic features, coast and rivers and minerals. 'Drivers of change' are also identified, and these include climate change, housing and infrastructure (including Heathrow Airport), woodland management and water abstraction.

The assessment of base case requires an understanding of these current trends and drivers for change and how local landscape character is likely to change in the absence of the proposed development. The trends and drivers that relate to Heathrow Airport and the surrounding area that might be affected are therefore summarised below, although in less detail than for the Thames Valley and focussing on issues that may be affected by flight path changes.

Table 3.5 Thames Valley NCA and Northern Thames Basin NCA – Key features and trends

Feature	Trend	
	Thames Valley	Northern Thames Basin
Trees and woodland	Over the last 10 years, following uptake of the Woodland Grant Scheme, existing woodland in the area has been enhanced, and in some places increased. Broadleaf woodland SSSI are predominantly in favourable condition, suggesting the wooded character is strengthening. The area is also of international importance for its parklands, which include Windsor Forest and Great Park and Richmond Park SAC and has a high priority for the restoration of coppice management. The potential for the creation of new woodlands is identified as being low.	Woodland character is being maintained with good uptake of grant schemes for planting and maintenance. New tree planting is concentrated into larger blocks with apparent targeting within the Community Forests in the area.
Boundary features	Environmental Stewardship (ES) since 2005 has led to an increase in the length of managed hedgerow boundary features. As of March 2011, 124 km of hedgerow was managed under ES. However, this figure is only a small proportion of the boundaries in the local area and there is likely to have been a continuing decline in their integrity.	The main boundary feature in this area is hedgerows. Other boundary features found are ditches and woodlands. Relatively few receive grant support for maintenance.

Feature	Trend	
	Thames Valley	Northern Thames Basin
Agriculture	There are only small areas of agricultural land in the area within the M25 corridor and in the vicinity of Heathrow. Within the river corridor as a whole, agricultural use is mainly of grazing with some arable farmland in the west. There has been considerable historic pressure on agricultural land due to the need for development land, expansion of settlements, demand for reservoirs, gravel pits and recreation facilities such as golf courses. Between 2000 and 2009, the total area devoted to farming dropped by 5%. The number of livestock fell over the same period but the area of land classed as uncropped or grazing fell by only 4%. In many areas this grazing is now exclusively for horses. During this period, all land used for crop growing also reduced apart from small increases in that used for hardy nursery stock and “other” arable crops.	The area has a varied land use pattern comprising a mix of arable and pasture land. There has been an overall loss of mixed and general cropping and horticulture since 1998, although the rate of grassland loss has slowed and the mix of farm holding types has stabilised.
Settlement and Development	In the vicinity of the M25 and towards London, in the area of Heathrow, the character of the landscape, townscape and waterscape is dominated by urban influences, roads, the M25, Heathrow Airport and its associated infrastructure and developments, railways, overhead electricity lines and pylons and mineral workings, with former villages and their surrounding countryside having been subsumed into a wide urban area. This urbanisation is described by Natural England as being rapidly formed and lacking apparent co-ordination.	London has an expanding population and pressure to meet housing demand and other changes is placing pressure on existing greenspace which varies considerably in quality. There is an overall shortage of access to greenspace.

Feature	Trend	
	Thames Valley	Northern Thames Basin
Semi-natural habitats	Countryside Stewardship schemes are relatively few, indicating that management of semi-natural habitats is poor and may result in decline. Some initiatives have increased reedbed areas, such as at: Hampton, Marble Hill. Richmond and Molesey and nearby the Wildlife and Wetland Centre at Barnes is now classified as a SSSI. Although the area of lowland heathland is relatively small at around 70 ha, most is SSSI and its proximity to the adjacent Thames Basin Heaths SPA makes it highly significant. Much is being restored and extended under High Level Stewardship agreements. There are also possibilities offered by mitigation measures and conversion of extracted gravel and landfill sites, for example one of the largest landfill sites in the country, outside Gerrard's Cross, will reach capacity in the next few years.	-
Historic Features	There is a medium-high concentration of pre-1750 farmstead buildings, typically of loose courtyard plan with timber-framed barns (including aisled barns) and cattle housing (often a later addition). There are many mainly 19th century farmsteads built in brick with Welsh slate or tile or pantile roofs, often arranged in regular courtyard complexes. About 55% of historic farm buildings remain unconverted. About 83% are intact structurally.	This area has a rich historical heritage and there is evidence of settlement in the Hertfordshire, Essex heathlands and London areas dating back to prehistoric period along with palaeo-environmental, Palaeolithic and archaeological evidence. This area has nine sites on the English Heritage at risk register and many listed buildings. The main threats to these sites are the continued need for urban expansion and housing or industrial development and the management of agricultural land.
Rivers	The River Thames (and adjacent water bodies) is a key characteristic of the area immediately surrounding Heathrow, with the landscape including rivers, streams, lakes, canals and open water bodies resulting from flooded gravel workings. Other rivers, minor in nature, are generally heavily modified and suffer from pollution and low flows.	-

Table 3.6 - NCA – Drivers of change

Driver	Effect	
	Thames Valley	Northern Thames Basin
Climate change	The Environment Agency predicts that peak river flows may increase by 20% in the future. Also frequent, short duration, intense storms in summer are likely to cause more widespread and regular "flash" flooding from overwhelmed drainage systems and some rivers. It is estimated for example, that fluvial flows entering the tidal river at Teddington will increase by up to 40% by 2080. Mature and veteran trees within the area will be more at risk by increased storminess, periods of drought and the prevalence of pests and diseases, with the loss of shallow-rooting beech and previously-pollarded ancient trees due to being blown over and drought-stressed.	The Northern Thames Basin is among the warmest and driest parts of the UK. A number of characteristic specialist species, more typical of continental climates, survive here on the edge of their European range. It is anticipated that climate change will result in the spread of such species further north within the UK. Agricultural land is also at risk from soil erosion and nutrient loss as the soil becomes more susceptible to wind erosion in the predicted hotter and drier periods and water erosion in the wetter, colder periods. Increasing the size and connectivity of surrounding habitats, such as grasslands, will help support new species and improve biodiversity as well as reduce the effects of soil erosion. Also pollinating insects will benefit from the increase in semi-natural habitats and these in turn will benefit the local agricultural landscape. Predicted longer growing seasons and earlier onsets of spring will present an opportunity for introducing growth of new drought tolerant species. Woodland habitats (which make up a large proportion of semi-natural habitats in this area) may have increased above ground biomass due to increased carbon dioxide and nitrogen availability. This may have a negative impact on ground or lower growing flora. Wetlands and open water habitats and associated species are likely to have to cope with greater fluctuations in water levels which could be droughts or low rainfall in the summer with flooding or heavy rainfall in the winter. As great crested newts are found in relatively large numbers in this area, it may have an adverse effect on this protected species as well as on nesting sites for certain bird species.

Driver	Effect	
	Thames Valley	Northern Thames Basin
Infrastructure and housing	The assessment identifies that there will be continued development pressures including major roads, lighting and signage, expansion of urban areas and airport development at Heathrow, much unrelated to the surrounding area and contributing to the overall fragmentation of the landscape. The assessment also identifies the following pressure: There is land use pressure from non-farming use of small-sized holdings, notably horse grazing and land held in case of rising value as development land. Historic designed parkland features will be at risk from changing agricultural activities, development pressure and lack of management for individual trees. The Thames Rivers Restoration Trust Action Plan (2009) aims to find areas where floodwater can be safely stored, restore natural shape, function and form corridors between SSSI and reserves for wildlife to move around. Development may provide opportunities for co-ordinated provision of quality green infrastructure. This will have benefits for the health and wellbeing of those living in the NCA as well as visitors. There is likely to be continued demand for recreation opportunities from those living in the more urban parts of the NCA and Inner London.	Pressure for continued urban expansion and regeneration, including industrial development, offers opportunities to improve well-being conditions for local communities such as, improving greenspace quality and provision, but will also put pressure on water availability and habitat fragmentation. Future mitigation needs to ensure these factors are considered when developments occur. There is scope to expand the area of recreation provision by improving public access, while ensuring the needs of sensitive sites are not adversely damaged through, for example, disturbance or excessive trampling. The pressure for infrastructure development around London is going to continue to grow and is expected to create difficulties in preserving the London green belt. Care must be taken so that important habitats, geological, archaeological features and recreational greenspace are not destroyed in the process and the character of the area adversely affected.
Minerals	Gravel extraction is an important industry within the NCA. Previous gravel workings have been restored to form numerous water bodies. In addition, reclamation of disused quarries has resulted in large expanses of lake and wetland which provide important habitats for wildlife and are also valuable recreational resources.	

3.3.3 County Landscape Character Areas

The following information has been taken from the existing Surrey county character assessment. The County Character Areas are shown on Landscape Figure 16. The Heathrow site lies close to the boundary of the following county landscape character area:

Surrey Thames Valley: Thames Floodplain (Surrey County Council, 1997)

The character area is predominantly a low lying, flat floodplain crossed by numerous small rivers and occupied by large reservoirs such as Wraysbury Reservoir and flooded gravel pits. Vegetation is limited to around roads, rivers and the edges of wet gravel pits, creating an open landscape with remnant pockets of agriculture and market gardens. Urban development is dominant including mineral workings, Heathrow Airport and road and rail infrastructure. The embankments of roads, reservoirs and railways are noticeable features in many views.

3.3.4 District Character Areas

The following information has been taken from the existing South Bucks, Windsor and Maidenhead and Hillingdon district character assessments. The Slough Road Infrastructure character area has been described though desk study work. The district character areas are shown on Landscape Figure 16. The study area lies within or directly adjacent to the following district landscape character areas:

Hillingdon Lower Colne Floodplain (London Borough of Hillingdon, 2012)

The landscape is comprised of a low lying, flat floodplain with water as a dominant feature, including the River Colne, Grand Union Canal and large lakes. Floodplain meadows, grassland and woodland are dispersed within the floodplain with dense tree cover found along waterways and around lakes. An active footpath network provides recreation and links to the large waterbodies and woodland. Settlement is of low density comprising isolated farmsteads and small hamlets connected by few minor roads. Sand and gravel extraction are dominant features with former gravel pits flooded to make lakes.

Hillingdon Open Gravel Terrace (London Borough of Hillingdon, 2012)

The character area consists of a flat, low lying, farmland landscape of large scale arable fields with smaller pastoral fields close to settlements. Gravel and sand extraction is common, with some disused pits forming ponds and lakes. Other land use includes sports grounds, playing fields and the historic parkland of Cranford Countryside Park. Fields are often bounded by hedgerows but more significant vegetation is limited to areas such as Cranford Park and around ponds and lakes. There is little settlement within the character area but it is influenced by modern buildings along its edge, the M4 corridor and Heathrow Airport.

Hillingdon Heathrow Gravel Terrace Infrastructure (London Borough of Hillingdon, 2012)

The flat, open landscape is dominated by the large scale infrastructure of Heathrow Airport, with its runways, access roads and buildings. The character area is surrounded on all sides by perimeter roads, security fencing and blast walls. Vegetation is predominantly open grassland with some shrubs and climbers to boundaries.

Other district landscape character areas within the study area include:

South Bucks Colne Valley Floodplain (Buckinghamshire County Council and South Bucks District Council, 2011)

The character area is made up of a flat, low lying, open floodplain dominated by rough grazing and pasture with some arable fields. Fields are predominantly geometric in shape and bordered by low hedgerows with hedgerow trees. Settlement density is low with three small villages to the north and scattered farmsteads and small hamlets elsewhere. Gravel extraction has shaped the landscape with disused gravel pits forming waterbodies. Other water features include several streams and the River Colne in the east. Road and rail infrastructure crosses the area and man-made embankments are noticeable features. Public rights of way within the Colne Valley Regional Park and golf course provide recreational outlets.

South Bucks Iver Heath Mixed Use Terrace (Buckinghamshire County Council and South Bucks District Council, 2011)

The character area slopes to the north and acts as a transitional zone between lower and higher topography. Urban development influences the landscape, especially the villages of Iver and Iver Heath, and amongst settlement there is a mixed land cover of large open arable fields and horse paddocks bordered by hedgerows and hedgerow trees. The landscape is crossed by roads including the M25, creating a strong sense of movement. Other features include pylon lines, industrial and business development and Pinewood Studios.

Windsor and Maidenhead Settled Developed Floodplain, Horton and Wraysbury (Royal Borough of Windsor and Maidenhead, 2004)

The character area comprises of a broad, flat, open floodplain with a fragmented landscape pattern of natural and man-made wetland habitat, remnant hedgerows and hedgerow trees, shelterbelts and linear woodlands, gravel extraction works, industrial estates, sewage works and horse paddocks. The influence of the Thames is visible in the form of navigation channels, marinas, artificial cuts and canalisation. A mix of modern and traditional settlement is dispersed and connected by minor roads and tracks, although major transportation corridors are also present and aviation traffic is noticeable.

Windsor and Maidenhead Settled Farmed Floodplain, Datchet (Royal Borough of Windsor and Maidenhead, 2004)

The landscape contains a wide meandering section of the River Thames with diverse river edge habitats surrounded by flat and open floodplain with a rich farming heritage. There is a wooded character due to linear woodlands and parkland trees within designed landscapes. Settlement is small scale and dispersed and predominantly in the form of traditional vernacular farmsteads set within a rich mosaic of farmland. There is increasing influence from aviation and road traffic.

Slough Road Infrastructure

The character area is a mismatch of land uses from Poyle Industrial Estate to residential areas in Colnbrook, large former gravel pit lakes, pockets of pastoral

farmland and a former landfill site. The M4 runs along the northern boundary of the area and the M25 to the east with the A4 crossing though its centre. The River Colne runs north to south within the Colne Valley Regional Park, as does the Colne Valley Way. Topography is generally flat due to the proximity of the river, apart from man-made embankments along the motorways. Vegetation cover is limited to along the roads and the river, and around former gravel pit lakes, which serves to restrict views and provide a sense of enclosure. The most open area is between the M4 and A4 where the former landfill site is located.

3.3.5 Local Townscape Character Areas

The following local townscape character areas have been described using information from the Hillingdon district landscape character assessment and the Hounslow Urban Context and Character Study. The local character areas are shown on Landscape Figure 16.

Hillingdon Inter War Suburb Metroland (London Borough of Hillingdon, 2012)

Suburbs influenced by the 'garden suburb' movement and the extension of the Metropolitan Railway leading to its name as 'Metroland'. The townscape is medium density consisting of curvilinear streets, linear streets and cul-de-sacs, although some Victorian and post-war terraces remain in pockets. Built form is dominated by semi-detached two storey houses in pebbledash or colour render with brick also used. There is a leafy quiet suburban character due to the grass verges with street trees along roads, well vegetated domestic front gardens and publicly accessible greenspaces. Accessible landscape is also available on settlement edges such as golf courses, open countryside, Country Parks and nature reserves.

Hillingdon Historic Core (London Borough of Hillingdon, 2012)

The historic cores are usually associated with a church, green or common and have a considerable time depth with built form dating back to medieval times. The urban grain is dense with buildings often drawn close to street frontages creating an active and vibrant townscape. Building materials include timber frames, red brick, purple brick, slate and white render. Variety and rhythm is created through the varying building lines and roof heights with texture introduced through varied materials and façade treatment.

Hillingdon Commercial Airport (London Borough of Hillingdon, 2012)

The character area is comprised of commercial development in the form of hotels, restaurants, business parks and offices situated along a straight, tree lined main road. Development is set within large plots and buildings are often large scale and simple, built from glass, steel, concrete and red brick. Boundaries are formed by ornamental planting, wire fencing, low brick walls and hedgerows. Large car parking areas and roads are mainly tarmacked with concrete kerbs, and pedestrian areas are made up of concrete flags and block paving. There is a busy character and a strong sense of movement.

Hounslow Bedfont (London Borough of Hillingdon, 2014)

The character area is predominantly residential although housing is surrounded by large areas of semi-rural open space, with woodland and extensive former gravel pit lakes, and beyond that by green belt land to the south and west. The

topography is generally flat with a slight upward slope to the north, and the area is crossed by two artificial rivers (Longford River and the Duke of Northumberland's River). The urban areas are made up of post-war outer suburban housing derived from the 'Garden Suburb' ideal with large grass verges and crescents and rectangles of grassed amenity space. Housing is mainly two storey and semi-detached or terraced and there is little variation in character. There are also large areas devoted to trading estates, mineral works, utilities and a business park. On the whole, the urban area is of good quality with an even distribution of open spaces.

Hounslow Feltham (London Borough of Hillingdon, 2014)

The character area has a large amount of open space serving a mix of residential properties, which are predominantly trans- war outer suburban, two storey, semi-detached or in short terraces. Open space is in several forms including large semi-rural open areas bounded by green belt, Hounslow Heath, parks such as the large Hanworth Park, large school playing fields, locally focussed parks surrounded by the backs of houses, wide grass verges, and crescents and rectangles of amenity greenspace. In addition three rivers cross the area (River Crane, Longford River and the Duke of Northumberland's River) all of which provide some form of vegetation cover such as wooded banks. Feltham town centre is a regional attractor following comprehensive redevelopment and is served well by public transport. On the whole, the urban environment is fair to good quality although some modern development is relatively isolated from local centres.

Hounslow West (London Borough of Hillingdon, 2014)

The character area is a mix of residential, commercial and retail development and open space. Hounslow Heath occupies much of the south west of the study area and the Cavalry Barracks is another dominant feature, which holds a prominent position and has a strong physical, visual and social presence in the area. The two main roads Bath Road and Staines Road are two historical coaching routes, which cross the area and remain principal routes. Along the roads is a mixture of residential, commercial and retail use as well as landmark buildings such as St Paul's Church. The busy roads give two distinct feels; one of bustling activity and the other of quieter residential streets only one turn off these busy main routes. The residential areas are predominantly suburban in character with trans- to post-war, two storey, semi-detached or detached houses. Other housing types include blocks of flats and large townhouses.

Hounslow Cranford and Heston (London Borough of Hillingdon, 2014)

The character area is centred around two historic centres, Cranford and Heston, which have merged together with suburban, inter to trans war, two storey, semi-detached or terraced housing. The historic core of Heston is the most intact and includes St Leonard's Church. Many open spaces remain in the form of parkland along the River Crane, neighbourhood parks and small pockets of amenity greenspace. Within the residential areas and open space there is a secluded and quiet feeling reinforced by its limited accessibility and poor public transport links. The area has distinct boundaries, which further cut it off, including the River Crane, Grand Union Canal, Osterley Park and the Great West Road. The M4 splits the area in two and busy main roads cross the area and segregate it further, as well as degrading the pedestrian environment.

Slough Urban Area

Slough is predominantly made up of residential development but also contains the large Slough Trading Estate. The area is crossed by the A4, the M4 and the Great Western Mainline. Housing to the south east of Slough is predominantly two storey terraced housing of brick and tile with painted render or timber set along winding cul-de-sacs. Properties tend to have large private gardens and there are pockets of greenspace within the residential areas. Other housing includes flat blocks, some which are high rise but mostly two or three storeys. There is a coarse grain layout with limited legibility and a monotonous feel with little variation in housing character. The coarse grain layout is exacerbated by an industrial estate along Sutton Lane with large warehouses situated within expanses of hard standing.

3.3.6 Extent and Character of Views

Views towards Heathrow Airport are relatively restricted by built form to the north, east and south and by the raised embankments of reservoirs to the west and south west. Vegetation along the M25 and M4 and along waterways such as the River Colne constrains views further. The continuous urban area to the east and south, and the villages of Harmondsworth, Sipson, Harlington and Longford in the north, limits views to those buildings closest to the airport with areas behind screened by built form. The reservoirs in the west help to screen views but there are views from the banks of the reservoirs themselves.

Urban development, transport infrastructure and Heathrow Airport are dominant features in the landscape and influence most views. The most open views are to the west where farmland and habitat areas follow the River Colne through the Colne Valley Regional Park. In this location views are more rural in nature, although the reservoirs are a reminder of man-made development with their large embankments. Views from the urban edge are often over small pastoral fields or amenity open spaces towards housing and infrastructure.

3.3.7 Tranquillity and Dark Skies

There are no areas of high tranquillity in close proximity to Heathrow Airport. The CPRE mapping for Dark Skies and Tranquillity provides the baseline information for this element of the assessment and are contained in Landscape Figures 18 and 20.

The tranquillity mapping for Heathrow is dominated by areas of low tranquillity. This includes the existing airport, the urban areas inside the M25, the M25 itself and around Slough. The most tranquil area is to the south west of the existing airport.

The Dark Skies mapping reflects the tranquillity mapping with areas of high levels of light from the M25 eastwards and around Slough and the M4. The level of darkness increases to the north west and south west but there are only isolated areas with higher levels of darkness.

The current nature of overflight has been estimated from reference to the typical Heathrow radar flight tracks (based on Draft ERCD Report 1401 Noise Exposure Contours for Heathrow Airport 2013 (ERCD Report, 2014b)) For baseline purposes, this information has been overlaid onto the dark skies and tranquillity mapping shown in Landscape Figure 18 and flight routes in Landscape Figure 22. This illustrates part of two of the arrival holding stacks, and the areas of overflight of final approaches and departures. Flights (easterly arrivals and

westerly departures) directed between Slough, Maidenhead and High Wycombe overfly the Chilterns AONB currently, but westerly arrivals overfly the less tranquil areas of greater London.

3.4 Conclusion - Heathrow Land, Townscape and Waterscape

Heathrow sits within a largely man-made landscape of a predominantly urban / industrial nature. The nearby River Thames corridor to the south and the Colne Valley Regional Park to the west are a focus for recreational open space and tranquillity, with historic parkland at Windsor, Richmond and Hampton Court; ancient woodland at Burnham Beeches; many former minerals workings restored as lakes; and the South West London Waterbodies SPA / Ramsar site. Pressure for future development remains high due to the proximity of London, major transport links and the airport.

4 Heritage Baseline

This section presents the baseline for the Heritage sub-topic of the Place module. An individual baseline has been derived for each of the three proposed schemes due to the differing Land Take areas associated with each which can be significant in terms of Designated Heritage Assets.

The baseline has been derived from a desk based review of English Heritage data and information held by the relevant local authorities.

4.1 Introduction and Methodology

The Heritage baseline is derived from a review of existing designated sites within the study areas including:

- Listed Buildings;
- Conservation Areas; and
- Scheduled Monuments.

The designated sites have been identified from a review of data held by English Heritage and the relevant local authorities. Tables listing all designated sites identified are included in Appendix C and Heritage Figures showing the location of each designated site are presented within the accompanying Place Figures Report. Further details about the heritage appraisal methodology can be found in Appendix D.

Rather than presenting one baseline for Heathrow to cover both Heathrow schemes, a separate baseline is presented for Heathrow Northwest Runway (NWR) and for Heathrow Extended Northern Runway (ENR) for the purposes of the heritage analysis. This is due to the differing areas of proposed land take for the two options which impact upon differing heritage assets. However, it is acknowledged that there is some repetition between the two baselines.

The study areas have been defined as follows:

- The 'Proposed Development Footprint Study Area'. This comprises the development footprint of each of the proposed options and the surface access corridors. This defines the area where designated heritage assets are at greatest risk from physical impact from construction of the proposed options.
- An 'Intermediate Study Area' was defined as a 300m study area around the development footprint of each of the proposed options. A 300m study area was used as this is the size of the study area suggested in HA208/07 (Highways Agency et al., 2007) for scoping studies. The purpose of the Intermediate Study Area was to identify those designated heritage assets where the settings are at risk of impact from construction and operation of the proposed options.
- The 'Outer Study Area'. A wider 2km study area was used and a study area of the same size was defined around each of the proposed options. This was to identify designated heritage assets with settings at risk of impact from operation of the proposed options.

4.2 Heritage Baseline - Gatwick Second Runway (2R)

4.2.1 Proposed Development Footprint Study Area

There are 22 designated assets located within the 'Proposed Development Footprint Study Area ', all of which are Listed Buildings (Appendix C, Table C1). These are the only designated sites located within the footprint. Of these, six are Listed as Grade II* and the remaining 16 buildings are Listed as Grade II.

Grade II* Listed Buildings are defined by English Heritage as buildings that are particularly important and of more than special interest. These buildings are therefore likely to be highly sensitive to nearby development. Of the Grade II* Listed Buildings, the earliest in date are the formerly moated Hyders Hall/Gatwick Manor Inn (Asset No. LB4), and Charlwood Park Farmhouse (Asset No. LB22), both of which comprise open hall houses dating to the 15th century. Both have been altered in the succeeding centuries, but retain much of their original character. Rowley Farmhouse (Asset No. LB8) dates to the late 16th century, and is an example of an early, timber framed smoke bay house. Charlwood House (Asset No. LB13) is a timber framed four bay house, which dates to the early part of the 17th century. The Church of St Michael and All Angels (Asset No. LB15) is the work of architect William Burges, and although the style of the church is early 13th century French gothic, it actually dates to 1867. The most modern Grade II* Listed Building is The Beehive (Asset No. LB14). This is the former Gatwick Airport combined terminal and control tower, built in 1934-36. It is described by English Heritage as being of importance in terms of British aviation history and world airport design.

Grade II Listed Buildings are defined by English Heritage as buildings of national importance, and of special interest. Whilst not considered as highly sensitive to nearby development as Grade II* Listed Buildings, Grade II Listed buildings are still considered sensitive receptors to nearby development. The 16 Grade II Listed Buildings range in date from a possible 15th century timber framed building, now with the addition of a 20th century wing (Edgeworth House – Asset No. LB19) and the late medieval crown post barn at Rowley Farm House (Asset No. LB7) to the early 19th century house of Charlwood Park (Asset No. LB21). Fifteen of these buildings comprise either dwellings or barns, and nearly all are timber framed. The only exception to this is Lowfield Heath Windmill (Asset No. LB12), a former post mill which dates to 1762, and has now been relocated. Also included in the list is the now demolished early 19th century Charlwood Park (Asset No. LB21).

4.2.2 Gatwick 2R – Intermediate Study Area

A further ten heritage assets were identified within the Intermediate Study Area, comprising six Grade II Listed Buildings (Appendix C, Table C2), two Conservation Areas (Appendix C, Table C3) and two Scheduled Monuments (Appendix C, Table C4).

The Listed Buildings in this area range in date from the late 16th century timber framed Povey Cross House (Asset No. LB28) to the now demolished early 20th century cottage known as Sycamore House (Asset No. LB24). The Church Road, Horley Conservation Area (Asset No. CA1) is located to the southwest of the current settlement focus of Horley, around St Bartholomew's Church, and is located partially within this study area. While a draft Character Appraisal for this Conservation Area has been undertaken by Reigate and Banstead Borough Council, it is not currently available for public consultation. Also partially located within this study area is the Ifield Village Conservation Area (Asset No. CA2),

which has been designated as it retains its historic character as a small scattered settlement, focused on an historic church and public house with large surrounding areas of open fields.

There are two Scheduled Monuments within the Intermediate Study Area. One is the medieval moated site at Ifield Court (Asset No. SM1) which includes a moat, its internal area and also a platform and shallow ditch to the south west. The whole area forms the site of the manor house of Ifield Court which was superseded by the present building to the east of the moated site, and is located in the south western part of the study area. The second Scheduled Monument consists of the medieval settlement remains 100m south east and 150m south west of Oldlands Farm, Tinsley Green (Asset No. SM2) and is located within the south eastern part of the study area. It includes the remains of part of a dispersed medieval settlement situated on the Upper Tunbridge Wells Clay to the north east of Crawley. It represents the original focus of Tinsley Green, known as Tyntesle in the medieval period, and survives in the form of earthworks and associated buried remains.

4.2.3 Gatwick 2R – Outer Study Area

Located within the wider, Outer Study Area for Gatwick 2R are a further 162 assets, consisting of 153 listed Listed Buildings (Appendix C Table C5), comprising five Grade I, four Grade II* and 144 Grade II buildings. In addition to this are two further Scheduled Monuments (Table C7), five Conservation Areas (Appendix C Table C6) and Horley Conservation Area (Asset No. CA1) and Ifield Village Conservation Area (Asset No. CA2).

Of the five Grade I Listed Buildings, four are churches with their origins in the medieval period, the earliest being the Church of St Bartholomew which dates to the 12th century (Asset No. LB129). The remaining two buildings in this category comprise a 17th century Friends' Meeting House (Asset No. LB48), and Harrow House, which also dates to the 17th century (Asset No. LB119). The four Grade II* buildings include the 19th century Providence Chapel (LB122) and a 15th or 16th century house known as The Manor House (Asset No. LB131). The 145 Grade II Listed Buildings include a wide variety of types of building, ranging from 18th century chest tombs (Asset No. LB128 and Asset No. LB153), to an artificial island created in the latter part of the 19th century (Asset No. LB65).

As stated, the Church Road, Horley Conservation Area (Asset No. CA1) and the Ifield Village Conservation Area (Asset No. CA2) extend into this study area. The five additional Conservation Areas also situated within this study area includes the Dyers Company Almshouses (Asset No. CA5), which are protected as a good example of a comprehensively planned group of residential buildings, forming an important part of Crawley's New Town history.

Two Scheduled Monuments are also located within the wider study area. The first of these is the Moated site at Ewhurst Place (Asset No. SM3), which comprises an inner and an outer moat which define a square island and a roughly L-shaped precinct area, and also contains Grade II* Listed Building Ewhurst Place (Asset No. LB36), and Grade II Listed Building Bridge over Moat at Ewhurst Place (Asset No. LB35). The second Scheduled Monument is Thunderfield Castle medieval moated site (Asset No. SM4). Only known as Thunderfield Castle since the 17th century, it is the former site of a medieval moated manor house.

4.3 Heritage Baseline - Heathrow Northwest Runway (NWR)

4.3.1 Heathrow NWR – Proposed Development Footprint Study Area

There are 21 designated assets within the footprint of the proposed Heathrow Airport NWR development comprising two Scheduled Monuments (Appendix C Table C8), two Conservation Areas (Appendix C Table C9), 17 Grade II Listed Buildings (Table C10).

Both Scheduled Monuments are located towards the south of the proposed development footprint. The easternmost of these comprises part of a causewayed enclosure north east of Mayfield Farm (Asset No. SM1). This monument includes the western part of a causewayed enclosure which survives as archaeological remains, visible as soilmarks and cropmarks on aerial photographs. The second Scheduled Monument located within the footprint is a Romano-British site located to the west of East Bedfont parish church (Asset No. SM2). No detailed information is currently readily available regarding this site, and a request has been submitted to English Heritage for the Scheduling description. The Ancient Monuments and Archaeological Areas Act 1979 requires Scheduled Monument Consent for any work that physically affects a designated monument. As such, these sites are considered highly sensitive, and legal consent would be needed for any proposed development that may affect them.

Longford Village Conservation Area (Asset No. CA1) is characterised by its linear historic core, and the developments on the island to the northeast, defined by the River Colne. Seven Listed Buildings are located within this Conservation Area. These comprise two 16th century buildings: Flats 1-3 (Yeomans) (Asset No. LB9); and the White Horse Public House (Asset No. LB10). The remaining Listed Buildings comprise; the late 17th century red brick Weekly House (Asset No. LB6), barn (Asset No. LB5) and wall (Asset No. LB7); Longford Close, a mid-18th century red brick house (Asset No. LB8); and a pair of rendered cottages built in 1739 (Asset No. LB11). Conservation Areas are defined as parts of an area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance, and are designated as such by local authorities.

Harmondsworth Village Conservation Area (Asset No. CA2) is characterised by its historic core that developed in the medieval period at the gate of the Benedictine Priory and a more recently developed outer zone. The village is surrounded by fields which provide an open setting of agricultural/rural land. Four Listed Buildings are located within this Conservation Area. Three comprise 17th or 18th century walls (Asset Nos. LB15, LB16, LB18) while the fourth comprises Harmondsworth Hall (Asset No. LB17) an early 18th century dwelling constructed in brown brick. The proposed development footprint only encompasses the southern part of Asset No. CA2, and located within the northern section are the 12th century Grade II* Listed Building of St Mary's Church, and the Scheduled Monument and Grade I Listed Building of the Great Barn at Manor Farm.

Other Listed Buildings that fall within the *Proposed Development Footprint Study Area* include: an 18th century cast iron cannon monument (Asset No. LB4) which marks the north-western end of the baseline measured by General Roy in 1784 across Hounslow Heath, from King's Arbour to Hampton Poor House, which is now taken to be the origin of the Ordnance Survey; the cast iron King's Bridge over the Duke of Northumberland's River (Asset No. LB3), which dates to 1834; the maintenance headquarters and offices built in 1950-55 by the architect Sir E Owen

Williams for the British Overseas Airways Corporation (Asset No. LB2); two 16th century cottages (Asset Nos. LB12 and LB13); the 16th century King Henry Public House and stables (Asset No. LB14).

4.3.2 Heathrow NWR – Intermediate Study Area

A further 54 heritage assets were identified within the Intermediate Study Area, comprising one Scheduled Monument (Appendix C Table C12), five Conservation Areas (Appendix C Table C13) and 48 Listed Buildings (Appendix C Table C11), of which one is Grade I Listed, three are of Grade II* status, and the remaining 44 are Grade II Listed.

The Grade I Listed Building within this study area is the early 15th century Great Barn, Harmondsworth (Asset No. LB283), which is located within the Harmondsworth Conservation Area (Asset No. CA2). The three Grade II* Listed Buildings comprise the early 18th century Dunmore House (Asset No. LB28), Lord Knyvett's Adult Education Centre (Asset No. LB44), which was constructed in *c.*1624, and the 12th century Church of St Mary, Harmondsworth (Asset No. LB280). Of the 44 Grade II Listed Buildings within this study area, those of a notably early date are the late medieval timber framed King William IV Public House (Asset No. LB287) and four buildings dating to the 16th century: Perry Green (Asset No. LB46); The Sun House (Asset No. LB272); Howcroft (Asset No. LB276); and 25 Holloway Lane (Asset No. LB281).

The Scheduled Monument located within this study area is the Schoolhouse (Lord Knyvett's) (Asset No. SM5), described as a little altered school founded by will of Lord Thomas Knyvett in 1624. The five Conservation Areas include Cranford Village (Asset No. CA6), which has been designated because of the quality of the early 18th century buildings which form the heart of the village, and Stanwell (Asset No. CA8), designated because of the number of fine examples of Georgian and early Victorian architecture surviving in the village, particularly around the central village green. The two Conservation Areas identified within the Proposed Development Footprint Study Area also extend into this study area.

4.3.3 Heathrow NWR – Outer Study Area

Located within the wider, Outer Study Area for Heathrow NWR are a further 166 assets, consisting of 160 Listed Buildings (Appendix C Table C14), comprising two Grade I, eleven Grade II* and 147 Grade II buildings, five Conservation Areas (Appendix C Table C15), and one Scheduled Monument (Appendix C Table C16).

The two Grade I Listed Buildings comprise two churches: the 14th/15th century Church of St Mary, in Stanwell (Asset No. LB208); and the Church of St Peter and St Paul, in Harlington (Asset No. LB299). The eleven Grade II* Listed Buildings include two further churches: the 13th century Church of St Dunstan (Asset No. LB296), located within the former Cranford Park Estate; and the 13th century Church of St Martin, in West Drayton (Asset No. LB343). The 16th century walls of St Martin's Churchyard are also Grade II* Listed (LB344). The remaining eight Grade II* Listed Buildings include an early 16th century gatehouse (Asset No. LB339), a 15th century timber framed house (Asset No. LB200), and King John's Palace, built *c.*1600 (Asset No. LB57). The list of 147 Grade II Listed Buildings includes two further churches: the Norman Church of St Mary (Asset No. LB197) in East Bedfont; and the 19th century Anglican Church of St Paul in Hounslow West (Asset No. LB244). The remaining buildings within this category cover a wide range of dates and types, including St George's Meadows, a 16th century timber

framed farmhouse (Asset No. LB309), and the Ticket Hall and Shops at Hounslow West Underground Station, built in 1931 (Asset No. LB247).

The five Conservation Areas include the area surrounding St Paul's Church (Asset No. CA18), designated for the architectural character of the landmark Victorian Church, and the quality of the streets surrounding it, with an adjacent open space adding to the open view and hinting at the village's agricultural origins. Two other Conservation Areas, West Drayton Green (Asset No. CA17), and Harlington Village (Asset No. CA14), do not have readily available Conservation Area appraisals, and so little is known about the reasons for their designation. The additional Scheduled Monument is 'Two concentric ring ditches showing as cropmarks at Thorney' (Asset No. SM4). A request to English Heritage revealed they hold no further information on this asset, but it is clearly visible on aerial photographs of the site.

4.4 Heritage Baseline - Heathrow Extended Northern Runway (ENR)

4.4.1 Heathrow ENR – Proposed Development Footprint Study Area

The designated assets identified within the Proposed Development Footprint Study Area for Heathrow ENR comprise seven designated assets all of which are Grade II Listed Buildings (Appendix C Table C17). These include a late 16th-early/17th century timber framed house with some 18th century remodelling known as The Hollies (Asset No. LB5), Windsor House (Asset No. LB4). An 18th century cast iron cannon monument (Asset No. LB6) marks the north-western end of the baseline measured by General Roy in 1784 across Hounslow Heath, from King's Arbour to Hampton Poor House; this baseline is taken to be the origin of the Ordnance Survey. The remainder of the assets comprise the cast iron King's Bridge over the Duke of Northumberland's River (Asset No. LB5), which dates to 1834; a City Post denoting the limit of the City of London's jurisdiction over the River Thames and the River Colne dating to 1861 (Asset No. LB3); the Milestone at Madbridge (Asset No. LB9), which is dated 1741, and the maintenance headquarters and offices built in 1950-55 by the architect Sir E Owen Williams for the British Overseas Airways Corporation (Asset No. LB1). This building is now occupied by British Airways. Grade II Listed Buildings are defined by English Heritage as buildings of national importance, and of special interest and are protected under legislation by the Planning (Listed Buildings and Conservation Areas) Act 1990.

4.4.2 Heathrow ENR – Intermediate Study Area

A further 30 heritage assets are located within the Intermediate Study Area, comprising 23 additional Listed Buildings (Appendix C Table C18), of which one is of Grade II* status (Asset No. LB44), and 22 are of Grade II status; five Conservation Areas (Appendix C Table C19), and two Scheduled Monuments (Appendix C Table C20).

The additional Conservation Areas within this study area include Longford Village (Asset No. CA1) and Colnbrook (Asset No. CA3). The Scheduled Monuments located within this study area are a Romano British site west of East Bedfont Church (Asset No. SM2) and the Schoolhouse (Lord Knyvett's) (Asset No. SM5), described as a little altered school founded by will of Lord Thomas Knyvett in 1624.

The Grade II* Listed Building is Lord Knyvett's Adult Education Centre, which was constructed in *c.*1624 (Asset No. LB44).

4.4.3 Heathrow ENR – Outer Study Area

A further 168 designated assets have been identified within the Outer Study Area for Heathrow ENR consisting of, 160 Listed Buildings (Table C21), comprising four Grade I, five Grade II* and 151 Grade II Listed Buildings, six further Conservation Areas (Appendix C Table C22), one further Scheduled Monument (Table C23) and one Registered Park and Garden (Table C24). Conservation Areas CA2, CA3 and CA4 also extend into this study area.

The four Grade I Listed Buildings comprise: the 14th/15th century Church of St Mary, in Stanwell (Asset No. LB208); the 12th century Church of St Michael in Horton (Asset No. LB237); the early 15th century Great Barn, Harmondsworth (LB283); the 12th century Church of St Peter and St Paul, in Harlington (LB299). Of the five additional Grade II* Listed Buildings include, the Churches of St Dunstan and St Mary (Asset Nos. LB296 and LB280), the Ostrich Public House (Asset No. LB69), and King John's Palace (Asset No. LB57).

The six Conservation Areas include Bedfont Green (Asset No. CA5), and Hounslow Cavalry Barracks (Asset No. CA15). The barracks buildings are formally disposed around the parade ground, such that the spatial qualities of the whole are important, as well as the individual buildings.

The additional Scheduled Monument in this study area comprises part of a causewayed enclosure, 632m north-east of Mayfield Farm (Asset No. SM1). The Registered Park and Garden comprises the Grade II Listed Ditton Park, which was mostly laid out in the 17th and 18th centuries, and is located in the hamlet of Ditton (RPG1).

4.5 Heritage Baseline Conclusions

There are no Conservation Areas or Scheduled Monuments within the Proposed Development Footprint Study Area for Gatwick 2R. Of the 22 listed buildings present six are Grade II* and the remaining 16 are Grade II. A further six Grade II listed buildings, two Conservation Areas and two Ancient Monuments are located within the Intermediate Study Area.

There are 17 Grade II listed buildings, two Conservation Areas and two Scheduled Monuments within the Proposed Development Footprint Study Area for Heathrow NWR. A further 48 listed buildings are located within the Intermediate Study Area of which one is Grade I and three are Grade II*. One Scheduled Monument and five Conservation Areas are also located within this study area.

Seven Grade II Listed Buildings lie within the Proposed Development Footprint Study Area for Heathrow ENR. A further 23 Listed Buildings are located within the Intermediate Study Area one Grade II* and 22 Grade II. Two Scheduled Monuments and five Conservation Areas are also located within the Intermediate Study Area.

5 Waste Baseline

This Section presents the baseline for the Waste sub-topic of the Place module including:

- Annual total waste tonnages from 2025 to 2050 which have been derived from a bespoke model applying waste per passenger estimates with passenger estimates; and
- Anticipated future waste management capacity locally and nationally

5.1 Background and Methodology

The waste baseline has been developed based on do-minimum options for Heathrow and Gatwick. A baseline for each airport has been prepared using publicly available waste data from the latest HAL and GAL sustainability reports, (Heathrow Airport Ltd, 2011), (Gatwick Airport Ltd, 2010 and 2012).

A bespoke model has been developed by Jacobs that applies waste per passenger estimates combined with passenger number forecasts to project annual total waste and recycling tonnages from 2025 to 2050. The model results are contained in Appendix E. The model has been limited to 2050 as beyond this period it is considered that the level of uncertainty will be too high to provide robust, meaningful data due to the complexities and wide range of variants involved in waste projections. For example, as a minimum waste outputs will be subject to changes in consumer attitudes; airline service provision (e.g. sustainable procurement); and consumer product design for re-use and durability. In addition, the Airports Commission Assessment of Need Carbon Capped and a Carbon Capped scenario were used for demand forecasts within the model and these only projects forward to 2050. Therefore, for the period 2050 to 2085, if passenger numbers remain relatively constant it could be assumed that waste generation would also remain relatively constant at the 2050 estimated levels. If passenger numbers continued to increase beyond 2050, the waste per passenger estimate for 2050 could be applied to future passenger number to provide an indication of the potential waste generation.

The following scenarios have been prepared to provide a range of estimates for each airport:

- Scenario 1 - No change in waste per passenger
- Scenario 2 - Waste prevention based on the average reduction in waste per passenger over recent years
- Scenario 3 - Waste prevention using a more conservative waste reduction assumption than that experienced over recent years.

The scenarios have been modelled using two different passenger number forecasts, namely the Assessment of Need Carbon Capped and Carbon Traded projections provided by the Airports Commission.

In addition to the waste forecasts, a number of recycling rates have been tested to provide an indication of the recycling tonnage that may be achieved.

5.2 Waste Baseline

5.2.1 Reported Waste and Recycling Data

Gatwick

Data on waste generation levels and recycling performance were sourced from recent sustainability reports published by GAL (Gatwick Airport Ltd, 2010 and 2012) and are summarised in Table 5.1.

Table 5.1 - Gatwick Airport Ltd waste generation levels and recycling performance 2008 to 2012

Year	2008	2009	2010	2011	2012
Waste produced (tonnes)	12,297	10,177	9,685	9,206	8,803
Total per passenger (kg/Pax)	0.360	0.310	0.310	0.270	0.260
% Change in kg/Pax for previous year		-16.1%	0.0%	-14.8%	-3.8%
Waste recycled or composted (%)	26.6%	39.0%	41.0%	54.6%	40.0%
Sources: Our Decades of Change reports 2010 and 2012					

Gatwick's Our Decades of Change Report 2012 (Gatwick Airport Ltd, 2012) includes a commitment to recycle 70% of waste by 2020.

Heathrow

Data on waste generation levels and recycling performance were sourced from recent sustainability reports published by HAL (Heathrow Airport Ltd, 2011) and are summarised in Table 5.2.

Table 5.2 - Heathrow Airport Ltd waste generation levels and recycling performance 2008 to 2013

Year	2008	2009	2010	2011	2012	2013
Waste produced (tonnes)	29,502	26,489	24,906	26,220	26,441	26,693
Total per passenger (kg/Pax)	0.441	0.402	0.379	0.377	0.378	0.369
% Change in kg/Pax for previous year		-9.7%	-6.0%	-0.3%	0.1%	-2.5%
Waste recycled or composted (%) including Aircraft Cabin Waste	44.3%	40.6%	38.0%	29.2%	31.0%	41.7%
Sources: Heathrow Sustainability Performance Summaries 2010 to 2013						

Heathrow Sustainability Performance Summary 2013, states '*The waste data included in our report relates to waste generated by Heathrow Airport Ltd's activities and waste from tenants, retailers, contractors and others that use the Heathrow waste collection service. Our research suggests this equates to approximately 1/4 of the total waste generated by airport activities. The remaining waste is either generated off-airport, is construction/demolition waste which is*

reported separately, or it is otherwise managed outside of the Heathrow contract', (Heathrow Airport Ltd, 2013).

In addition, the 2013 Sustainability Performance Summary highlights a commitment to recycle 70% of waste by 2020.

5.2.2 Waste Growth and Recycling Scenarios

To illustrate the potential range in future waste generation levels a series of waste growth scenarios have been developed. Along with the growth scenarios, different recycling performances were modelled to show the tonnage of material that could be recycled in the future.

Table 5.3 summarises the growth scenarios model for each airport and reflects the different starting points and the different waste generation levels.

Table 5.3 - Waste Growth Scenarios

Waste Growth Scenario	Gatwick	Heathrow
1: No change in waste/ passenger from most recently reported data	No growth in waste/passenger, with the figure remaining at the 2012 level of 0.260 kg/passenger.	No growth in waste/passenger, with the figure remaining at the 2013 level of 0.369 kg/passenger.
2: Waste prevention based on the average reduction in waste/ passenger over recent years	The average growth rate between 2008 and 2012 of minus 8.7% per annum continues until 2020, then 0% growth	The average growth rate between 2008 and 2013 of minus 3.7% per annum continues until 2020, then 0% growth
3: Waste prevention using a more conservative waste reduction assumption than that experienced over recent years.	A growth rate of minus 2% per annum until 2020, then 0% growth	A growth rate of minus 2% per annum until 2020, then 0% growth

The resultant waste/passenger factors were then applied to the passenger number forecasts in the do minimum Assessment of Need Carbon Capped and Carbon traded projections provided by the Airports Commission.

In addition to modelling waste growth scenarios, a range of recycling performances has been modelled to provide an indication of the recycling tonnage that may be achieved. The recycling scenarios modelled are summarised in Table 5.4.

Table 5.4 - Recycling Scenarios

Recycling Scenario	Gatwick	Heathrow
A: No change in current recycling rate	Recycling rate of 40%	Recycling rate of 41.7%
B: Recycling target of 70% in 2020 achieved and maintained (both airport's target)	A phased increase in recycling rate from 2012 to achieve 70% by 2020	A phased increase in recycling rate from 2013 to achieve 70% by 2020
C: Recycling target of 55% in 2020 achieved and maintained (mid-range estimate between current performance and both airport's target)	A phased increase in recycling rate from 2012 to achieve 55% by 2020	A phased increase in recycling rate from 2013 to achieve 55% by 2020

5.2.3 Waste Forecasts

Gatwick Waste Forecasts

Waste forecasts for Gatwick for the period 2015 to 2050 are summarised in Appendix E. The forecasts show that by 2050 the annual waste generated at Gatwick, for the three waste growth scenarios, would be in the range 6,400 to 12,300 tonnes. The range for Gatwick is quite wide due the assumption for waste prevention used in Scenario 2 which assumes a high level of waste prevention up to 2020.

In terms of recycling tonnages, all scenarios show an increasing trend in line with increasing passenger numbers. Table 5.5 shows the recycled tonnages by growth and recycling scenario in 2050.

Table 5.5 - Summary of annual recycling tonnages by 2050

High Level Traffic Forecasts - Capacity constrained, carbon traded			
Recycling Scenario	**Growth Scenario**		
	Scenario 1	**Scenario 2**	**Scenario 3**
Scenario A - No change in recycling rate (40%)	4,920	2,600	4,200
Scenario B - Recycling target of 70% in 2020 achieved and maintained	8,610	4,550	7,350
Scenarios C - Recycling target of 55% in 2020 achieved and maintained	6,765	3,575	5,775
High Level Traffic Forecasts - Capacity constrained, carbon capped			
Recycling Scenario	**Growth Scenario**		
	Scenario 1	**Scenario 2**	**Scenario 3**
Scenario A - No change in recycling rate (40%)	4,840	2,560	4,120
Scenario B - Recycling target of 70% in 2020 achieved and maintained	8,470	4,480	7,210
Scenarios C - Recycling target of 55% in 2020 achieved and maintained	6,655	3,520	5,665

Heathrow Waste Forecasts

Waste forecasts for Heathrow for the period 2015 to 2050 are summarised in Appendix E. The forecasts show that by 2050 total annual waste generated at Heathrow, for the three waste growth scenarios, would be in the range 26,600 to 35,000 tonnes.

In terms of recycling tonnages, all scenarios show an increasing upward trend in line with increasing passenger numbers. Table 5.6 shows the recycled tonnages by growth and recycling scenario in 2050.

Table 5.6 - Summary of annual recycling tonnages by 2050

High Level Traffic Forecasts - Capacity constrained, carbon traded			
Recycling Scenario (tonnes)	**Growth Scenario**		
	Scenario 1	**Scenario 2**	**Scenario 3**

Scenario A - No change in recycling rate (41.7%)	14,595	11,217	12,677
Scenario B - Recycling target of 70% in 2020 achieved and maintained	24,500	18,830	21,280
Scenarios C - Recycling target of 55% in 2020 achieved and maintained	19,250	14,795	16,720
High Level Traffic Forecasts - Capacity constrained, carbon capped			
Recycling Scenario (tonnes)	**Growth Scenario**		
	Scenario 1	**Scenario 2**	**Scenario 3**
Scenario A - No change in recycling rate (41.7%)	14,387	11,092	12,510
Scenario B - Recycling target of 70% in 2020 achieved and maintained	24,150	18,620	21,000
Scenarios C - Recycling target of 55% in 2020 achieved and maintained	18,975	14,630	16,500

5.2.4 Regional Context

To place these waste estimates into a regional context, the inputs into incineration and treatment facilities and landfill sites in London and the South East of England for 2012 are summarised in Table 5.7.

Table 5.7 - Regional Waste Facilities Inputs 2012 ('000 tonnes) (Environment Agency, 2012)

	South East of England	London	Total
Landfill inputs	8,315	1,358	9,673
Treatment inputs (excluding metal recycling sector)	6,069	4,192	10,261
Incineration inputs	2,074	1,794	3,868
Total	16,458	7,344	23,802

The data shows that just under 24 million tonnes of waste was received at incineration and treatment facilities and landfill sites in London and the South East of England, highlighting that the magnitude of the tonnages referenced in this report from both Heathrow and Gatwick airport operations are comparatively very small.

The destinations for both airports' waste are not known however, they are expected to use a number of facilities within existing capacity in the London area and South East. Principally, the incineration facility at Lakeside is understood to provide a strategic treatment point for airport wastes (Grundon, 2014).

The following breakdown of existing and remaining capacity at incineration and landfill facilities illustrate that the magnitude of operational wastes referenced in this report remain small, however, in the absence of future landfill capacity becoming available, available landfill capacity for operational wastes would disappear in the near future.

In terms of remaining landfill capacity, the Environment Agency, Waste Management 2012 – England and Wales data (Environment Agency, 2012), provides an indication of the remaining capacity at sites within the region:

- For London, the remaining capacity at permitted non-hazardous waste landfill sites at the end of 2012 was 5,878,000 cubic metres which equates to 3.8 years remaining life based on the 2012 input rates; and
- For the South East of England, the remaining capacity at permitted non-hazardous waste landfill sites at the end of 2012 was 61,612,000 cubic metres which equates to 6.9 years remaining life based on the 2012 input rates.

These figures do not take account of future landfill developments.

In terms of energy from waste capacity for municipal and/or industrial & commercial waste in the region, there are eleven facilities as summarised in Table 5.8. Whilst the overall permitted annual capacity is over 3.6 million tonnes and will be available longer term, a large proportion of the capacity is locked into existing waste treatment contracts with for example, Local Authorities for up to 25 years. The exact extent of these contracts is unknown however these will account for the majority of the existing treatment capacity below.

Table 5.8 - Regional Energy from Waste Facilities 2012 (Environment Agency, 2012)

Operator Name	Installation Name	Planning Region	Planning Sub-Region	Permitted Capacity (tonnage)
South East London Combined Heat and Power Limited	Lewisham	London	South East London	488,000
London Waste Ltd	Edmonton	London	North London	675,000
Riverside Resource Recovery Limited	Belvedere	London	South East London	700,000
Veolia ES Hampshire Ltd	Marchwood, Southampton	South East	Hampshire	210,000
Veolia ES Hampshire Ltd	Integra South East Energy Recovery Facility, Portsmouth	South East	Hampshire	210,000
Veolia ES Hampshire Ltd	Integra North East Energy Recovery Facility, Basingstoke	South East	Hampshire	102,000
Kent Enviropower Ltd	Waste Recycling Facility, Allington Quarry, Maidstone	South East	Kent	500,000
Lakeside Energy From Waste Limited	Slough	South East	Berkshire	400,000
Waste Gas Technology UK Ltd	Isle of Wight Energy from Waste	South East	Isle of Wight	38,000
Veolia ES South Downs Ltd	Newhaven	South East	East Sussex	242,000
Enviropower Limited	Lancing Combustion Plant	South East	West Sussex	60,350

5.2.5 Future Regional Context

The forecasts provided above extend up to the year 2050; however this period goes beyond the planning horizon for most waste management infrastructure. This is reflected in the recent capacity studies considered in this section, which generally consider planned capacity up to the period 2020-2025. A lot of the existing waste infrastructure included in current industry forecasts will have reached the end of its operational life and will require replacement. Therefore the availability of waste treatment capacity to manage the wastes generated from future airport developments is unknown at present.

Future infrastructure development will be driven by policy/legislative requirements. The European Commission is currently reviewing EU Waste Policy and Legislation (European Commission, 2014) including a scheduled review of waste management targets within the Waste Framework, Landfill and Packaging & Packaging Waste Directives. The revisions to the Landfill Directive and Producer Responsibility legislation being considered by the European Commission may see waste and recycling targets for 2030 being set at ambitious levels (70% municipal waste recycled; 80% packaging waste recycled) ((European Commission, 2014). If these targets are adopted then this will place a high market demand for the development of additional recycling capacity.

The following qualitative commentary provides an indicative picture of the current and planned treatment infrastructure, and any identified infrastructure gaps, using the following references:

- Defra – 'Forecasting 2020 Waste Arisings and Treatment Capacities' (Defra, October 2013)
- Imperial College London – 'Waste Infrastructure Requirements for England' (Imperial College London, March 2014)
- SITA – 'Mind the Gap – UK residual waste infrastructure capacity requirements, 2015-2025' (SITA, 2014)
- Eunomia – 'Residual Waste Infrastructure Review' (Eunomia, May 2014)
- Ricardo-AEA – 'Commercial and Industrial Waste in the UK and Republic of Ireland' (Ricardo-AEA, October 2013)

The reports above draw upon existing waste data tables produced annually by the Environment Agency (Environment Agency, 2014) and published via the UK Government's national public register for environmental information[1].

5.2.6 Current Regional Capacity (London & South-East)

The Imperial College report presents the available infrastructure capacity based on existing permitted infrastructure as of March 2010. The report separates the waste arisings data between Local Authority Collected Municipal waste (LACMW) and Local Authority Commercial & Industrial waste (LAC&I), however for the purposes of treatment capacity the two streams have been aggregated by region to get an overall total treatment capacity by recovery operation.

In London and the South-East of England the permitted capacity (thousand tonnes) is presented in Table 5.9.

[1] –https://www.gov.uk/access-the-public-register-for-environmental-information.

Table 5.9 - Regional Permitted Capacity ('000 tonnes) (Imperial College London, 2014)

Region	Waste Electrical & Electronic Equipment (WEEE) Treatment	Materials Recycling Facility	Anaerobic Digestion	Mechanical Biological Treatment	Incineration	Composting
London	459	1,822	0	562	1,088	353
South-East	247	2,449	120	200	1,468	761

This regional capacity can then be compared against the regional treatment requirements for the total local authority collected waste tonnage (the combined total of LACMW and LAC&I) to provide an indicative regional view of the treatment surplus or deficit around the various regions of the UK. Whilst it is not the case that all waste generated within a region will be treated at a recycling facility in that same region, it is perhaps a more realistic way to present the UK treatment capacity rather than considering the aggregated national picture. For example, it is unlikely to be the case that waste will travel the full length of the country prior to treatment.

The regional capacity requirements for London and the South-East are shown in Table 5.10. However, it should be noted that the capacities referred to below are in relation to those treatment facilities that operate under the Environmental Permitting Regulations (England & Wales) 2007. This legislation combines two historical waste licensing regimes (Waste Management Licenses and PPC Permits were previously subject to two different set of regulations) and generally applies to the larger tonnage, 'higher risk' facilities. It should be noted that the tonnages below do not cover the 'lower risk' waste treatment activities that are exempt from full licensing requirements, many of which relate to recycling activities. However there is no reported data on the capacity and throughput of exempt facilities. Therefore the actual capacity gap will not be as large as indicated below but there is no reported data to quantify the gap.

Table 5.10: Regional Capacity Requirement ('000 tonnes) (Imperial College London, 2014)

		London	South-East
Recycling	LACW	3578	3856
	Capacity	1822	2449
	Capacity requirement	**1756**	**1407**
Incineration	LACW	632	697
	Capacity	1088	1468
	Capacity requirement	**-456**	**-771**
Composting/Anaerobic Digestion	LACW	1329	1472
	Capacity	353	881
	Capacity requirement	**976**	**591**
Other	LACW	986	1015
	Capacity	1021	447
	Capacity requirement	**-35**	**568**

In addition to separating the data into regional analysis, Imperial College also highlighted the importance of breaking down the regional capacity need into the various waste treatment technologies.

It can be seen from the above breakdown of waste treatment capacity operating under an Environmental Permit that both London and the South-East of England require an injection of recycling capacity but appear to have a surplus of waste incineration infrastructure. The availability of incineration capacity is significantly influenced by the Lakeside EfW facility located near Colnbrook. This facility provides 400,000 tonnes capacity for incineration in the South East and is an important component of the overall available provision in the South East. Additionally the facility is co-located with a high temperature incinerator capable of processing difficult wastes (for example clinical wastes) which is an important regional facility for these waste types (Grundon, 2014).

5.2.7 Planned UK Capacity

The Defra waste forecast is focussed on assessing the likelihood of the UK being able to meet its target under the EU Landfill Directive of reducing the amount of biodegradable municipal waste (BMW) that is sent to landfill in 2020 by 35% compared to a 1995 baseline. In order for England to achieve this target there must be a bare tonnage reduction of around 10.2 million tonnes of BMW sent to landfill. The report provides a summary view of the various stages of planning for a number of waste facilities and assesses the likelihood of these facilities coming on line by 2020.

Based upon their assessment, Defra propose that there is 95% likelihood that there will be sufficient surplus capacity to achieve the 2020 BMW reduction target. This analysis is the closest we can obtain to serving as an indicator of likely capacity in 2025.

5.2.8 Residual Waste Treatment

The Imperial College report and the Defra report both recognise that BMW is generally mixed into the residual waste stream as opposed to the ‘clean’ dry mixed recyclables, therefore the importance of analysing regional residual waste treatment technologies and capacities is equally significant as looking at the overall picture of treatment capacity.

While there is a lack of detailed regional information on residual waste treatment projections for London and the South-East of England, both the SITA UK report (SITA, 2014) and the Eunomia report (Eunomia, 2011) referred to above attempt to provide an understanding of the current UK residual waste capacity and future capacity.

Both reports estimate an increase in operational and planned residual treatment capacity up to 2025. Eunomia predict an estimated 17m tonnes of operational capacity by 2018, an increase of around 10m tonnes over eight years and this figure would appear to be supported by the trends identified by SITA UK who predict capacities of 15m tonnes in 2015, 20m tonnes in 2020 and 25m tonnes in 2025.

However, both sets of analysis still point towards a residual waste treatment capacity deficit by 2025 of around 5.7m tonnes.

5.3 Waste Baseline Conclusions

Modelling has demonstrated that airport waste arisings are declining due to sustainable waste management practices and waste minimisation. They will constitute only a small proportion of total waste arisings in the South East of England. However a number of the industry reports draw attention to the fact that most biodegradable waste will appear in the residual waste stream, and that there should be specific consideration of residual waste treatment capacity in the UK. Both SITA and Eunomia highlight the likelihood that by 2025 there will be a capacity deficit of residual waste treatment technologies, and this should be recognised when considering long-term airport capacity increase.

Glossary

This Glossary provides a definition for the key technical terms used in each of the appraisal reports.

Land Take	
Term	**Definition**
Core Strategy	A core strategy document is the key compulsory local development document specified in UK planning law. Every other local development document is built on the principles it sets out, regarding the development and use of land in a local planning authority's area.
Green Belt	Green belt land s designated by local authorities with the main purpose to protect the land around larger urban centres from urban sprawl.
Heathrow Opportunity Area	An area identified in the current London Plan (2011) capable of accommodating a proportion of 12,000 new jobs and over 9,000 new homes.
Local Plan	The plan for the future development of the local area, drawn up by the local planning authority in consultation with the community. In law this is described as the development plan documents adopted under the Planning and Compulsory Purchase Act 2004. Current core strategies or other planning policies, which under the regulations would be considered to be development plan documents, form part of the Local Plan. The term includes old policies which have been saved under the 2004 Act.
Local Planning Authority (LPA)	A local planning authority (LPA) is the local authority or council that is empowered by law to exercise statutory town planning functions for a particular area of the United Kingdom.
National Planning Policy Framework (NPPF)	The National Planning Policy Framework sets out government's planning policies for England and how these are expected to be applied

Landscape, townscape and waterscape	
Term	**Definition**
Ancient Woodland	Land that has had continuous woodland cover since at least 1600AD.
Area of Great Landscape Value (AGLV)	An area perceived to have particular scenic value and as such is locally designated. New terminology is 'locally designated landscape'.
Area of Outstanding Natural Beauty (AONB)	National landscape designation for areas with high scenic quality, which has statutory protection to conserve and enhance the natural beauty of the landscape.
Dark skies	Skies which are the least influenced by light pollution from street lights and other sources of lighting.
Effect (negligible / minor / moderate / major)	The level to which a proposed scheme changes landscape quality or visual amenity, taking into account the value and sensitivity of landscape and visual receptors.
Elements (of a landscape / townscape)	Individual parts which make up the landscape, such as, trees, hedges and buildings.
Hydrological features	Streams, rivers, lakes, ponds, ditches.
Hydrology	Overarching topic description for looking at the nature of streams, rivers, lakes, ponds, ditches.
Landscape and Visual Impact Assessment (LVIA)	The study of how a proposed scheme is likely to change landscape quality and visual amenity.
Landscape character	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse
Landscape character areas	Single unique areas that are the discrete geographical areas of a particular landscape type
Landscape character assessment	The process of identifying and describing variation in the character of the landscape
Landscape features	Individual parts which make up the landscape, such as, trees, hedges and buildings.
Quality (condition) (of a landscape / townscape)	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Sensitivity (low / moderate / high)	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value related to that receptor.
Significant	'Large' or 'moderate' significance of effect scores.

Landscape, townscape and waterscape	
Term	**Definition**
Topography	The shape of the landscape and whether it is made up of hills, valleys, escarpments.
Townscape	Built up areas such as towns and cities comprising of housing, offices, retail.
Townscape character	The character and composition of the built environment including the buildings and the relationships between them, the different types of urban open space, including green spaces, and the relationship between buildings and open space
Townscape character assessment	The study of the character and composition of the built environment.
Value (of a landscape / townscape)	The relative value that is attached to different landscapes/ townscapes by society. A landscape/ townscape may be valued by different stakeholders for a whole variety of reasons.
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings
Waterscape	Landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other.
Zone of Theoretical Visibility (ZTV)	A map, usually digitally produced, showing areas of land within which a development is theoretically visible

Heritage	
Term	**Definition**
Almshouse	A house devoted to the shelter of the poor and endowed by a benefactor for this use.
Causewayed Enclosure	A Neolithic (4000 – 2200 BC) monument comprising an irregularly circular enclosing ditch, interrupted by frequent causeways, and often accompanied by an internal bank, also causewayed.
Chest Tomb	A tomb designed in the form of a cist or stone box placed over a burial. Its outward form often reproduces the features of the classical sarcophagus or medieval effigy base.
Crop / Soil Mark	Crop marks are traces of buried archaeological remains, caused by the different rates of growth and ripening of crops where they are affected by changes in soil density or the presence of concentrations of stone. Soil marks are created when ploughing reveals patterns of differently coloured or stonier soil. Both types are usually detected by aerial photography.
Crown Post Barn	A barn with timber roof construction including crown post trusses, commonly dated to between the 13th and 14th centuries AD.
Designated Heritage Assets	Assets protected by statutory designation such as Scheduled Monuments, Listed Buildings, Conservation Areas.
Hall House	A house consisting of a public hall with private living accommodation attached. Built from the medieval period onwards.
Listed Building	A listed building, in the United Kingdom, is a building that has been placed on the Statutory List of Buildings of Special Architectural or Historic Interest.
Manor House	The principal house of a manor or village.
Medieval Period	Historical period spanning AD 1066 - 1540
Moated Site	A house, garden or other feature surrounded by a wide ditch, usually filled with water. These types of features are usually moated for status rather than defensive reasons.
Registered Parks and Gardens	A site included on the Register of Historic Parks and Gardens in England. Most sites registered are, or were, the grounds of private houses. The Register, however, encompasses designed landscapes of many types including public parks, town squares and cemeteries.
Scheduled Monument	a scheduled monument is a 'nationally important' archaeological site or historic building, given protection against unauthorised change.
Timber Framed Building	A building constructed with a basic timber framework; between the members are panels which can be infilled with timber, wattle and daub, plaster, brick or other materials.

Waste	
Term	**Definition**
Anaerobic Digestion (AD) plant	A process where biodegradable material is placed in an enclosed vessel and broken down in controlled conditions in the absence of oxygen. Outputs are typically a digestate and biogas
Energy from Waste (EfW) plant	Processing facilities, primarily incineration, whereby energy may be recovered from waste. The resultant energy can be used to create power, heat or combined heat and power.
Energy recovery	Recovery of useful energy in the form of heat and/or power from burning waste or other combustible materials. Generally applied to incineration, but can also include the combustion of landfill gas and gas produced during anaerobic digestion.
Feedstock (of waste)	Supply of suitable waste material for a waste facility
Hazardous waste	Waste (or the substances it contains) that is considered harmful to humans or the environment. Examples of hazardous waste include solvents, asbestos
Historic landfills	Landfill sites that are no longer accepting waste
Materials Management Plan (MMP)	Describes the quantities of different material which will be generated on site, methods of management and potential end use of the material
Materials Recycling Facility (MRF)	A facility for the sorting of mixed recyclable materials into separate material streams
Nitrate Vulnerable Zone (NVZ)	A NVZ is designated where land drains and contributes to the nitrate found in polluted waters
Organic waste	Waste derived from animal or plant matter
Residual waste	Waste that is not separated out for recycling or composting or sent for reprocessing.
Site Waste Management Plan (SWMP)	Sets out how different waste generated through construction activity will be effectively managed at all stages of a project - from design through to completion
Source Protection Zone (SPZ)	Show the risk of contamination from any activities that might cause groundwater pollution in the area
Waste arisings	The amount of waste generated either historically, now or projected in the future
Waste hierarchy	The preferred order in which waste should be managed with prevention the most preferable, followed by reuse and recycling and disposal with no energy recovery the least preferable option for managing waste
Waste management permit	Required for the operation of waste management facilities/activities as set out in The Environmental Permitting (England and Wales) Regulations 2010 as amended.
Waste treatment facilities	Involves the physical, chemical or biological processing of waste to reduce the volume or harmfulness of the waste.

References

Buckinghamshire County Council and South Bucks District Council, (2011). *South Bucks District Landscape Character Assessment.*

Crawley Borough Council, (2008). *Local Development Framework Core Strategy* http://www.crawley.gov.uk/pw/web/int136669 *[Accessed 08/10/2014]*

Crawley Borough Council, (2009). *Crawley Baseline Character Assessment.*

Crawley Borough Council, (2012). *Crawley Borough Council Landscape Character Assessment.*

Crawley Borough Council, (2014). *'Draft Submission Local Plan'* http://www.crawley.gov.uk/pw/web/PUB228628 *[Accessed 08/10/2014].*

Department for Environment, Food and Rural Affairs (Defra), (2013). *Forecasting 2020 Waste Arisings and Treatment Capacities*, October 2013.

Department for Communities and Local Government, (2012). National Planning Policy Framework
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf *[Accessed 08/10/2014].*

Environment Agency, (2012). *Summary report on waste management data for 2012*.

Environment Agency, (2014). *Access the Public Register For Environmental Information*, https://www.gov.uk/access-the-public-register-for-environmental-information [Accessed 12/10/2014].

ERCD (2014a) *Draft ERCD Report 1402 Noise Exposure Contours for Gatwick Airport 2013*.

ERCD, (2014b) *Draft ERCD Report 1401 Noise Exposure Contours for Heathrow Airport 2013*.

Eunomia, (2011). *Residual Waste Infrastructure Report – High Level Analysis*
http://www.eunomia.co.uk/Eunomia_Residual_Waste_Infrastructure_Review_High-level_Version.pdf

European Commission, (2014). *Review of Waste Policy and Legislation*
http://ec.europa.eu/smart-regulation/impact/planned_ia/docs/2014_env_005_waste_review_en.pdf [Accessed 12/10/2014].

Gatwick Airport Ltd, (2010 and 2012). *Our Decades of Change reports.*

Grundon, (2014). *Response to the Delivery Discussion Paper*.

Heathrow Airport Ltd, (2011). *Towards a Sustainable Heathrow*.

Heathrow Airport Ltd, (2013). *Responsible Heathrow – Sustainability Performance Summary*.

Highways Agency et al (2007) Design Manual for Roads and Bridges Volume 11, Section 3, Part 2 (HA208/07) Cultural Heritage. Highways Agency, Scottish Executive Development Department, The National Assembly for Wales and The Department of Regional Development Northern Ireland.

Hillingdon Borough Council, (2012). *Local Plan Part 1 – Strategic Policies* http://www.hillingdon.gov.uk/article/23501/Hillingdon-Local-Plan---Adoption-of-Part-1---November-2012 [Accessed 08/10/2014].
Horsham District Council, (2003). *Horsham District Landscape Character Assessment.*

Horsham District Council, (2007). *General Development Control Policies* http://www.horsham.gov.uk/__data/assets/pdf_file/0003/3729/DCPolicies_adopt07.pdf [Accessed 08/10/2014].

Horsham District Council, (2014). *Horsham District Planning Framework* http://www.horsham.gov.uk/planningpolicy/planning-policy/horsham-district-planning-framework [Accessed 08/10/2014].

Hounslow Borough Council, (2014). *Proposed Submission Version Local Plan* http://www.hounslow.gov.uk/local_plan_proposed_submission_draft_consultation_document_-_volume_1_part_1.pdf [Accessed 08/10/2014].

Imperial College London, (2014). *Waste Infrastructure Requirements for England, March 2014*.

Jacobs (2014a) Module 10: Place Assessment on behalf of the Airports Commission, Jacobs

Jacobs (2014b) Module 7: Biodiversity Assessment on behalf of the Airports Commission, Jacobs

Jacobs (2014c) Heathrow Airport Third Runway, Airports Commission, Phase 2 – Surface Access Appraisal Report, Jacobs

Jacobs (2014d) Heathrow Airport (Heathrow Hub Option), Airports Commission, Phase 2 – Surface Access Appraisal Report, Jacobs

Jacobs (2014e) Gatwick Airport Second Runway, Airports Commission, Phase 2 – Surface Access Appraisal Report, Jacobs

Jacobs, (2014f). *Place Baseline Waste Forecast Model,Jacobs*

Landscape Institute and Institute of Environmental Management and Assessment, (2013). *Guidelines for Landscape and Visual Impact Assessment (GLVIA3) (3rd Edition):* Routledge.

London Borough of Hillingdon, (2012). *Hillingdon Landscape Character Assessment.*

London Borough of Hounslow, (2014). *Urban Context and Character Study.*

Mid Sussex District Council, (2005). *A Landscape Character Assessment for Mid Sussex.*

Mole Valley District Council, (2009). *Adopted Core Strategy* http://molevalley-consult.limehouse.co.uk/portal/cs/cs_-_adopted_oct_2009/core_strategy_-_adopted_october_2009_1?pointId=906692 [Accessed 08/10/2014].

Mole Valley District Council, (2013). *Mole Valley Local Plan Landscape SPD.*

Natural England, (2012). *National Character Area Profile 115: Thames Valley, http://publications.naturalengland.org.uk/publication/3865943?category=587130 [Accessed July 2014].*

Natural England, (2013a). *National Character Area Profile 111: Northern Thames Basin,* http://publications.naturalengland.org.uk/publication/4721112340496384?category=587130 *[Accessed July2014].*

Natural England, (2013b). *National Character Area Profile 121: Low Weald* http://publications.naturalengland.org.uk/publication/12332031?category=587130 [Accessed July 2014].

Natural England, (2013c). *National Character Area Profile 122: High Weald* http://publications.naturalengland.org.uk/publication/4706903212949504?category=587130 [Accessed July 2014].

Reigate and Banstead Borough Council, (2008). *Borough Wide Landscape and Townscape Character Assessment.*

Reigate and Banstead District Council, (2014). *Local Plan: Core Strategy* http://www.reigate-banstead.gov.uk/Images/Core%20Strategy%20July2014%20(corrected%20p54)_tcm9-56174.pdf [Accessed 08/10/2014].

Ricardo AEA, (2013). *Commercial and Industrial Waste in the UK and Republic of Ireland, CIWM Report.*

Royal Borough of Windsor and Maidenhead, (2004). *Landscape Character Assessment for the Royal Borough of Windsor and Maidenhead.*

Sita, (2014). *Mind the Gap, UK residual waste infrastructure capacity requirements 2015-2025*

Slough Borough Council, (2008). *Adopted Core Strategy* http://www.slough.gov.uk/downloads/Adopted_Core_Strategy_16-12-08.pdf [Accessed 08/10/2014].

Spelthorne Borough Council, (2009). *Adopted Core Strategy* http://www.spelthorne.gov.uk/CHttpHandler.ashx?id=1436&p=0 [Accessed 08/10/2014].

Surrey County Council, (1997). *The Future of Surrey's Landscape and Woodlands.*

Surrey County Council, (2009). *Surrey Waste Plan* http://www.surreycc.gov.uk/environment-housing-and-planning/minerals-and-waste-policies-and-plans/surrey-minerals-plan-core-strategy-development-plan-document/adopted-core-strategy-development-plan-document [Accessed 08/10/2014].

Surrey County Council, (2011). *Surrey Minerals Plan: Core Strategy* http://www.surreycc.gov.uk/environment-housing-and-planning/minerals-and-waste-policies-and-plans/surrey-minerals-plan-core-strategy-development-plan-document/adopted-core-strategy-development-plan-document [Accessed 08/10/2014].West London Waste, (2009). *West London Waste Strategy* http://westlondonwaste.gov.uk/wp-content/uploads/West-London-Waste-Strategy-update-2009.pdf [Accessed 08/10/2014].

West Sussex County Council, (2003). *Adopted Minerals Core Strategy* http://www.westsussex.gov.uk/your_council/strategies_policies_and_publi/policies/minerals_and_waste_policy/existing_local_plans.aspx [Accessed 08/10/2014].

West Sussex County Council, (2007). *Landscape Character Assessment of West Sussex.*

West Sussex County Council, (2014a). *Waste Local Plan* http://www.westsussex.gov.uk/your_council/strategies_policies_and_publi/policies/minerals_and_waste_policy/waste_local_plan.aspx [Accessed 08/10/2014].

West Sussex County Council, (2014b). *Adopted Minerals Core Strategy* http://www.westsussex.gov.uk/your_council/strategies_policies_and_publi/policies/minerals_and_waste_policy/existing_local_plans.aspx [Accessed 08/10/2014].

Appendix A: Relevant Baseline Planning Policies

Table A1 - Gatwick Baseline (Do Minimum Base Case Without Airport Expansion) for the Short and Medium Term

Authority	Key Land Constraints in Local Authority Area that Could Impact on Future Growth Patterns and Land Take	Short and Medium Term Growth Patterns and Land Take Close to Proposal Area
Crawley Borough Council	**Currently the Gatwick boundary is within the Borough of Crawley** **Core Strategy October 2008**: Strategic Gap between Gatwick and Crawley (Policy C2) Gatwick Safeguarded Land (G2) **Draft Submission Local Plan 2015 -2030** additional constraints Gatwick Safeguarding Area (Policy GAT2) Maps can be viewed at http://www.crawley.gov.uk/pw/Planning_and_Development/Planning_Policy/index.htm	Housing allocations in the adopted Core Strategy are mostly confined to Crawley Town Centre. The main employment area in the Borough is to the north of the built up area of Crawley and South of Gatwick (beyond the Strategic Gap in the Core Strategy). The Core Strategy allocates two Employment Opportunity Areas in a small area just between the north of the main employment area and the south of the Strategic Gap (see adopted Core Strategy proposal map below. The Draft Submission Local Plan 2015 – 2030 allocates the majority of its housing requirements (some 3,800 dwellings) in the town centre and to a larger area to the north- east of the Borough, just below the strategic gap between Crawley and Gatwick. (Please note that the Draft Submission Local Plan has not yet been approved by Full Council for submission).
Horsham District Council	**Adopted Core Strategy 2007 General Development Control Policies** High Weald and Sussex Downs AONB (Policy DC 4) **Horsham District Planning Framework – Proposed Submission May 2014** No constraints identified Maps can be viewed at: http://horsham.limehouse.co.uk/portal/planning/hdpf_1/hdpf_prop_sub?tab=files	Horsham District adjoins Crawley Borough to the west. Gatwick is to the north east of the district. Horsham's adopted Core Strategy allocates 2,500 dwellings and employment land to the west of Crawley. The emerging Planning Framework provides for some 13,000 new dwellings by 2031. The emerging Planning Framework makes key mixed use allocations to the north of Horsham Town and land West of Southwater.

Authority	Key Land Constraints in Local Authority Area that Could Impact on Future Growth Patterns and Land Take	Short and Medium Term Growth Patterns and Land Take Close to Proposal Area
Mole Valley District Council	**Adopted Core Strategy 2009** Majority of the district is within the Metropolitan Green Belt. Maps can be viewed at: http://www.molevalley.gov.uk/index.cfm?articleid=9178	Mole Valley District adjoins Crawley and Gatwick on the north western edge. The adopted Core Strategy allocates some 3,760 new dwellings in the District until 2026. The Council is currently consulting on a Housing and Traveller Sites Plan. Development is being steered towards the built up areas of Leatherhead, Dorking (including North Holmwood), Ashstead, Bookham and Fetcham which are some distance from Gatwick. There is also some infill / redevelopment proposed for the District's towns. Charlwood and Hookwood are close to Gatwick but levels of development are unlikely to be substantial.
Reigate and Banstead District Council	**Reigate and Banstead Adopted Core Strategy July 2014** Majority of District is within the Metropolitan Green Belt (Policy CS3) Area of Outstanding Natural Beauty through the middle of the District (Policy CS2) Maps can be viewed at: https://www.reigate-banstead.gov.uk/planning/planning_policies/local_development_framework/coreexamin/index.asp	The Pre-adoptive Core Strategy splits the District into three policy areas (north to south). Area 3 to the south is closest to Gatwick with mixed use developments proposed within and on the edge of Horley. This includes 4,210 new dwellings and 24,000sq m of employment by 2027.

Table A2 - Minerals and Waste Plans

Authority	Allocations within Vicinity of Gatwick
West Sussex Waste Plan 2014 Maps can be viewed at: http://www.westsussex.gov.uk/your_council/strategies_policies_and_publi/policies/minerals_and_waste_policy/waste_local_plan.aspx	No allocations identified within Gatwick area.
West Sussex Minerals Plan 2003 Maps can be viewed at: http://www.westsussex.gov.uk/your_council/plans_performance_and_policie/policies/minerals_and_waste_policy/minerals_local_plan.aspx	No allocations identified within Gatwick area
Surrey County Council Adopted Minerals Core Strategy 2011 Maps can be found at: http://www.surreycc.gov.uk/environment-housing-and-planning/minerals-and-waste-policies-and-plans/surrey-minerals-plan-core-strategy-development-plan-document/adoption-of-core-strategy-and-primary-aggregates-development-plan-documents	No allocations identified within Gatwick area
Surrey Waste Plan March 2009 Maps can be found at: http://www.surreycc.gov.uk/environment-housing-and-planning/minerals-and-waste-policies-and-plans/surrey-waste-plan	No allocations identified within Gatwick area.

Table A3 - Heathrow Baseline (Do Minimum Base Case Without Airport Expansion)

Authority	Key Land Constraints in Local Authority Area that Could Impact on Future Growth Patterns and Land Take	Short and Medium Term Growth Patterns and Land Take Close to Proposal Area
Hillingdon Borough Council	**Local Plan Part 1 – Strategic Policies November 2012** Metropolitan Green Belt, Metropolitan Open Land and Green Chains (all EM2) Maps can be viewed at: http://www.hillingdon.gov.uk/23501	Currently the Heathrow boundary is within Hillingdon Borough. The Local Plan runs to 2026. The largest provision of housing development in the Plan is to the north and middle of the Borough (north and south of A40 - see map below) with some 1,387 dwellings proposed. There are also housing allocations at Uxbridge and the Hayes and West Drayton Corridor (a further 1,237 dwellings). Heathrow Opportunity Area is a London Plan growth area. The Hillingdon Local Plan Part 1 defines the Hillingdon Heathrow Opportunity Area as an area including the Hayes/ West Drayton Corridor, Stockley Park and the area within and around Heathrow Airport. The local plan allocates 318 dwellings in the Heathrow Opportunity Area just to the north of Heathrow. It is possible housing numbers will increase as proposed changes to the London Plan indicate a higher housing requirement for Hillingdon. The local plan identifies 13.63ha of employment land split over a number of key employment sites including the Hayes and West Drayton Corridor and other areas around the Heathrow Opportunity Area (particularly for hotel and office) directly to the north of Heathrow. The actual sites for housing and employment development will be allocated in Hillingdon's forthcoming Local Plan Part 2: Site Allocations and Designations and Development Management Policies (currently out for consultation – expected to be adopted 2015)
Hounslow Borough Council	**Proposed Submission Version Local Plan to 2030 March 2014** Green Belt and Metropolitan Open Land (Policy CB1) Maps can be viewed at:	The two key areas for housing growth in the plan are at Brentford (2090 dwellings) and Hounslow (1588 dwellings). There are a number of smaller allocations throughout the Borough Employment development will be promoted in the four main towns of Chiswick,

Authority	Key Land Constraints in Local Authority Area that Could Impact on Future Growth Patterns and Land Take	Short and Medium Term Growth Patterns and Land Take Close to Proposal Area
	http://www.hounslow.gov.uk/index/environment_and_planning/planning/planning_policy/localplan/local_plan_proposed_submission.htm	Brentford, Hounslow and Feltham and within the Hounslow (Great Western Corridor) Strategic Outer London Development Centre as well as other strategically and locally significant locations for employment.
Spelthorne Borough Council	**Adopted Core Strategy February 2009** Large areas of Green Belt throughout the Borough (Policy EN2) Large areas of Flood Zone 3 to the south and west of the Borough (Policy LO1) Maps can be viewed at: http://www.spelthorne.gov.uk/article/2889/Spelthorne-Development-Plan---Adopted-Core-Strategy-and-Policies-DPD	The two main areas allocated for growth in the adopted Core Strategy to 2026 are at Staines (820 dwellings and 37ha of employment land) and Ashford which is some 5.5 km to the south of Heathrow (1,250 dwellings and 12ha of employment land some 5km). Stanwell, which is on the south western boundary of Heathrow, is identified for 450 dwellings and 11ha of employment land.
Slough Borough Council	**Adopted Core Strategy December 2008** Green Belt and Strategic Gap between Heathrow and Slough Borough (Core Policy 2) Maps can be viewed at: http://www.slough.gov.uk/council/strategies-plans-and-policies/core-strategy-dpd.aspx	The adopted Core Strategy to 2026 identifies seven 'Areas of Major Change'. These are: Slough Town Centre Slough Trading Estate Britwell Wexham Park Hospital Cippenham Upton Western End of the A4 Bath Road These areas will be the focus for residential and employment development.

Table A4 - Minerals and Waste Plans

Authority	Allocations within Vicinity of Heathrow
Hillingdon Local Plan Part 1 November 2012 Maps can be viewed at: http://www.hillingdon.gov.uk/23501	The Hillingdon Local Plan 1 safeguards three areas for minerals resources all within approximately 1.5km to the north of Heathrow. The extent of the largest area is approximately 15 ha. The other two are slightly smaller.
West London Waste Plan Proposed Submission February 2014 Maps can be viewed at: http://www.wlwp.net/	The plan proposes the following waste sites: Rigby Lane Waste Treatment Station, Hillingdon Hounslow Western International Market, Hayes Road, Southall
Hounslow Minerals Note 2012	No minerals sites are allocated within the Heathrow area.
Surrey County Council Adopted Minerals Core Strategy 2011 Maps can be found at: http://www.surreycc.gov.uk/environment-housing-and-planning/minerals-and-waste-policies-and-plans/surrey-minerals-plan-core-strategy-development-plan-document/adoption-of-core-strategy-and-primary-aggregates-development-plan-documents	An area to the south of Heathrow in Spelthorne Bough is a minerals safeguarding area.
Surrey Waste Plan March 2009 Plans can be viewed at: http://www.surreycc.gov.uk/environment-housing-and-planning/minerals-and-waste-policies-and-plans/surrey-waste-plan	Waste site allocated for recycling, storage, transfer, materials recovery and processing facilities in the Stanwell Manor area of Spelthorne Borough. This is to the south west of Heathrow.

Authority	Allocations within Vicinity of Heathrow
Slough Borough Council is currently without an up-to-date minerals and waste plan following the closure of the Joint Strategic Planning Unit for Berkshire. Slough still needs to decide about its future policy needs.	No sites are allocated proximate to Heathrow.

Appendix B: Landscape Methodology

The process of Landscape and Visual Impact Assessment (LVIA) takes account of potential changes to physical elements within the landscape as well as the way in which people visually perceive the landscape. The landscape takes its character from a combination of elements, including landforms, land-use, vegetation cover, field patterns and boundaries, settlement patterns and types of buildings, roads, railways and rights of way. Landscapes vary considerably in both character and quality, and they are key components of the distinctiveness of any local area or region. The assessment of effects on landscape therefore addresses changes in any of these components that would be caused by a proposed development.

Townscape can be described as *"…areas where the built environment is dominant. Villages, towns and cities often make important contributions as elements in wider-open landscapes, but townscape means the landscape within the built-up area, including the buildings, the relationships between them, the different types of urban open spaces, including green spaces, and the relationship between buildings and open spaces."*[2]

Waterscape is broadly understood as a landscape in which an expanse of water is a dominant feature, but is not a recognised technical term in landscape guidance. In referring to an expanse of water, waterscape covers lakes and rivers which are addressed for landscape purposes under 'hydrological features' and coastal aspects are addressed under 'seascapes'. The latter is defined as *"landscapes with views of the coast or seas, and coasts and adjacent marine environments with cultural, historical and archaeological links with each other."*[8]

People also experience landscape and townscape as a visual phenomenon, and the quality of views in any given area can make a significant contribution to 'quality of life'. In some areas, views can also be important to the local economy. Visual Impact Assessment therefore seeks to identify where existing views would be altered by any proposed changes in the landscape, and to assess the significance of those changes, taking into account the quality and extent of existing views, the number of people affected and the nature of the change.

The high level, desk based assessment has been undertaken in line with Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA3)**Error! Bookmark not defined.** and Chapter 10 of the Airports Commission Appraisal Framework (Chapter 10). This methodological summary is intended to identify the underlying principles and terminology that underpin assessment.

Visual effects on individual receptors have been addressed as well as in terms of the perceptual qualities of the landscape. The effects of flight paths on landscape character, visual amenity, tranquillity and dark skies have been assessed from the area affected by N70 (N=20) noise contours, supplemented by information regarding flight paths to 4000ft, related to the published CPRE tranquillity maps.

Tranquillity mapping has been obtained from the CPRE (Campaign for the Protection of Rural England). The rational for tranquillity mapping is described in the CPRE publication 'Developing an Intrusion Map of England', 2007. The resulting tranquillity mapping takes

[2] Guidelines for Landscape and Visual Impact Assessment (GLVIA3); 3rd Edition - Landscape Institute and Institute of Environmental Management and Assessment – Routledge 2013
[3] Ibid.

account of Civil Aviation Authority information on airports and the '57Leq contour and a 1km radius'. For the purposes of this report, CPRE's Tranquillity mapping is overlain by noise mapping of the predicted noise levels at 2030 and 2050 for both the existing airport configurations without further development, as well as for the promoters' schemes. These provide an illustration of the likely areas where there may be changes in noise levels due to air traffic movements. These changes may be either positive or negative, depending upon location of receptors. No attempt is made within this report to quantify these changes in terms of acceptability or nuisance, or indeed the level at which a landscape character area may be significantly affected, as this is beyond the technical expertise of the author.

In 2003, the CPRE acquired satellite imagery (source unknown) and translated the data into mapping to represent 'Dark Skies' maps. These maps were created from pixels representing a square kilometre, and are therefore the level of detail is relatively course grained when dealing with individual developments. They are a colour representation of satellite measurements of artificial light at night. The light is measured on a range from 0 to 255; 0 means the satellite is detecting no light in that pixel and 255 means the satellite's detector is saturated with light. The measure is therefore of light detected from above, and is not a representation of the visibility of air traffic lights in the sky, when viewed from the ground. The presence of ground lighting has been considered with the report as a whole when dealing with visual impacts. The noise contours have been superimposed onto the CPRE Dark Sky data for illustrative purposes only.

Individual topics listed in Chapter 10 of the Appraisal Document have been addressed as part of the assessment of effects on landscape character, townscape character and visual amenity as follows:

- *Effects on topography, hydrology and land cover on landscape and townscape character areas directly affected by the scheme;*
- *Effects on the layout, density and mix of buildings on townscape character areas directly affected by the scheme;*
- *Tranquillity effects are assessed within the area bounded by the N70 (N=20) noise contour, and dark skies effects within the study area as defined;*
- *Effects on cultural spaces and human interaction and visual effects on recreational areas and on townscape character areas directly affected by the scheme; and,*
- *Effects on beauty have been addressed in the effects on landscapes designated for their natural beauty.*

A study area for the assessment of effects has been defined as a 5km offset from the scheme. It was anticipated that the most significant effects on landscape character and views from the proposed ground based elements of the scheme (such as buildings and runways), would only occur within an area of approximately 5km. Beyond 5km, even though some elements might be visible, they would be barely perceptible due to the distance away from the airport and the filtering effect of intervening vegetation.

The study area for tranquillity has been defined by the N70 contour as a proxy for the area with aircraft at 7000ft or below. Whilst this will not result in a definitive area where aircraft are below 7000ft above mean sea level (AMSL), the largest aircraft at 70dB Lmax identified within the NATS London Airspace Consultation Standard Noise Tables appendix (Airbus 380) is at 7000ft with this noise level. It is therefore considered a valid proxy for the 7000ft contour pending the airspace change programme that would be available from detailed design activity.

Areas of Outstanding Natural Beauty (AONBs) and Areas of Great Landscape Value (or locally designated landscapes) have been assessed within a 15km study area as they are of significant importance to the landscape surrounding the airports.

Timescales for the assessment have been determined as during construction (when the majority of the site is under construction) and operation. Although temporary, construction effects are usually the most significant for landscape character and visual amenity so both construction and operation effects have been assessed. In the report, construction is discussed first as it would occur first temporally. Operation effects have then been discussed afterwards.

Baseline information has been gathered through a desk study of the existing documents listed below and review of aerial photography, Ordnance Survey mapping and Google Streetview. Landscape and townscape effects have been broadly assessed by determining the effects on the county or district level character areas. A high level visual assessment has also been undertaken by identifying key visual receptors to the scheme and the potential effects on them. Landscape and townscape character areas and visual receptors have been assessed for their sensitivity, and quality and value have been considered. Below are descriptions and criteria used for these assessments.

Landscape quality is defined as follows: "Landscape quality (or condition) is based on judgements about the physical state of the landscape, and about its intactness, from visual, functional, and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place." The description of landscape quality for each character area is based on descriptions within existing Landscape Character Assessments. Landscape quality has been described using the following criteria:

- *Highest Quality – areas that exhibit a strong landscape structure with valued features that contribute to the wider landscape character and may be considered to be of particular importance to conserve. Includes the most aesthetically attractive landscapes, which are often designated for their natural beauty;*
- *Very Attractive – areas that exhibit a recognisable landscape structure, such as diverse, semi-natural or farmed landscape with natural features. Normally abundant woodland cover together with a high distribution of trees, hedgerows, streams and other naturalised unpolluted water corridors. May be designated for their natural beauty;*
- *Good – countryside with some variety in farmland cover. Settlements and villages with pockets of open space and public recreation areas. There is a reasonable distribution of semi-natural vegetation, trees and shrub cover and the overall view of the area is pleasant. May be designated for their natural beauty;*
- *Ordinary – typical open agricultural land where attractive features are offset by detractors. Some strategic planning is evident but development is primarily functional including housing estates, business parks or urban fringe land uses. Not particularly aesthetically attractive, but with more value than a poor quality landscape. Land may be within a Green Belt or have a local landscape designation; and,*
- *Poor – includes detractors such as power lines, industrial derelict or inappropriate built forms with no aesthetic value or evidence of strategic planning. There is lack of mature vegetation cover and no landscape designations apply. Intensively farmed landscape, which has lost most of its features.*

GLVIA 3rd edition describes townscape as "…areas where the built environment is dominant. Villages, towns and cities often make important contributions as elements in

wider-open landscapes, but townscape means the landscape within the built-up area, including the buildings, the relationships between them, the different types of urban open spaces, including green spaces, and the relationship between buildings and open spaces." Townscape quality has been described using the following criteria:

- *Highest Quality – townscape with highly valued, rare or unusual features with a high level of human interaction. Area or feature designations or important arrangement of Listed Buildings or cultural features. High quality buildings with a well maintained appearance with attractive details and materials. Few or no visual detractors;*
- *Very Attractive – locally distinctive development form with cultural associations and good quality appearance and locally characteristic materials. Harmonious relationship between public spaces and buildings with a well maintained appearance. Several designated or valued features. No significant visual detractors. Promotes human interaction and pedestrian movement with few conflicts with vehicular use;*
- *Good – locally distinctive appearance with planned layout and well maintained ornamental features. Possible degradation of modern development mix but with potential for enhancement. Some human interaction and pedestrian movement with few conflicts;*
- *Ordinary – functional, incoherent development form with minimal use of design criteria for modern contemporary buildings. Little distinctiveness locally with remnant distinctive features out of context within the townscape. Little human interaction limited to social / community locations. Vehicular traffic dominates movement; and,*
- *Poor – poorly designed development form with inappropriate materials and quality. Unsympathetic scale and lacking in structure, variety, coherence or clear communication links. Poor boundary definition and large amount of vandalised rarely used un-owned space. Lack of maintenance and showing decline in appearance with little or no evidence of human interaction. Pedestrian movement severed and inhibited by transport systems.*

Landscape value is defined as follows: "The relative importance attached to a landscape (often as a basis for designation or recognition), which expresses national or local consensus, because of its quality, special qualities including perceptual aspects such as scenic beauty, tranquillity or wildness, cultural associations or other conservation issues." The description of landscape and townscape value for each character area takes account of:

International, national and local landscape designations;
Policies in local planning documents;
Areas of local community interest such as local green spaces, village greens or allotments;
Status of cultural heritage or ecological features;
Recreation value; and,
Scenic quality and perceptual aspects.

Landscape and townscape value has been described using the following criteria:

Table B1 - Value Criteria

Landscape/ Townscape Value	Criteria	Typical Scale
Exceptional	High importance and rarity; very attractive; no or limited potential for substitution	International or National
High	High importance and rarity; very	National, Regional or Local

	attractive as a whole or in part; limited potential for substitution	
Medium	Medium importance and rarity; typical or pleasant; potential for substitution	Regional or Local
Low	Low importance or rarity; poor quality and condition, easily substituted	Local

Sensitivity reflects the vulnerability of the landscape/ townscape to accommodate the proposed change. It is also based on its importance in relation to national and local designations, its perceived value to local users and consultees, and any intrinsic aesthetic characteristics such as its contribution to local landscape quality or sense of place.

In some instances a landscape or townscape with important elements may be of lower sensitivity as a result of its potential tolerance to change, for example, a variable landform or high levels of tree cover. Conversely, a landscape or townscape with few features of interest may be of a higher sensitivity because it is vulnerable to the introduction of a development, for example, a flat landscape with an open character where screen planting would be inappropriate. The assessment has relied upon professional judgement and subjective opinion based on professional experience.

The sensitivity of a visual receptor is based on the viewer's familiarity with the scene, the activity or occupation that brings them into contact with the view and the nature of the view, whether full or glimpsed, near or distant. It is also determined by the importance of the receptor, the importance of the view, the perceived quality of the view and its ability to accommodate change. The following tables contain the criteria used as a basis for the assessment of sensitivity:

Table B2 – Landscape/Townscape Sensitivity Criteria

Landscape/ Townscape Sensitivity	Criteria
High	*Highly important and rare components, often including international or national designations.* *Of particularly high quality and distinctive character.* *Susceptible to relatively small changes with limited potential for substitution.* *Good condition.* *Strong recreational value is demonstrated through extensive recreational features such as public rights of way/public open space and/or widely distributed promotional (tourist) material and/or local interest groups.* *There are strong conservation interests, such as the presence of features of nationally recognised historical, cultural or ecological interest.*
Moderate	*Medium importance and rare components, often including regional or local designations.* *Of good to ordinary quality and character.* *Reasonably tolerant of change with limited potential for substitution.* *Moderate physical condition.* *Moderate recreational value is demonstrated through some recreational features such as public rights of way/public open space and/or the existence of some locally distributed promotional (tourist) material and/or some local interest groups.* *There is a presence of locally unique buildings or structures and/or landscape features.* *There are moderate conservation interests, such as the presence of features of locally recognised historical, cultural or ecological interest.*
Low	*Components of low importance and rarity and unlikely to contain any designations.* *Poor/derelict condition with little scenic merit.* *Potentially tolerant of substantial change and substitutability.* *There is little recreational value with very few recreational features such as public rights of way/public open space, and no formal expression of specific local interest in the area.* *Not remarkable in any way and does not contain rare elements or features.* *There are no or very weak conservation interests.*

Table B3 – Visual Sensitivity Criteria

Visual Sensitivity	Criteria
High	*Viewers with high interest in their everyday visual environment, with prolonged and regular viewing opportunities and/or within highly valued landscapes, such as:* *Views within, from or towards internationally/nationally designated and highly valued landscapes/features, such as World Heritage Sites, National Parks and Areas of Outstanding Natural Beauty.* *Visitors to heritage assets, or to other attractions, where views of the surroundings are an important contributor to the experience.* *People engaged in outdoor recreation, including users of public rights of way/public open space, whose attention is likely to be focused on the landscape and would have open views.* *Views within areas recognised as having strong recreational value, such as Open Access Land or on rivers. These areas may be the subject of widely distributed promotional (tourist) material and/or local interest groups.* *Views with cultural value, such as where referenced within famous literature or artwork.* *Open views from residential properties.* *The Scheme would readily harm the character of the view in a way that cannot be easily mitigated.*
Moderate	*Viewers with moderate interest in their environment, with discontinuous irregular viewing periods and/or within moderate to highly valued landscapes, such as:* *Views within, from or towards local designations, such as local landscape designations within the Local Plan.* *Views within areas recognised as having moderate or high recreational value but where the users focus is engaged in outdoor sport and recreation rather than the appreciation of the landscape e.g. golf, hunting, water based activities.* *Public rights of way with more restricted views.* *Views experienced by drivers/travellers/passengers of moving vehicles along routes recognised for their scenic value.* *Views from residential properties with restricted views.* *Views from workers (outdoors) where views and the setting contribute towards the quality of working life.* *The Scheme could be accommodated within the view with only moderate change, and some effective mitigation would be possible.*
Low	*Viewers with a passing interest in their surroundings and momentary viewing periods, and/or within landscapes of low value such as:* *Views experienced by drivers/travellers/passengers of moving vehicles along routes unrecognised for their scenic value.* *Views experienced by people at their place of work (indoors), whose attention may be focused on their work or activity and not on the view.* *The Scheme could be readily accommodated within the view with only minor change, and effective mitigation could be easily accommodated within the proposals.*

The **magnitude of impact** is the degree of change that would occur during the construction and operation of the proposed scheme. Magnitude is determined by the perceived contrast or integration with existing features and aesthetic character in terms of form, line, colour, texture, density and scale. It also considers the geographical extent and duration of the impacts. Landscape, townscape and visual magnitude of impact have been described as Adverse or Beneficial. The following tables contain the criteria used as a basis for the assessment of magnitude of impact:

Table B4 - Magnitude of Landscape/ Townscape Impact Criteria

Magnitude of Landscape/ Townscape Impact	Criteria
Major Adverse	*Complete or long term loss of, or significant damage to, key components and elements or the integrity of character over a wide area.*
Moderate Adverse	*Partial loss of, or damage to, key components and elements but not adversely affecting the overall integrity of character.* *Noticeable change in terms of key components and elements and character over a moderate area.*
Minor Adverse	*Some measurable loss of, or damage to, one or more key components and elements over a limited area.*
Negligible	*No discernible impact on the character, features or elements.*
Minor Beneficial	*Some measurable contribution towards, or benefit to, one or more key components and elements over a limited area.*
Moderate Beneficial	*Partial contribution towards, or benefit to, key components and elements but not significantly improving the overall integrity of character.* *Noticeable change in terms of key components and elements and character over a moderate area.*
Major Beneficial	*Complete or long term significant improvement to key components and elements and the integrity of character over a wide area.*

Table B5 - Magnitude of Visual Impact Criteria

Magnitude of Visual Impact	Criteria
Major Adverse	*The proposals would dominate or form a significant and immediately apparent part of the view that would permanently affect and change its overall character.* *The proposals would cause a very significant deterioration in the existing view.*
Moderate Adverse	*The proposals would form a visible and recognisable new element of the view within the overall character.* *The proposals would cause a noticeable deterioration in the existing view over a moderate area.*
Minor Adverse	*The proposals would constitute only a minor component of the wider view.* *The proposals would cause a barely perceptible deterioration in the existing view over a limited area.*
Negligible	*Only a very small part or no part of the proposals would be visible.* *No discernible deterioration or improvement in the existing view.*
Minor Beneficial	*The proposals would constitute only a minor component of the wider view.* *The proposals would cause minor improvements to the existing view over a limited area.*
Moderate Beneficial	*The proposals would form a visible and recognisable new element of the view within the overall character.* *The proposals would cause a noticeable improvement in the existing view over a moderate area.*
Major Beneficial	*The proposals would dominate or form a significant and immediately apparent part of the view that affects and changes its overall character.* *The proposals would cause a very significant improvement in the existing view.*

An assessment has been made of the sensitivity of each individual landscape and townscape character area and visual receptor using a scale of 'High', 'Moderate' or 'Low' sensitivity. The magnitude of impact on each receptor has also been assessed using a scale of 'Major', 'Moderate', 'Minor' and 'Negligible' and 'Beneficial' or 'Adverse'. These sensitivity and impact assessments have been fed into the matrix provided below to determine the significance of effect on each receptor. These levels of significance can either be Beneficial or Adverse and typical descriptions of these categories are also provided.

This matrix forms only a guide to the way that sensitivity and magnitude of impact give rise to a prediction of effects. The assessment of significance of effect relies upon common sense, experience and professional judgement, supported by substantiated reasoning. The predicted effect may not always fit with the matrix. For example, in assessing the significance of an effect, an assessor may consider changes of a relatively low magnitude to be highly significant if they relate to a highly sensitive (or 'important' or 'vulnerable') landscape or visual resource, whilst high magnitudes of impact on less sensitive receptors may be deemed to be relatively less significant. The relationship between sensitivity and magnitude of impact is not always linear.

Table B6 - Effect Matrix

		Sensitivity		
		Low	Moderate	High
Impact Magnitude	**Major Adverse**	Moderate or Minor Adverse	Major or Moderate Adverse	Major Adverse
	Moderate Adverse	Minor Adverse	Moderate Adverse	Major or Moderate Adverse
	Minor Adverse	Minor Adverse or Negligible	Minor Adverse	Moderate or Minor Adverse
	Negligible	Negligible	Negligible	Negligible
	Minor Beneficial	Minor Beneficial or Negligible	Minor Beneficial	Moderate or Minor Beneficial
	Moderate Beneficial	Minor Beneficial	Moderate Beneficial	Major or Moderate Beneficial
	Major Beneficial	Moderate or Minor Beneficial	Major or Moderate Beneficial	Major Beneficial

Table B7 – Landscape/Townscape Impact Descriptors

Landscape/ Townscape Impact	Descriptor
Major Adverse/ Beneficial	A permanent, large scale, long term deterioration/improvement in the landscape/ townscape resource.
Moderate Adverse/ Beneficial	Noticeable deterioration/improvement in the existing landscape/ townscape resource
Minor Adverse/ Beneficial	Barely noticeable deterioration/improvement in the existing landscape/ townscape resource.
Negligible	No noticeable deterioration/improvement in the existing landscape/ townscape resource.

Table B8– Visual Impact Descriptors

Visual Impact	Descriptor
Major Adverse/ Beneficial	Where the Scheme would cause a permanent, large scale, long term deterioration/improvement in the existing view.
Moderate Adverse/ Beneficial	Where the Scheme would cause a noticeable deterioration/improvement in the existing view.
Minor Adverse/ Beneficial	Where the Scheme would cause a barely perceptible deterioration/improvement in the existing view.
Negligible	Where the Scheme would cause no discernible deterioration/improvement in the existing view.

Appendix C: Heritage Designated Sites

Gatwick 2R

Table C1 - Listed Buildings within the Proposed Development Footprint Study Area

Asset Number	National Heritage List ID	Name	Grade
LB1	1279757	County Oak Cottage	II
LB2	1298885	St Barbe Cottage	II
LB3	1279557	Poles Acre Barn	II
LB4	1187103	Gatwick Manor Inn/Hyders Hall	II*
LB5	1354186	Old Bonnetts Cottage	II
LB6	1298884	Barn At Gatwick Manor	II
LB7	1187117	Crown Post Barn To East Of Rowley Farm House	II
LB8	1187079	Rowley Farmhouse	II*
LB9	1187104	Spikemead Farmhouse	II
LB10	1187105	Brookside	II
LB11	1207831	Radford Farmhouse	II
LB12	1298883	Lowfield Heath Windmill (Re-Located)	II
LB13	1187080	Charlwood House	II*
LB14	1268327	The Beehive (Former Combined Terminal And Control Tower)	II*
LB15	1187081	Church Of St Michael And All Angels	II*
LB16	1029955	Teizers Farm House	II
LB17	1187082	Old Cottage	II
LB18	1187073	Wing House	II
LB19	1187072	Edgeworth House	II
LB20	1298874	Lilac Cottage	II
LB21	1207540	Charlwood Park (Demolished)	II
LB22	1187090	Charlwood Park Farmhouse	II*

Table C2 - Listed Buildings within the Intermediate Study Area

Asset Number	National Heritage List ID	Name	Grade
LB23	1298873	Oak Cottage	II
LB24	1187101	Sycamore House	II
LB25	1187111	Cherry Tree Cottage	II
LB26	1187110	Oldlands Farmhouse	II
LB27	1207886	Tinsley Farmhouse	II
LB28	1248454	Povey Cross House	II

Table C3 - Conservation Areas within the Intermediate Study Area

Asset Number	Name
CA1	Church Road, Horley
CA2	Ifield Village

Table C4 - Scheduled Monuments within the Intermediate Study Area

Asset Number	National Heritage List ID	Name
SM1	1012464	Medieval moated site at Ifield Court
SM2	1018681	Medieval settlement remains 100m south east and 150m south west of Oldlands Farm, Tinsley Green

Table C5 - Listed Buildings within the Outer Study Area

Asset Number	National Heritage List ID	Name	Grade
LB29	1298886	Brook Cottage	II
LB30	1187107	Turks Croft	II
LB31	1207485	Boscobel/C G A Insurance Brokers Limited	II
LB32	1067613	Old Pound Cottage	II
LB33	1207872	St Margaret's Cottage	II
LB34	1187089	Blackdog Cottage	II
LB35	1187093	Bridge Over Moat At Ewhurst Place	II
LB36	1187092	Ewhurst Place	II*
LB37	1298888	Table Tomb To George And Mary Hutchinson In Parish Churchyard	II
LB38	1207927	The Vicarage	II
LB39	1187108	Parish Church Of St Margaret	I
LB40	1279522	Church Cottage	II
LB41	1187109	Harrow Cottage/Old Plough Cottage/Plough Inn	II
LB42	1187102	Fir Tree Cottage	II
LB43	1240231	Bonwycke Place	II
LB44	1187083	Hazelwick Grange	II
LB45	1187106	The Old Rectory	II
LB46	1207719	Mounting Block In Forecourt Of Friends Meeting House	II
LB47	1207683	Meeting House Cottage	II*
LB48	1298879	Friends' Meeting House	I
LB49	1279535	Newstead Lodge	II
LB50	1187097	Old Inn Cottage	II
LB51	1392429	Ridley's Court (Former Stables To Worth Park)	II
LB52	1187099	The Old House	II
LB53	1207650	Michaelmas Cottage	II
LB54	1298880	Apple Tree Farm	II
LB55	1392581	Fountain And Pond Basin At Milton Mount Gardens (Former Worth Park)	II
LB56	1187100	Jordans	II
LB57	1187112	The Tweed	II
LB58	1026984	Pockneys Farmhouse	II

Asset Number	National Heritage List ID	Name	Grade
LB59	1026954	Hill House	II
LB60	1298882	Jordans Social Club	II
LB61	1392579	Pulhamite Rockery At Milton Mount Gardens (Former Worth Park Gardens)	II
LB62	1187096	Finches Cottage	II
LB63	1180389	Oak Lodge	II
LB64	1187098	Langley Grange	II
LB65	1392580	Pulhamite Rock Islet In Lake At Milton Mount Gardens (Former Worth Park)	II
LB66	1187095	Old Martyrs	II
LB67	1298881	Langley Green Farmhouse	II
LB68	1354210	Lower Prestwood Farmhouse	II
LB69	1354887	Copthorne Hotel	II
LB70	1180381	Naldretts Farmhouse	II
LB71	1207387	Little Orchards	II
LB72	1250230	Heathy Ground Farmhouse	II
LB73	1354208	Red Gables	II
LB74	1039928	Simmonds Cottage	II
LB75	1187113	Toovies Farmhouse	II
LB76	1204793	Stonelands Farm House	II
LB77	1298878	The Old Fox House	II
LB78	1207671	Upper Prestwood Farmhouse	II
LB79	1277889	Hillands	II
LB80	1029960	Allingham Farm House	II
LB81	1277936	Fullbrook Cottage	II
LB82	1277803	Lowfield Heath Windmill	II
LB83	1248625	Barn About 50 Metres To The South West Of Tifters	II
LB84	1248354	Little Dolby	II
LB85	1277829	Tifters	II
LB86	1248578	Ringers	II
LB87	1277957	Weavers Cottages	II
LB88	1248323	Ye Olde Bakehouse	II
LB89	1277802	Spicers Farm Barn	II

Asset Number	National Heritage List ID	Name	Grade
LB90	1248648	Cartshed At Charlwood Place Farm	II
LB91	1248649	Spicers	II
LB92	1277800	Stabling At Charlwood Place Farm Approximately 30m To South Of Farmhouse	II
LB93	1248652	Spicers Farm Granary	II
LB94	1277799	Barn At Charlwood Place Farm Approximately 30m South West Of Farmhouse	II
LB95	1248647	Granary At Charlwood Place Farm Approximately 20m South West Of Farmhouse	II
LB96	1248653	Barn At Robins Farm Approximately 40m To South West Of House	II
LB97	1248327	Vintners Wells	II
LB98	1277955	Charlwood Place Farmhouse	II
LB99	1248325	Mytten Croft	II
LB100	1277888	Robins	II
LB101	1204822	Keepers Cottage	II
LB102	1248535	Barn At Tanyard	II
LB103	1248533	Tanyard	II
LB104	1248503	Primrose Cottage	II
LB105	1248504	The Glovers	II
LB106	1277824	Lychgate	II
LB107	1277922	Cattle Shelter	II
LB108	1248320	Brook Cottage/Brookside	II
LB109	1248622	Stone Causeway In Churchyard Of St Nicholas	II
LB110	1248624	Temple Bar House	II
LB111	1277887	The Lock Up	II
LB112	1248610	Church Of Saint Nicholas	I
LB113	1248623	The Cottage	II
LB114	1277982	Two Stacks	II
LB115	1277798	Elm Cottage	II
LB116	1248638	Sun Cottage	II
LB117	1248637	Hunts	II
LB118	1248466	Tudor Cottage	II
LB119	1248295	Harrow House	II
LB120	1277979	Old Rosemary Cottages	II

Asset Number	National Heritage List ID	Name	Grade
LB121	1248298	Chapel Farmhouse	II
LB122	1277978	Providence Chapel	II*
LB123	1277900	Pagewood Cottage	II
LB124	1248443	Spring Cottage	II
LB125	1248410	Laurel Cottage	II
LB126	1248639	Mores	II
LB127	1248414	Bristow Cottage	II
LB128	1029958	Dodd Tomb 8 Yards South East Of Chancel	II
LB129	1204775	Church Of St Bartholemew	I
LB130	1248444	Pagewood House	II
LB131	1248380	The Manor House	II*
LB132	1248640	Swan Cottage	II
LB133	1204784	Burstow Court	II
LB134	1277920	Spottles	II
LB135	1248601	Staggers Avon	II
LB136	1248599	Dormers	II
LB137	1277915	The Cottage	II
LB138	1248600	Stan Hill	II
LB139	1248396	Charlwood Place	II
LB140	1204767	Broadbridge Farm House	II
LB141	1028987	Inholms Farm House	II
LB142	1028992	Fishers/Fishers Farm House	II
LB143	1295120	Fishers Cottage/The Barn	II
LB144	1248357	Edolphs	II
LB145	1028988	Yew Tree Cottage	II
LB146	1119778	Farm Building At Edolphs Approximately 50m To North East Of House	II
LB147	1248408	Spencers	II
LB148	1378037	Coldlands Farm House	II
LB149	1378036	Flint Tomb 8 Yards South West Of Church Of St Bartholomew	II
LB150	1028985	Billingsley Tomb 10 Yards West Of South Aisle Of Church Of St Bartholomew	II
LB151	1028984	Barnes Tomb 8 Yards West Of West End Of Church Of St Bartholomew	II

Asset Number	National Heritage List ID	Name	Grade
LB152	1378035	Church Of St Bartholomew	I
LB153	1028986	Turner Tomb 8 Yards North Of Church Of St Bartholomew	II
LB154	1028982	High House	II
LB155	1378034	Ye Olde Six Bells	II
LB156	1277903	Hookwood Manor	II
LB157	1028983	Barn 10 Yards North Of Ye Olde Six Bells	II
LB158	1378002	Vulcan Cottage	II
LB159	1029022	Ringley Oak Cottage	II
LB160	1261682	Station Goods Shed	II
LB161	1248455	Westlands Farmhouse	II
LB162	1028994	Jordans	II
LB163	1248463	Hookwood House Including Attached Garden Wall And Gate	II
LB164	1261718	Birchwood Cottage	II
LB165	1277911	Stable About 10 Metres To North Of Hookwood House	II
LB166	1248464	Hookwood Cottage	II
LB167	1377561	Twyners Croft	II
LB168	1372057	Old Bell House/Old Mill House/Wisteria Cottage	II
LB169	1028991	The Orchard Cottage	II
LB170	1178299	The Cottage	II
LB171	1295115	The Old House	II
LB172	1178322	Priestlands	II
LB173	1248465	The Hopps	II
LB174	1277904	Woodlands Farmhouse	II
LB175	1378024	Sawpit, Anderson's Builders Yard	II
LB176	1028962	Honeysuckle Cottages	II
LB177	1178256	Hutchins	II
LB178	1028989	Yew Trees	II
LB179	1378000	Monks Cottage	II
LB180	1378038	Lydford	II
LB181	1295137	Benham Farm Annexe/Benhams Farmhouse/Benhams House	II

Table C6 - Conservation Areas within the Outer Study Area

Asset Number	Name
CA1	Church Road, Horley
CA2	Ifield Village
CA3	Charlwood
CA4	Burstow
CA5	Dyers Company Almshouses
CA6	Sunnymead Flats
CA7	Massetts Road

Table C7 - Scheduled Monuments within the Outer Study Area

Asset Number	National Heritage List ID	Name
SM3	1009754	Moated site at Ewhurst Place
SM4	1013348	Thunderfield Castle medieval moated site

Heathrow NWR

Table C8 - Scheduled Monuments within the Proposed Development Footprint Study Area

Asset Number	National Heritage List ID	Name
SM1	1002043	Part of a causewayed enclosure, 632m north-east of Mayfield Farm
SM2	1002042	Romano-British site 1000yds (910m) W of East Bedfont parish church

Table C9 - Conservation Areas within the Proposed Development Footprint Study Area

Asset Number	Name
CA1	Longford Village
CA2	Harmondsworth Village

Table C10 - Listed Buildings within the Proposed Development Footprint Study Area

Asset Number	National Heritage List ID	Name	Grade
LB2	1268530	Technical Block A, Heathrow Airport	II
LB3	1080299	King's Bridge	II
LB4	1119717	Monument At North Western End Of General Roys Survey Base	II
LB5	1286544	Barn To West Of Weekly House	II
LB6	1192588	Weekly House	II
LB7	1358338	Wall To North West Of Weekly House	II
LB8	1080297	Longford Close	II
LB9	1080298	Flats 1-3 (Yeomans)	II
LB10	1192507	The White Horse Public House	II
LB11	1358336	Queen River Cottage/Willow Tree Cottage	II

Asset Number	National Heritage List ID	Name	Grade
LB12	1286577	Longford Cottage	II
LB13	1358337	Orchard Cottage	II
LB14	1080296	King Henry Public House/The Stables	II
LB15	1358414	Wall To East Of The Grange	II
LB16	1080124	Wall And Gates To South Of Harmondsworth Hall	II
LB17	1080123	Harmondsworth Hall	II
LB18	1080125	Wall To West And North Of The Grange	II

Table C11 - Listed buildings within the Intermediate Study Area

Asset Number	National Heritage List ID	Name	Grade
LB25	1074923	The Farm (Mr Bennett)	II
LB26	1204814	Boundary Wall Between No 40b And Entrance To Coachman's Cottage	II
LB27	1298895	40b, High Street	II
LB28	1204875	Dunmore House	II*
LB29	1187046	The Vicarage	II
LB30	1187045	Forecourt Wall And Gate Piers Of Dunmore House	II
LB31	1204882	46 And 48, High Street	II
LB32	1393523	Stanwell War Memorial	II
LB33	1204809	The Swan Public House	II
LB34	1298922	Stanwell Farmhouse	II
LB35	1187047	Old Farm Guest House	II
LB36	1298894	Windsor Cottage	II
LB37	1298902	The Wheatsheaf Inn And Wheatsheaf Cottages	II

Asset Number	National Heritage List ID	Name	Grade
LB38	1204803	Milestone	II
LB39	1187040	Brook Cottage, Boundary Walls And Iron Railings	II
LB40	1187048	Granary About 15 Yards East Of No 56	II
LB41	1187039	13, High Street	II
LB42	1187058	Gates Piers And Gates To Stanwell Place	II
LB43	1298901	Cheyne Cottage	II
LB44	1204896	Lord Knyvett's Adult Education Centre	II*
LB45	1187017	Callis Farmhouse	II
LB46	1187057	Perry Green	II
LB49	1080325	Green Man Public House	II
LB9	1187016	Milestone At Madbridge	II
LB62	1129999	Cranford Park Bridge	II
LB63	1358320	Cranford Park Bridge	II
LB74	1124376	Barn At Tanhouse Farm To South East Of The Farmhouse	II
LB80	1317656	Mill House And Tanhouse Farmhouse J R Swanston Plant And Engineer (Longford) Limited	II
LB82	1129998	Bridge Over River Crane	II
LB83	1080149	Bridge Over River Crane	II
LB87	1317589	Church Of St Thomas	II
LB88	1124383	St Thomas's Vicarage	II
LB267	1358368	The Gable Stores	II
LB269	1080202	The Crown Public House	II
LB270	1080118	K6 Telephone Kiosk In Front Of Five Bells Public House	II
LB271	1194343	The Five Bells Inn	II
LB272	1358366	The Sun House	II
LB273	1358367	Manor Farmhouse	II

Asset Number	National Heritage List ID	Name	Grade
LB275	1080217	The Lodge	II
LB276	1080200	Howcroft (Rear Part Only)	II
LB277	1194310	The Vicarage/Tower House	II
LB278	1080218	Wall To East Of The Lodge	II
LB279	1080199	Acacia House	II
LB280	1080201	Church Of St Mary, Harmondsworth	II*
LB281	1358410	25, Holloway Lane	II
LB283	1194332	The Great Barn, Harmondsworth	I
LB284	1080219	Lanz Farmhouse	II
LB287	1080164	The King William Iv Public House	II

Table C12 - Scheduled Monuments within the Intermediate Study Area

Asset Number	National Heritage List ID	Name
SM5	1005920	Schoolhouse (Lord Knyvett's)

Table C13 - Conservation Areas within the Intermediate Study Area

Asset Number	Name
CA3	Colnbrook
CA4	Cranford Park
CA5	Bedfont Green
CA6	Cranford Village
CA8	Stanwell

Table C14 - Listed Buildings within the Outer Study Area

Asset Number	National Heritage List ID	Name	Grade
LB145	1187026	Parish Church Of St Matthew	II
LB149	1392259	Ashford War Memorial	II
LB164	1187067	Church Of St Hilda	II
LB181	1187028	Railings And Gates Lodge To Welsh School	II
LB182	1204676	Welsh School	II
LB183	1187027	Chapel At Welsh School	II
LB184	1390714	Milestone	II
LB186	1260937	Tower And Spire Of Former Church Of St Catherine	II
LB189	1188725	Fawns Manor	II
LB190	1067589	Bedfont House	II
LB191	1096134	Captain Millers Headstone At St Marys Church	II
LB192	1096135	Group Of Three 18th Century Headstones St Marys Church	II
LB193	1096136	18th Century Headstone St Marys Church	II
LB194	1096137	Headstone To Mary Taylor St Marys Church	II
LB195	1376786	Summerhouse	II
LB196	1080324	Burlington House/Flanking Walls Of Burlington House	II
LB197	1360959	Church Of St Mary	II
LB198	1096133	Brick Chest Tomb South Of Gates Monument At St Marys Church	II
LB199	1096132	Gates Monument At St Marys Church	II
LB200	1376785	Numbers 1-72 And Community Hall	II
LB201	1360961	Milestone 12 Miles From London	II
LB202	1358318	Pates Manor	II
LB203	1376787	Gate Piers And Walls	II
LB204	1187044	Charles Rowlls Tomb In St Mary's Churchyard	II
LB205	1298896	Anonymous Vault In St Mary's Churchyard	II

Asset Number	National Heritage List ID	Name	Grade
LB206	1204863	John Hodges Vault In St Mary's Churchyard	II
LB207	1187043	Frances Paterson Tomb In St Mary's Churchyard	II
LB208	1187042	Church Of St Mary	I
LB209	1260802	Stable Block At Feltham Lodge, With Attached Walls To East And West	II
LB210	1281005	Henry Bullock Tomb In St Mary's Churchyard	II
LB211	1187041	Coachman's Cottage	II
LB215	1067584	Milestone 13 Miles From London	II
LB216	1074922	Holmwood	II
LB217	1204903	Barn 15 Yards West Of Hithermoor Farmhouse	II
LB218	1187049	Hithermoor Farmhouse	II
LB219	1187050	Barn And Stables 30 Yards West Of Hithermoor Farmhouse	II
LB220	1240644	Marjory Kinnon School/The Old School	II
LB221	1088096	Baber Bridge	II
LB222	1088097	Baber Auxiliary Bridge	II
LB223	1390544	Parish Boundary Stone	II
LB47	1298897	The Croft	II
LB224	1390547	Milestone Opposite Islay Gardens	II
LB48	1204906	Old Oak Cottage	II
LB225	1375623	Barrack Masters House (Building 3) Hounslow Barracks	II
LB226	1240633	The Keep (Armoury) To Hounslow Cavalry Barracks	II
LB227	1240631	Former Chapel To Hounslow Cavalry Barracks	II
LB228	1375627	Medical Centre (Building 24), Hounslow Barracks	II
LB229	1375625	Former Married Quarters (Building 16), Hounslow Barracks	II
LB230	1260922	Former Coach Houses At North And South Ends Of West Stable Range And North End Of East Stable Range To Hounslow Cavalry Barracks	II
LB232	1375626	Hardinge Block (Building 8), Hounslow Barracks	II

Asset Number	National Heritage List ID	Name	Grade
LB233	1240615	Former Stable Ranges Along The East And West Side Of Former Parade Ground To Hounslow Cavalry Berracks	II
LB234	1375624	Former Hospital (Building 41), Hounslow Barracks	II
LB235	1240579	Former Officers Mess And Quarters To Hounslow Cavalry Barracks	II
LB236	1375628	Naafi (Building 9), Hounslow Barracks	II
LB239	1117645	The Five Bells Public House	II
LB50	1312996	Dairy At Berkin Manor At North East Corner Of House	II
LB243	1313015	Ashgood Farmhouse	II
LB51	1298905	Poyle Farmhouse	II
LB244	1245132	Church Of St Paul	II
LB2	1187063	The Hollies	II
LB247	1241237	Ticket Hall And Shops At Hounslow West Underground Station	II
LB248	1313011	Horton Lodge	II
LB3	1280897	City Post	II
LB4	1205057	Windsor House	II
LB10	1298921	Water-Pump Approximately 75 Yards East Of The Punchbowl Inn	II
LB55	1187062	Barn To King John's Palace	II
LB56	1298904	Colne Cottage	II
LB57	1280920	King Johns Palace	II*
LB58	1204986	The White Hart Inn	II
LB249	1080306	Round House/The Village Lock Up	II
LB59	1187060	Kenilworth And Adjoining House	II
LB60	1187061	Star And Garter Public House	II
LB61	1298903	Abington	II
LB64	1204982	Fairmead And The Haven	II
LB65	1187059	Badminton House, Post Office, Adjoining House And Hampton House	II

Asset Number	National Heritage List ID	Name	Grade
LB66	1204965	1, 2 And 3, Park Street	II
LB67	1124403	Barn To Rear Of Aberdeen House	II
LB68	1317805	Aberdeen House	II
LB69	1124367	The Ostrich Public House	II*
LB70	1124408	Number 110 And House Adjoining To West (Anthonys (79) Ltd)	II
LB71	1124368	Town House	II
LB72	1124407	Milestone Outside No 3 Milestone Cottages	II
LB73	1124369	Excelsior House	II
LB75	1124406	Lucas (Newsagent)	II
LB76	1164470	Park House And Ye Olde George Public House	II
LB77	1319362	Mildridge Farmhouse	II
LB78	1244863	Royal Standard House	II
LB79	1317757	34, High Street	II
LB81	1124405	Ayres House (Bt And G Winston Premises)	II
LB84	1164451	The Red Lion Public House	II
LB85	1332745	Old School House	II
LB86	1164886	Former School (Now Colnbrook Youth Centre)	II
LB252	1284985	Sipson House	II
LB253	1080305	Stansfield House	II
LB254	1080197	Forecourt Wall To The Dower House	II
LB255	1080196	The Dower House	II
LB256	1284844	The Pheasant Public House	II
LB257	1080138	Elder Farmhouse	II
LB258	1194282	268-272, High Street	II
LB259	1080195	Harlington Baptist Church	II
LB260	1393114	Hangar, Heston Air Parks	II

Asset Number	National Heritage List ID	Name	Grade
LB262	1409790	Road Traffic Hazard Sign	II
LB285	1113383	Milestone At Tq 0137 7793	II
LB288	1080198	The White Hart Public House	II
LB290	1285085	Ha Ha Walls To South And South West Of Cranford House Stables	II
LB291	1240696	The Rectory	II
LB292	1080159	Cranford Park Bridge	II
LB293	1285115	Cellars Of Former Cranford House	II
LB294	1181206	Curved Wall To South Of West End Of Stables	II
LB295	1358387	Wall To South Of East End Of Stables	II
LB296	1181190	Church Of St Dunstan	II*
LB297	1080157	Cranford House Stables	II
LB298	1358391	Wall To South Of Churchyard Of Church Of St Peter And St Paul	II
LB299	1080163	Church Of St Peter And St Paul	I
LB300	1080158	Walls To North Of Stables	II
LB301	1250772	Monument To William And Elizabeth Brookes In Churchyard Of Church Of St Peter And St Paul	II
LB302	1181370	Walls To North Of Church Of Saint Peter And Saint Paul	II
LB303	1358388	Garden Walls To West Of Cranford House Stables	II
LB304	1332739	Old Timbers	II
LB305	1124379	Sutton Court Farmhouse	II
LB306	1096071	Brentford Fountain Western International Market	II
LB307	1393676	War Memorial Cherry Lane Cemetery	II
LB309	1180958	St George's Meadows	II
LB310	1285225	Colne Mead	II
LB311	1358403	Forecourt Wall To Number 85	II
LB312	1181607	Fray's Cottage/Old Mill House	II*

Asset Number	National Heritage List ID	Name	Grade
LB313	1358354	Walls To North And East Of Garden Of Southlands	II
LB314	1286038	Southlands	II*
LB315	1080252	Forecourt Walls To West Of Southlands	II
LB316	1080251	Wall To East Of Barn To South Of Avenue Cottage	II
LB317	1193679	Barn To South Of Avenue Cottage	II
LB318	1164740	Thorney House	II
LB319	1358353	Avenue Cottage/Avenue House (Flats 1-4)	II
LB320	1080250	The Old House	II
LB321	1358349	The Frays	II*
LB322	1193735	The Olde Cottage	II
LB323	1358355	Hope Cottage	II
LB324	1286058	33 And 33a, The Green	II
LB325	1080253	Front Wall And Gates To Number 24	II
LB326	1286057	Wall To North Of Number 31	II
LB327	1358352	Forecourt Walls To Number 31	II
LB328	1080249	Elmsdale House	II
LB329	1286043	24, The Green	II
LB330	1358345	Drayton Hall (Council Offices)	II
LB331	1358351	29, The Green	II
LB332	1286076	Industrial Buildings Adjoining Behind Number 27	II
LB333	1080248	Number 25, Including Wall And Stable Building Behind	II
LB18	1164843	The Tower Arms Public House	II
LB334	1193014	Walls To East And South Of Garden Of Number 28 (Coombe House)	II*
LB335	1358326	Wall Running South From The Old Gatehouse And West Along Front Of Gatehouse Nurseries	II*
LB336	1080277	Wall In Front Of Numbers 30 To 36 (Even)	II

Asset Number	National Heritage List ID	Name	Grade
LB337	1358327	Wall In Front Of Numbers 40 To 50 (Even)	II
LB338	1080247	15, The Green	II
LB339	1193001	The Old Gatehouse	II*
LB340	1080275	Wall And Gate Piers To North Of The Old Gatehouse	II
LB341	1286348	Walls In Front Of Numbers 52-58 (Even) And Along West End Of Property	II
LB342	1080276	Walls To North And West Of Land Of Gatehouse Nurseries	II
LB343	1358325	Church Of St Martin	II*
LB344	1286366	Walls Around St Martin's Churchyard	II*
LB345	1080119	Pair Of K6 Telephone Kiosks In Front Of Number 85, North Of Church Road, The Green	II

Table C15 - Conservation Areas within the Outer Study Area

Asset Number	Name
CA13	Feltham Town Centre
CA14	Harlington Village
CA15	Hounslow Cavalry Barracks
CA17	West Drayton Green
CA18	St Paul's Church

Table C16 - Scheduled Monuments within the Outer Study Area

Asset Number	National Heritage List ID	Name
SM4	1006944	Two concentric ditches showing as crop marks at Thorney

Heathrow ENR

Table C17: Listed Buildings in the Proposed Development Footprint Study Area

Asset Number	National Heritage List ID	Name	Grade
LB1	1268530	Technical Block A, Heathrow Airport	II
LB5	1187063	The Hollies	II
LB3	1280897	City Post	II
LB4	1205057	Windsor House	II
LB5	1080299	King's Bridge	II
LB6	1119717	Monument At North Western End Of General Roys Survey Base	II
LB9	1187016	Milestone At Madbridge	II

Table C18: Listed Buildings within the Intermediate Study Area

Asset Number	National Heritage List ID	Name	Grade
LB34	1298922	Stanwell Farmhouse	II
LB44	1204896	Lord Knyvett's Adult Education Centre	II*
LB45	1187017	Callis Farmhouse	II
LB47	1298897	The Croft	II
LB48	1204906	Old Oak Cottage	II
LB49	1080325	Green Man Public House	II
LB50	1312996	Dairy At Berkin Manor At North East Corner Of House	II
LB51	1298905	Poyle Farmhouse	II
LB10	1298921	Water-Pump Approximately 75 Yards East Of The Punchbowl Inn	II
LB11	1286544	Barn To West Of Weekly House	II
LB12	1192588	Weekly House	II
LB13	1358338	Wall To North West Of Weekly House	II

Asset Number	National Heritage List ID	Name	Grade
LB14	1080297	Longford Close	II
LB15	1080298	Flats 1-3 (Yeomans)	II
LB16	1192507	The White Horse Public House	II
LB17	1358336	Queen River Cottage/Willow Tree Cottage	II
LB52	1286577	Longford Cottage	II
LB53	1358337	Orchard Cottage	II
LB54	1080296	King Henry Public House/The Stables	II
LB62	1129999	Cranford Park Bridge 1	II
LB63	1358320	Cranford Park Bridge 2	II
LB82	1129998	Bridge Over River Crane 1	II
LB83	1080149	Bridge Over River Crane 2	II

Table C19: Conservation Areas within the Intermediate Study Area

Asset Number	NAME
CA1	Longford Village
CA3	Colnbrook
CA4	Cranford Park
CA6	Cranford Village
CA8	Stanwell

Table C20: Scheduled Monuments within the Intermediate Study Area

Asset Number	National Heritage List ID	Name
SM2	1002042	Romano-British site 1000yds (910m) W of East Bedfont parish church

SM5	1005920	Schoolhouse (Lord Knyvett's)

Table C21: Listed buildings within the Outer Study Area

Asset Number	National Heritage List ID	Name	Grade
LB184	1390714	Milestone	II
LB189	1188725	Fawns Manor	II
LB25	1074923	The Farm (Mr Bennett)	II
LB190	1067589	Bedfont House	II
LB191	1096134	Captain Millers Headstone At St Marys Church	II
LB192	1096135	Group Of Three 18th Century Headstones St Marys Church	II
LB193	1096136	18th Century Headstone St Marys Church	II
LB194	1096137	Headstone To Mary Taylor St Marys Church	II
LB195	1376786	Summerhouse	II
LB196	1080324	Burlington House/Flanking Walls Of Burlington House	II
LB197	1360959	Church Of St Mary	II
LB198	1096133	Brick Chest Tomb South Of Gates Monument At St Marys Church	II
LB199	1096132	Gates Monument At St Marys Church	II
LB200	1376785	Numbers 1-72 And Community Hall	II
LB201	1360961	Milestone 12 Miles From London	II
LB202	1358318	Pates Manor	II
LB203	1376787	Gate Piers And Walls	II
LB204	1187044	Charles Rowlls Tomb In St Mary's Churchyard	II
LB205	1298896	Anonymous Vault In St Mary's Churchyard	II
LB206	1204863	John Hodges Vault In St Mary's Churchyard	II

Asset Number	National Heritage List ID	Name	Grade
LB207	1187043	Frances Paterson Tomb In St Mary's Churchyard	II
LB208	1187042	Church Of St Mary	I
LB209	1260802	Stable Block At Feltham Lodge, With Attached Walls To East And West	II
LB210	1281005	Henry Bullock Tomb In St Mary's Churchyard	II
LB211	1187041	Coachman's Cottage	II
LB26	1204814	Boundary Wall Between No 40b And Entrance To Coachman's Cottage	II
LB27	1298895	40b, High Street	II
LB28	1204875	Dunmore House	II*
LB29	1187046	The Vicarage	II
LB30	1187045	Forecourt Wall And Gate Piers Of Dunmore House	II
LB31	1204882	46 And 48, High Street	II
LB32	1393523	Stanwell War Memorial	II
LB33	1204809	The Swan Public House	II
LB35	1187047	Old Farm Guest House	II
LB36	1298894	Windsor Cottage	II
LB37	1298902	The Wheatsheaf Inn And Wheatsheaf Cottages	II
LB38	1204803	Milestone	II
LB39	1187040	Brook Cottage, Boundary Walls And Iron Railings	II
LB40	1187048	Granary About 15 Yards East Of No 56	II
LB41	1187039	13, High Street	II
LB42	1187058	Gates Piers And Gates To Stanwell Place	II
LB215	1067584	Milestone 13 Miles From London	II
LB43	1298901	Cheyne Cottage	II

Asset Number	National Heritage List ID	Name	Grade
LB46	1187057	Perry Green	II
LB216	1074922	Holmwood	II
LB217	1204903	Barn 15 Yards West Of Hithermoor Farmhouse	II
LB218	1187049	Hithermoor Farmhouse	II
LB219	1187050	Barn And Stables 30 Yards West Of Hithermoor Farmhouse	II
LB220	1240644	Marjory Kinnon School/The Old School	II
LB221	1088096	Baber Bridge	II
LB222	1088097	Baber Auxiliary Bridge	II
LB223	1390544	Parish Boundary Stone	II
LB224	1390547	Milestone Opposite Islay Gardens	II
LB225	1375623	Barrack Masters House (Building 3) Hounslow Barracks	II
LB226	1240633	The Keep (Armoury) To Hounslow Cavalry Barracks	II
LB227	1240631	Former Chapel To Hounslow Cavalry Barracks	II
LB228	1375627	Medical Centre (Building 24), Hounslow Barracks	II
LB229	1375625	Former Married Quarters (Building 16), Hounslow Barracks	II
LB230	1260922	Former Coach Houses At North And South Ends Of West Stable Range And North End Of East Stable Range To Hounslow Cavalry Barracks	II
LB231	1117642	Little Court	II
LB232	1375626	Hardinge Block (Building 8), Hounslow Barracks	II
LB233	1240615	Former Stable Ranges Along The East And West Side Of Former Parade Ground To Hounslow Cavalry Berracks	II
LB234	1375624	Former Hospital (Building 41), Hounslow Barracks	II
LB235	1240579	Former Officers Mess And Quarters To Hounslow Cavalry Barracks	II
LB236	1375628	Naafi (Building 9), Hounslow Barracks	II
LB237	1117644	Church Of St Michael	I

Asset Number	National Heritage List ID	Name	Grade
LB238	1319363	Churchyard Wall To West Of Church Of St Michael	II
LB239	1117645	The Five Bells Public House	II
LB240	1135966	Lych Gate To North Of Church Of St Michael	II
LB241	1319361	Brookfield	II
LB242	1313048	The Crown Public House And Attached Barn	II
LB243	1313015	Ashgood Farmhouse	II
LB245	1135929	Horton Cedars	II
LB246	1117643	The Old Rectory	II
LB247	1241237	Ticket Hall And Shops At Hounslow West Underground Station	II
LB248	1313011	Horton Lodge	II
LB55	1187062	Barn To King John's Palace	II
LB56	1298904	Colne Cottage	II
LB57	1280920	King Johns Palace	II*
LB58	1204986	The White Hart Inn	II
LB249	1080306	Round House/The Village Lock Up	II
LB59	1187060	Kenilworth And Adjoining House	II
LB60	1187061	Star And Garter Public House	II
LB61	1298903	Abington	II
LB64	1204982	Fairmead And The Haven	II
LB65	1187059	Badminton House, Post Office, Adjoining House And Hampton House	II
LB66	1204965	1, 2 And 3, Park Street	II
LB67	1124403	Barn To Rear Of Aberdeen House	II
LB68	1317805	Aberdeen House	II

Asset Number	National Heritage List ID	Name	Grade
LB69	1124367	The Ostrich Public House	II*
LB70	1124408	Number 110 And House Adjoining To West (Anthonys (79) Ltd)	II
LB71	1124368	Town House	II
LB72	1124407	Milestone Outside No 3 Milestone Cottages	II
LB73	1124369	Excelsior House	II
LB74	1124376	Barn At Tanhouse Farm To South East Of The Farmhouse	II
LB75	1124406	Lucas (Newsagent)	II
LB76	1164470	Park House And Ye Olde George Public House	II
LB77	1319362	Mildridge Farmhouse	II
LB78	1244863	Royal Standard House	II
LB79	1317757	34, High Street	II
LB80	1317656	Mill House And Tanhouse Farmhouse J R Swanston Plant And Engineer (Longford) Limited	II
LB81	1124405	Ayres House (Bt And G Winston Premises)	II
LB84	1164451	The Red Lion Public House	II
LB85	1332745	Old School House	II
LB86	1164886	Former School (Now Colnbrook Youth Centre)	II
LB87	1317589	Church Of St Thomas	II
LB252	1284985	Sipson House	II
LB253	1080305	Stansfield House	II
LB88	1124383	St Thomas's Vicarage	II
LB254	1080197	Forecourt Wall To The Dower House	II
LB255	1080196	The Dower House	II
LB256	1284844	The Pheasant Public House	II

Asset Number	National Heritage List ID	Name	Grade
LB257	1080138	Elder Farmhouse	II
LB258	1194282	268-272, High Street	II
LB259	1080195	Harlington Baptist Church	II
LB260	1393114	Hangar, Heston Air Parks	II
LB261	1358414	Wall To East Of The Grange	II
LB262	1409790	Road Traffic Hazard Sign	II
LB263	1080124	Wall And Gates To South Of Harmondsworth Hall	II
LB264	1080123	Harmondsworth Hall	II
LB265	1080125	Wall To West And North Of The Grange	II
LB266	1117627	Barn To South-West Of Ditton Farmhouse	II
LB267	1358368	The Gable Stores	II
LB268	1319330	Ditton Farmhouse	II
LB269	1080202	The Crown Public House	II
LB270	1080118	K6 Telephone Kiosk In Front Of Five Bells Public House	II
LB271	1194343	The Five Bells Inn	II
LB272	1358366	The Sun House	II
LB273	1358367	Manor Farmhouse	II
LB274	1117663	Granary 50 Yds South-West Of Ditton Farmhouse	II
LB275	1080217	The Lodge	II
LB276	1080200	Howcroft (Rear Part Only)	II
LB277	1194310	The Vicarage/Tower House	II
LB278	1080218	Wall To East Of The Lodge	II
LB279	1080199	Acacia House	II

Asset Number	National Heritage List ID	Name	Grade
LB280	1080201	Church Of St Mary, Harmondsworth	II*
LB281	1358410	25, Holloway Lane	II
LB283	1194332	Manor Farm Barn (To West Of Church Of St Mary)	I
LB284	1080219	Lanz Farmhouse	II
LB285	1113383	Milestone At Tq 0137 7793	II
LB287	1080164	The King William Iv Public House	II
LB288	1080198	The White Hart Public House	II
LB290	1285085	Ha Ha Walls To South And South West Of Cranford House Stables	II
LB291	1240696	The Rectory	II
LB292	1080159	Cranford Park Bridge	II
LB293	1285115	Cellars Of Former Cranford House	II
LB294	1181206	Curved Wall To South Of West End Of Stables	II
LB295	1358387	Wall To South Of East End Of Stables	II
LB296	1181190	Church Of St Dunstan	II*
LB297	1080157	Cranford House Stables	II
LB298	1358391	Wall To South Of Churchyard Of Church Of St Peter And St Paul	II
LB299	1080163	Church Of St Peter And St Paul	I
LB300	1080158	Walls To North Of Stables	II
LB301	1250772	Monument To William And Elizabeth Brookes In Churchyard Of Church Of St Peter And St Paul	II
LB302	1181370	Walls To North Of Church Of Saint Peter And Saint Paul	II
LB303	1358388	Garden Walls To West Of Cranford House Stables	II
LB304	1332739	Old Timbers	II
LB305	1124379	Sutton Court Farmhouse	II

Asset Number	National Heritage List ID	Name	Grade
LB306	1096071	Brentford Fountain Western International Market	II
LB307	1393676	War Memorial Cherry Lane Cemetery	II

Table C22: Conservation Areas within the Outer Study Area

Asset Number	NAME
CA2	Harmondsworth Village
CA5	Bedfont Green
CA14	Harlington Village
CA15	Hounslow Cavalry Barracks
CA17	West Drayton Green
CA18	St Paul's Church

Table C23: Scheduled Monuments within the Outer Study Area

MAP ID	List Entry	Name
SM1	1002043	Part of a causewayed enclosure, 632m north-east of Mayfield Farm

Table C24: Registered Parks and Gardens within the Outer Study Area

Map ID	List Entry	Name	Grade
RPG1	1001290	Ditton Park	II

Appendix D Heritage Impact Assessment Methodology

Assessment of Value

An assessment of the value of each identified designated asset was undertaken on a six-point scale of Very High, High, Medium, Low, Negligible and Unknown. The assessment of value was based on professional judgement informed by consideration of the heritage values identified in the National Planning Policy Framework, and the criteria for the assessment of value provided in HA 208/07, as presented in Tables D1 and D2 below.

Table D1 - Criteria to Assess the Value of Archaeological Remains

Value	Criteria
Very High	• World Heritage Sites (including nominated sites). • Assets of acknowledged international importance. • Assets that can contribute significantly to acknowledged international research objectives.
High	• Scheduled Monuments (including proposed sites). • Undesignated assets of schedulable quality and importance. • Assets that can contribute significantly to acknowledged national research objectives.
Medium	• Designated or undesignated assets that contribute to regional research objectives.
Low	• Designated and undesignated assets of local importance. • Assets compromised by poor preservation and/or poor survival of contextual associations. • Assets of limited value, but with potential to contribute to local research objectives
Negligible	• Assets with very little or no surviving archaeological interest.
Unknown	• The value of the site has not been ascertained.

Table D2 - Criteria to Assess the Value of Historic Buildings

Value	Criteria
Very High	• Structures inscribed as of universal importance as World Heritage Sites. • Other buildings of recognised international importance.
High	• Scheduled Monuments with standing remains. • Grade I and Grade II* Listed Buildings. • Other listed buildings that can be shown to have exceptional qualities in their fabric or historical associations not adequately reflected in the listing grade. • Conservation Areas containing very important buildings. • Undesignated structures of clear national importance.

Value	Criteria
Medium	• Grade II Listed Buildings. • Historic (unlisted) buildings that can be shown to have exceptional qualities in their fabric or historical associations. • Conservation Areas containing buildings which contribute significantly to its historic character. • Historic Townscape or built-up areas with important historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Low	• 'Locally Listed' buildings. • Historic (unlisted) buildings of modest quality in their fabric or historical association. • Historic Townscape or built-up areas of limited historic integrity in their buildings, or built settings (e.g. including street furniture and other structures).
Negligible	• Buildings of no architectural or historical note; buildings of an intrusive character.
Unknown	• Buildings with some hidden (i.e. inaccessible) potential for historic significance.

Assessment of Magnitude and Significance of Impact

Magnitude of impact is assessed without reference to the assessment of value of the receptor, and may include physical impacts upon the asset, or impacts upon its setting or amenity value. Assessment of magnitude and significance of impact were assessed using professional judgement guided by the methodology and criteria provided by HA208/07 set out in Tables D3 to D4 below.

Table D3 - Magnitude of Impact: summary of factors for archaeological remains

Magnitude	Factors in the assessment of magnitude of change
Major	Change to most or all key archaeological materials, such that the resource is totally altered. Comprehensive changes to setting.
Moderate	Changes to many key archaeological materials, such that the resource is clearly modified. Considerable changes to setting that affect the character of the asset.
Minor	Changes to key archaeological materials, such that the asset is slightly altered. Slight changes to setting.
Negligible	Very minor changes to archaeological materials, or setting.
No Change	No Change.

Table D4 - Magnitude of Impact: summary of factors for the built heritage

Magnitude	Factors in the assessment of magnitude of change
Major	Change to key historic building elements, such that the resource is totally altered. Comprehensive changes to the setting.
Moderate	Change to many key historic building elements, such that the resource is significantly modified. Changes to the setting of an historic building, such that it is significantly modified.
Minor	Change to key historic building elements, such that the asset is slightly different. Change to the setting of an historic building, such that it is noticeably changed.
Negligible	Slight changes to historic building elements or setting that hardly affect it.
No Change	No Change. No change to fabric or setting.

For both sub-topics, the significance of impact is determined as a combination of the assessment of the value of the asset and the magnitude of the impact. This is achieved using professional judgment informed by the matrix illustrated below in Table D5. Five levels of significance of impact are defined which apply equally to Adverse and Beneficial impacts. Within this report, all impacts are assumed to be Adverse unless otherwise stated, and residual impacts of Moderate level or above are considered to be significant.

Table D5 - Matrix to Assess the Significance of Impacts on Cultural Heritage Assets

	Magnitude of Impact				
Value	**No Change**	**Negligible**	**Minor**	**Moderate**	**Major**
Very High	Neutral	Slight	Moderate or Large	Large or Very Large	Very Large
High	Neutral	Slight	Slight or Moderate	Moderate or Large	Large or Very Large
Medium	Neutral	Neutral or Slight	Slight	Moderate	Moderate or Large
Low	Neutral	Neutral or Slight	Neutral or Slight	Slight	Slight or Moderate
Negligible	Neutral	Neutral	Neutral or Slight	Neutral or Slight	Slight

Appendix E: Waste Model Results[4]

Table E1: Gatwick Baseline Waste Forecasts 2015 to 2050

High Level Traffic Forecasts - Capacity constrained, carbon traded								
Total per passenger (kg/Pax)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	0.260	0.260	0.260	0.260	0.260	0.260	0.260	0.260
Scenario 2 - Waste Prevention	0.217	0.138	0.138	0.138	0.138	0.138	0.138	0.138
Scenario 3 – Conservative Waste Prevention	0.245	0.221	0.221	0.221	0.221	0.221	0.221	0.221
Waste produced (tonnes)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	9,500	10,100	10,400	11,000	11,500	12,000	12,200	12,300
Scenario 2 - Waste Prevention	7,900	5,300	5,500	5,800	6,100	6,400	6,500	6,500
Scenario 3 - Conservative Waste Prevention	9,000	8,600	8,800	9,400	9,800	10,200	10,400	10,500
High Level Traffic Forecasts - Capacity constrained, carbon capped								
Total per passenger (kg/Pax)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	0.260	0.260	0.260	0.260	0.260	0.260	0.260	0.260
Scenario 2 - Waste Prevention	0.217	0.138	0.138	0.138	0.138	0.138	0.138	0.138
Scenario 3 - Conservative Waste Prevention	0.245	0.221	0.221	0.221	0.221	0.221	0.221	0.221
Waste produced (tonnes)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	9,700	10,100	10,300	10,700	11,200	11,500	11,900	12,100
Scenario 2 - Waste Prevention	8,100	5,300	5,400	5,600	5,900	6,100	6,300	6,400
Scenario 3 - Conservative Waste Prevention	9,100	8,600	8,700	9,100	9,600	9,800	10,100	10,300

[4] Jacobs (2014) Place Baseline Waste Forecast Model

Figure E1 - Gatwick Baseline Waste Forecast 2015 to 2050 – Carbon Traded Passenger Numbers

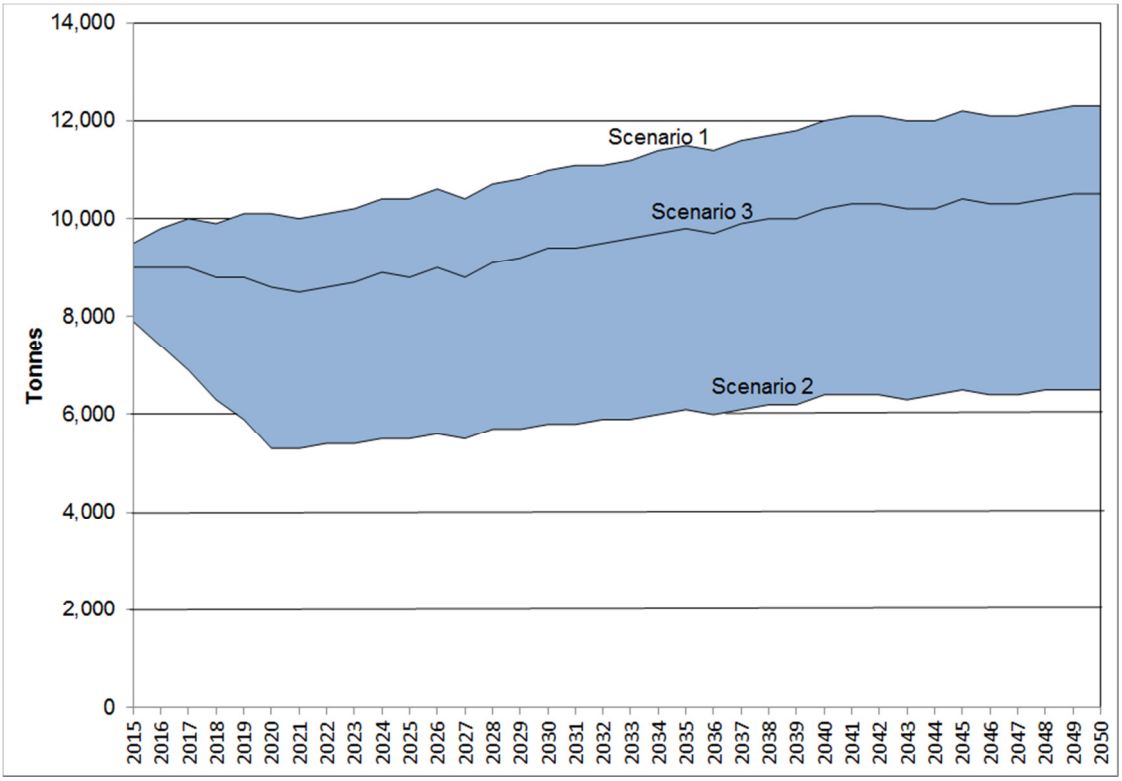

Figure E2 - Gatwick Baseline Waste Forecast 2015 to 2050 – Carbon Capped Passenger Numbers

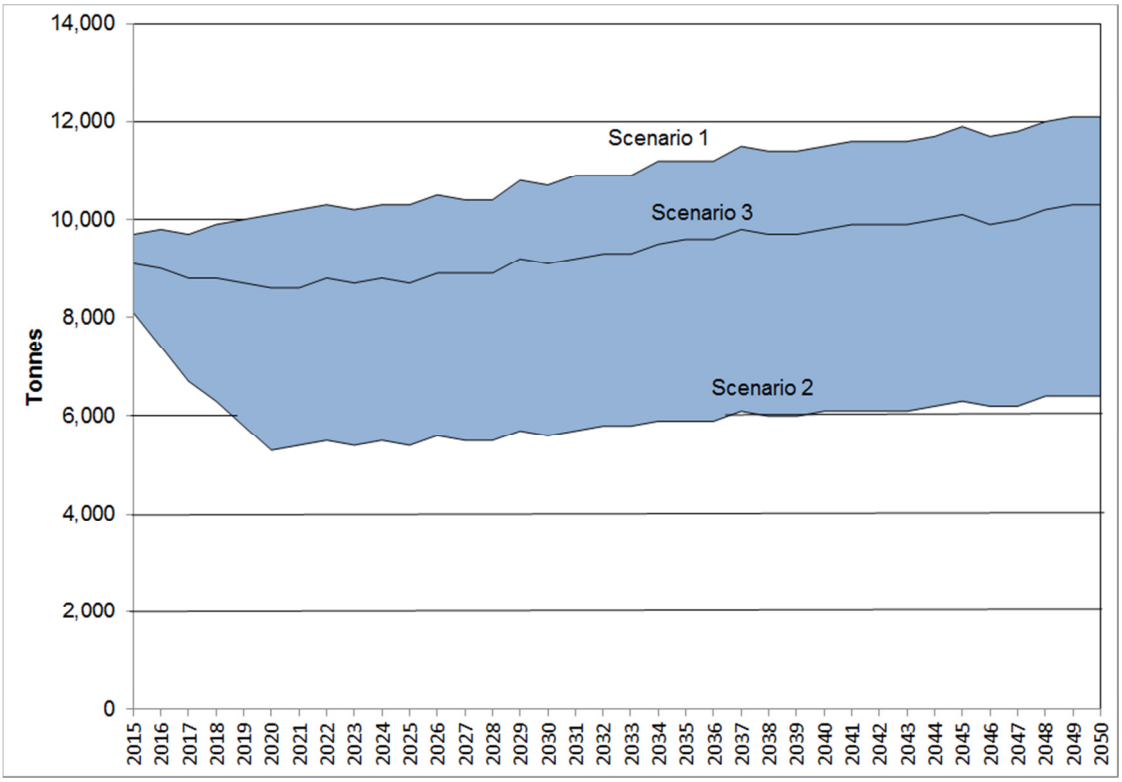

Table E2: Heathrow Baseline Waste Forecasts 2015 to 2050

High Level Traffic Forecasts - Capacity constrained, carbon traded								
Total per passenger (kg/Pax)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	0.369	0.369	0.369	0.369	0.369	0.369	0.369	0.369
Scenario 2 - Waste Prevention	0.343	0.284	0.284	0.284	0.284	0.284	0.284	0.284
Scenario 3 – Conservative Waste Prevention	0.355	0.321	0.321	0.321	0.321	0.321	0.321	0.321
Waste produced (tonnes)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	27,600	28,700	29,900	31,600	32,200	33,400	34,500	35,000
Scenario 2 - Waste Prevention	25,600	22,100	23,000	24,300	24,800	25,700	26,500	26,900
Scenario 3 - Conservative Waste Prevention	26,500	24,900	26,000	27,400	28,000	29,000	30,000	30,400
High Level Traffic Forecasts - Capacity constrained, carbon capped								
Total per passenger (kg/Pax)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	0.369	0.369	0.369	0.369	0.369	0.369	0.369	0.369
Scenario 2 - Waste Prevention	0.343	0.284	0.284	0.284	0.284	0.284	0.284	0.284
Scenario 3 - Conservative Waste Prevention	0.355	0.321	0.321	0.321	0.321	0.321	0.321	0.321
Waste produced (tonnes)	**2015**	**2020**	**2025**	**2030**	**2035**	**2040**	**2045**	**2050**
Scenario 1 - No change in waste growth per passenger	27,500	28,700	29,900	31,400	32,100	32,700	34,200	34,500
Scenario 2 - Waste Prevention	25,500	22,100	23,000	24,100	24,700	25,200	26,300	26,600
Scenario 3 - Conservative Waste Prevention	26,400	24,900	26,000	27,200	27,900	28,400	29,700	30,000

Figure E3 - Heathrow Baseline Waste Forecast 2015 to 2050 – Carbon Traded Passenger Numbers

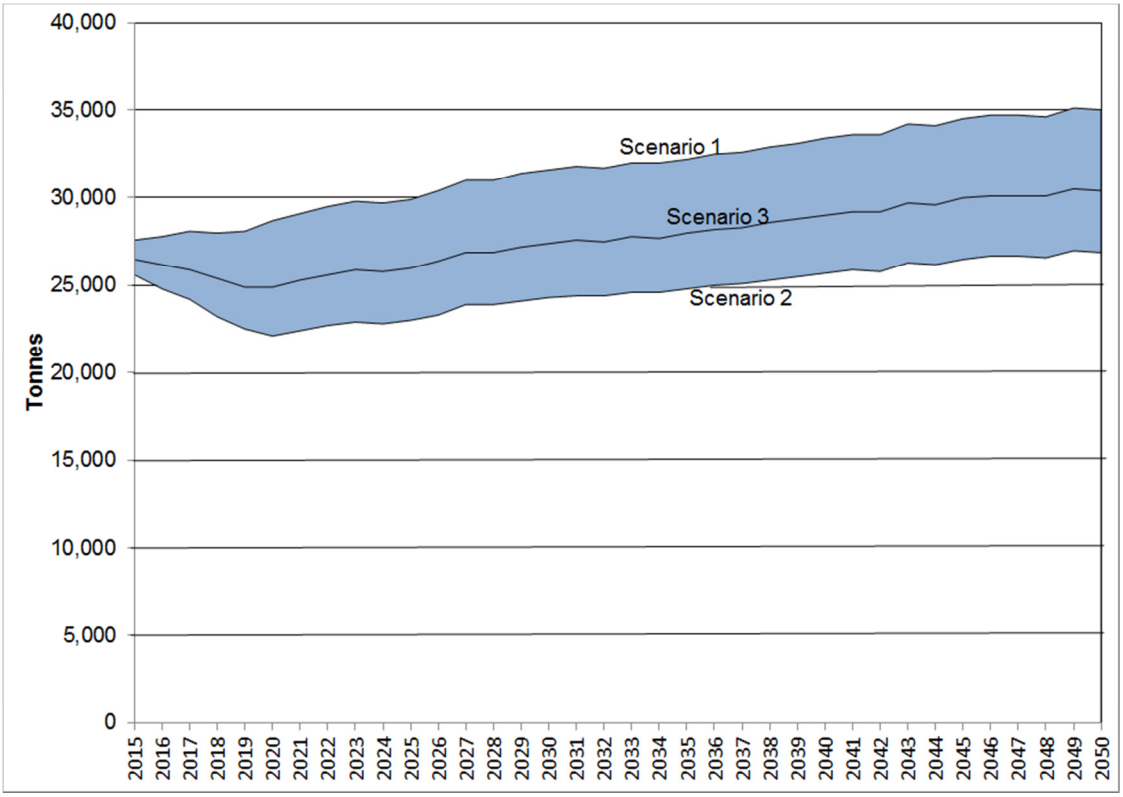

Figure E4 - Heathrow Baseline Waste Forecast 2015 to 2050 – Carbon Capped Passenger Numbers