Appendix A

TOPIC BASED SCHEMES ASSESSMENT: AoS FOR AIRPORTS NPS

A-11 HISTORIC ENVIRONMENT

June 2018

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11 HISTORIC ENVIRONMENT

11.1 INTRODUCTION

11.1.1 This topic based assessment considers each of the three airport expansion schemes under the Historic Environment topic. These are Heathrow Extended Northern Runway (LHR-ENR), Heathrow Northwest Runway (LHR-NWR) and Gatwick Second Runway (LGW-2R) (together the shortlisted schemes).

11.1.2 By law, before designating an Airports National Policy Statement (NPS) an Appraisal of Sustainability (AoS) must be carried out. This AoS is a strategic level assessment. It is based on the contents of the Airports NPS. The AoS considers alternatives to the Government's preferred scheme as set out in the Airports NPS, including the outline masterplans supplied to the Airports Commission for the three shortlisted schemes. This AoS considers the impacts of expansion without the benefits of the mitigation packages put forward by scheme promoters, unless stated otherwise. The Government has outlined that it expects a significant mitigation package to be put in place by the promoter of its preferred scheme to ensure that wherever possible significant effects are avoided, reduced or offset.

11.1.3 Further project-level design will be required which will inform an environmental impact assessment carried out by the promoter. This would include an assessment, which is likely to include effects identified in the AoS as well as more detailed mitigation developed as detailed design progresses. This will also be developed through consultation with both affected communities and other stakeholders

11.1.4 This assessment builds on the previous assessment undertaken as part of the Airports Commission (AC) Sustainability Appraisal[1] but also responds to the AoS Appraisal Framework. The Framework addresses historic environment issues which have been identified through the AoS scoping process which comprised a review of plans, policies and programmes, and also the national and local baseline information.

11.1.5 Each shortlisted scheme is considered against the AoS Appraisal Framework Objectives, and Questions. The Objective and Questions which are addressed within this assessment are as follows:

→ **AoS Objective 17:** Conserve and where appropriate enhance heritage assets and the wider historic environment including buildings, structures, landscapes, townscapes and archaeological remains.

- **AoS Question 31:** Will it affect the significance of internationally and nationally designated heritage assets and their settings?
- **AoS Question 32:** Will it affect the significance of non-designated heritage assets and their settings?
- **AoS Question 33:** Will it conserve or enhance heritage assets and the wider historic environment including landscapes, townscapes, buildings, structures, and archaeological remains?
- **AoS Question 34:** Will it lead to harm to the significance of heritage assets, for example from the generation of noise, pollutants and visual intrusion?

[1] Airports Commission, 2014. *Appraisal Framework*. [online] Accessed 24/12/2015.

11.2 POLICY AND LEGISLATION

11.2.1 The following policy and legislation relevant to the Historic Environment Assessment are summarised below and their context and applicability is explained as appropriate in the relevant sections of the assessment. Other topic specific policy and legislation has been covered within specific topic sections.

Ancient Monuments and Archaeological Areas Act 1979 (AMAAA)

11.2.2 The AMAAA 1979 largely relates to Scheduled Monuments and section 61(12) defines sites that warrant protection due to their being of national importance as ancient monuments. A monument is defined by the Act as any building, structure or work above or below the surface of the land, any cave or excavation; any site comprising the remains of any such building, structure or work or any cave or excavation; and any site comprising or comprising the remains of any vehicle, vessel or aircraft or other moveable structure or part thereof.

11.2.3 The Act also makes deliberate damage to a monument a criminal offence and any works taking place within one require Scheduled Monument Consent from the Secretary of State.

Planning (Listed Buildings and Conservation Areas) Act 1990 (P (LBCA))

11.2.4 Section 1 of the P (LBCA) Act 1990 defines a Listed Building as a building which is for the time being included in a list compiled or approved by the Secretary of State under that section. For the purpose of the Act any object or structure fixed to the building, which, since on or before the 1 July 1984, has formed part of the land and is comprised within the curtilage of the building is treated as part of the building. 'Building' is defined as including any structure or erection and any part of a building.

11.2.5 Section 66 places a responsibility upon the decision maker in determining applications for planning permission for any Scheme that affects a Listed Building or its setting to have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses.

11.2.6 Section 72 places a responsibility upon the decision maker in determining applications for planning permission within Conservation Areas to pay special attention to the desirability of preserving or enhancing the character or appearance of that area.

National Planning Policy Framework 2012 (NPPF)

11.2.7 Paragraph 3 of the NPPF states that the framework does not contain specific policies for nationally significant infrastructures projects. These are to be determined in accordance with the decision-making framework set out in the Planning Act 2008 and relevant National Policy Statements (NPSs) for major infrastructure. However, the NPPF does set wider development framework and reflects best practise.

11.2.8 Section 12 of the NPPF outlines government policy on the treatment of 'heritage assets' (including Scheduled Monuments, Listed Buildings, Conservation Areas, World Heritage Sites, Historic Parks and Gardens and Historic Battlefields, but also non-designated assets, including buried or suspected buried archaeological remains.

11.2.9 Paragraph 132 suggests that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation. The more important the asset the greater the weight should be. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification. The NPPF goes on to state that substantial harm to or loss of a Grade II Listed Building, park or garden should be exceptional. Substantial harm to or loss of designated assets of the highest significance (notably Scheduled Monuments, Protected Wreck Sites,

Battlefields, Grade I and Grade II* Listed Buildings, Grade I and Grade II* Registered Parks and Gardens and World Heritage Sites) should be wholly exceptional. Paragraphs 133-134 set out the decision-making framework for development affecting designated assets.

11.2.10 The NPPF also sets the framework for non-designated heritage assets, including regard to the scale of any harm or loss and the significance of the heritage asset (paragraph 135).

11.2.11 Non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments should be considered subject to policies for designated assets (paragraph 139).

11.3 BACKGROUND TO THE ASSESSMENT

11.3.1 The topic assessment is based on the following reports:

- Airports Commission, 2015. *Final Report*[2];
- Jacobs, 2014. 10. *Place Assessment*[3]; and
- Jacobs, 2014. 10. *Place: Baseline*[4].

11.3.2 The topic assessment also consulted the Heritage at Risk Register (HARR) during December 2015 and the Historic Environment Record (HER) for all relevant counties, also in late 2015.

11.3.3 For the purposes of establishing the cultural heritage baseline the assessment applied three study areas which are presented below. The impact of the schemes was also considered on designated assets lying outside of but close to the Outer Study Area (2km) and includes Kew Botanical Gardens which is a World Heritage Site. Designated assets were considered for all three areas below, together with entries on the HARR, whereas data on non-designated assets was obtained for the land take study area, not including the surface access corridors, and intermediate study area.

- Land Take Study Area: This comprises the footprint of each of the schemes and the surface access corridors. This defines the area where designated assets are at greatest risk from physical impact from construction of the proposed airport expansion schemes.
- Intermediate Study Area: This was defined as a 300m study area around the development footprint of each of the schemes and the size is based on Design Manual for Roads and Bridges (DMRB) guidance. The purpose of this study area was to identify those heritage assets where the settings are at risk of impact from construction and operation.
- Outer Study Area: A wider 2km study area was defined around each of the schemes. This was to identify designated heritage assets with settings at risk of impact from operation of the proposed airport expansion schemes.

11.3.4 The stated limits of all of the study areas would need to be subject to review at project level, and heritage assets and their settings lying outside of the limits should also be considered. In this way the effects of issues such as light, noise, tranquillity and the flight path can be considered in detail when more information on flight paths for a preferred scheme is known.

11.3.5 Data sources consulted include the National Heritage List for England (NHLE), the HER for all relevant counties and the HARR. The Historic Environment Assessment in this AoS focuses on designated heritage assets that could be affected, potential mitigation and residual impacts.

[2] Airports Commission, 2015. *Final Report*. [online] Accessed 23/12/2015.
[3] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[4] Jacobs, 2014. 10. *Place: Baseline*. [online] Accessed 23/12/2015.

11.3.6 The designated assets include:

- World Heritage Sites;
- Scheduled Monuments;
- Registered Parks and Gardens;
- Listed Buildings (all Grades); and
- Conservation Areas.

11.3.7 The assessment of non-designated archaeological remains, historic landscape character and townscapes is generic; assets have not been assessed individually at this stage.

11.3.8 To identify potential impacts on the tranquillity of the setting of assets, the N70 Contour was used which reflects where a number of events have a maximum external noise level of 70dB (A) or more. The assets located within the N70 daytime noise contour generated for 2030 and 2050 without the scheme being in place ('do minimum') were compared with the number of assets located inside the N70 daytime contour generated for the same years with the scheme in place ('do something')[5]. The assessment was based on the following guidance:

- Department for Communities and Local Government, 2012. *The National Planning Policy Framework*[6];
- Department for Communities and Local Government, 2014. *Planning Practice Guidance*[7]
- Historic England, 2008. *Conservation Principles, Policies and Guidance*[8]; Historic England, 2011. *The Setting of Heritage Assets*[9]. This has been replaced with Historic England 2015. *The Setting of Heritage Assets, Historic Environment GPA:3*[10]; and
- The Highways Agency, 2007. *DMRB Volume 11, Section 3 Part 2 Cultural Heritage (HA 208/07)*[11]

[5] Jacobs, 2014. 10. *Place Assessment. [*online] Accessed 23/12/2015.
[6] Department for Communities and Local Government, 2012. *National Planning Policy Framework*. [online] Accessed 23/12/2015.
[7] Department for Communities and Local Government, 2014. *Planning Practice Guidance.* [online] Accessed 04/07/2016.
[8] Historic England, 2008. *Conservation Principles, Policies and Guidance*. [online] Accessed 23/12/2015.
[9] Historic England, 2011. *The Setting of Heritage Assets*. [online] Accessed 04/07/2016.
[10] Historic England 2015. *The Setting of Heritage Assets, Historic Environment GPA: 3*. [online] Accessed 04/07/2016.
[11] The Highways Agency, 2007. *Design Manual for Roads and Bridges Volume 11, Section 3 Part 2 Cultural Heritage* (HA 208/07). [online] Accessed 23/12/2015.

11.4 INTERACTION WITH OTHER TOPICS

11.4.1 The assessment of the historic environment is closely related to other topic-based assessments in this report. In particular, the following interactions are noted within.

Table 11.1: Interaction of the Historic Environment Topic with other Topics

TOPIC	INTERACTION
Community	Heritage assets have a cultural value. For example, many designated assets are used for leisure and recreation, such as Kew Gardens World Heritage Site. Heritage assets also contribute to a sense of place.
Noise	The setting of heritage assets can be affected by noise, in this context this is generated by construction noise, surface transport and aviation noise.
Air quality	Particulate matter deposition can affect and degrade the fabric of historic structures.
Landscape	Heritage assets form an integral part of the landscape. Landscape features form part of historic landscapes. Loss of heritage assets can change landscapes. Similarly changes to the landscape can affect the setting of heritage assets.

11.5 ASSESSMENT CRITERIA

11.5.1 The general criteria used for assessing the significance of effects are set out in the methodology in Section 3 of the AoS Report to which this appendix is attached.

11.5.2 Additional assessment criteria specific to this topic have been applied to the assessment as set out in the DMRB (HA 208/07), which has been used in the AC assessment.[12] The assessment of value was based on professional judgement informed by consideration of the heritage values identified in the NPPF and Guidance[13,] and the criteria for the assessment of value provided in HA 208/07.

11.5.3 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, expert judgment informed by the matrix illustrated below in Table 11.2. 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 [14] (refer to Table 11.3 below for identification of significant effects).

Table 11.2: 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

[12] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[13] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.
[14] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.

	MAGNITUDE OF IMPACT				
Negligible	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

11.5.4 The schemes were appraised against the AoS Objectives and Questions using the notation set out in Table 11.3. It should be noted that schemes are assessed individually against the requirements of the Strategic Environmental Assessment (SEA) Regulations and presented together for comparison. This means that although the nature of effects can vary between schemes, the significance may be the same.

Table 11.3: Classification of Significant Effects in the AoS

++	*Significant positive effect*
+	*Positive effect*
-	*Negative effect*
--	*Significant negative effect*
+/-, ++/--	*Mixed positive and negative effect*
?	*Uncertain effect*
0	*No relationship / neutral effect*

11.6 SUMMARY OF BASELINE AND ISSUES

NATIONAL BASELINE

11.6.1 The baseline considers a number of types of historic environment receptors which in accordance with the NPPF[15] are referred to as heritage assets and defined below.

11.6.2 Heritage asset: A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. Heritage assets include designated heritage assets and assets identified by the local planning authority (including local listing).[16]

11.6.3 Designated heritage asset: A World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation.[17]

11.6.4 Archaeological interest: There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the

[15] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.
[16] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.
[17] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.

substance and evolution of places, and of the people and cultures that made them.[18]

11.6.5 In summary, England has the following heritage assets (2015 data from Heritage Counts[19]):

- 18 World Heritage Sites[20];
- 19,833 Scheduled Monuments;
- 1,628 Registered Parks and Gardens ;
- 9,840 Conservation Areas ;
- 46 Registered Battlefields;
- Five Areas of Archaeological Importance (Canterbury, Chester, Exeter, Hereford and York); and
- 375,880 Listed Buildings.

11.6.6 Although some assets including Registered Parks and Gardens and Conservation Areas are described below, what follows is not a comprehensive description of the significant heritage assets and their settings that contribute to the views and historic characteristics of the wider landscape / townscape. Detailed studies based on guidance provided in '*The Setting of Heritage Assets*'[21] and '*Seeing History in the View*'[22] will be undertaken at the Environmental Impact Assessment (EIA) stage to understand the wider historic landscape characteristics and visual significance. This AoS is carried out at a level of detail appropriate to the preparation of a NPS, and detailed assessment of any scheme contained in an application for development consent will come later.

LOCAL BASELINE

11.6.7 The HARR[23] was consulted to ascertain how many of the designated heritage assets identified as being present within the study areas is entered onto the list. The results were one Scheduled Monument, four Conservation Areas, and two Grade II Listed Buildings.

11.6.8 Each County local planning authority across the UK maintains a HER database of heritage assets. This includes heritage assets that are not defined by national policy as designated heritage assets but are recognised as being important within a local or neighbourhood and regional or county context. In addition it will include assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments. This could comprise historic landscapes, locally Listed Buildings and structures, known archaeological sites (buried remains), archaeological earthworks (above ground), and other structures and buildings of regional or local sensitivity. For London the Greater London HER is held by the Greater London Archaeological Advisory Service (GLAAS). In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant HER should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field

[18] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.
[19] English Heritage, 2014. *Heritage Counts England: Tenth Anniversary Edition 2014*. [] Accessed 23/12/2015.
[20] UNESCO, 2013. *Culture: World Heritage Centre: The List: World Heritage List*. [online] Accessed 23/12/2015.
[21] Historic England, 2015. *The Setting of Heritage Assets Historic Environment GPA: 3*. [online] Accessed 05/05/2016.
[22] Historic England, 2011. *Seeing History in the View* [online] Accessed 05/05/2016
[23] Historic England, 2015. *Heritage at Risk Register*. [online] Accessed 23/12/2015.

evaluation[24]. This level of significance assessment will be undertaken at subsequent project level assessment.

11.6.9 Of the 465 non-designated heritage assets known to be present from the HER database across the three shortlisted schemes; 276 lie within the Land Take Study Area and 189 within the Intermediate Study Area. Twelve Archaeological Notification Areas lie within the Land Take Study Area and one within the Intermediate Study Area. Their level of importance within a local / neighbourhood, county / regional or national context would need to be determined as part of a more detailed appraisal as part of an EIA.

11.6.10 All of the designated assets are of national importance regardless of their grade. The World Heritage Site is of international importance.

LGW-2R

11.6.11 None of the designated assets for this scheme are recorded on the HARR.

11.6.12 For LGW-2R there are 181 Listed Buildings within 2km of the scheme. These include five Grade I Listed Buildings and 10 Grade II*. In addition, there are seven Conservation Areas and four Scheduled Monuments, and various landscapes or townscapes of historical significance[25]. The distribution of these assets by study area is:

- Land Take Study Area: Six Grade II* Listed Buildings; 16 Grade II Listed Buildings;
- Intermediate Study Area: Six Grade II Listed Buildings, two Scheduled Monuments, two Conservation Areas; and
- Outer Study Area: Five Grade I Listed Buildings, four Grade II* Listed Buildings, 144 Grade II Listed Buildings, two Scheduled Monuments, five Conservation Areas.

11.6.13 Thirty-five non-designated assets lie within the Land Take Study Area and 20 in the Intermediate Study Area. Twelve archaeological notification areas lie within the Land Take Study Area and one in the Intermediate Study Area.

LHR-ENR

11.6.14 In total four Conservation Areas and a Grade II Listed Building appears on the HARR for LHR-ENR. The Listed Building is in the Land Take Study Area.

11.6.15 Two Conservation Areas are in the Intermediate Study Area and two are in the Outer Study Area. For LHR-ENR there are 190 Listed Buildings within 2km including four Grade I and six Grade II* Listed Buildings. There are also 11 Conservation Areas, three Scheduled Monuments, one Historic Park and Garden, and various landscapes or townscapes of historical significance within this scheme[26]. The distribution of these assets by study area is:

- Land Take Study Area: Seven Grade II Listed Buildings;
- Intermediate Study Area: One Grade II* Listed Building, 22 Grade II Listed Buildings, two Scheduled Monuments, five Conservation Areas; and
- Outer Study Area: Four Grade I Listed Buildings, five Grade II* Listed Buildings, 151 Grade II Listed Buildings, one Scheduled Monument, six Conservation Areas, one Registered Park or Garden.

[24] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.
[25] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[26] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.

11.6.16 Seventy-four non-designated assets lie within the Land Take Study Area and 79 in the Intermediate Study Area.

11.6.17 One Conservation Area lies within an area extending 100m either side of the proposed surface access corridors.

LHR-NWR

11.6.18 One Scheduled Monument, four Conservation Areas and two Grade II Listed Buildings appear on the HARR in relation to LHR-NWR. One of the Conservation Areas lies in the Outer Study Area, one in the Intermediate Study Area and two in the Land Take Study Area. The two Listed Buildings are also within the Land Take Study Area as is the Scheduled Monument.

11.6.19 For LHR-NWR there are 225 Listed Buildings within 2km of the scheme including three Grade I and 14 Grade II* Listed Buildings. There are also 12 Conservation Areas and Four Scheduled Monuments, and various landscapes or townscapes of historical significance[27]. The distribution of these assets by study area is:

- Land Take Study Area: 17 Grade II Listed Buildings, two Scheduled Monuments, two Conservation Areas;
- Intermediate Study Area: One Grade I Listed Building, three Grade II* Listed Buildings, 44 Grade II Listed Buildings, one Scheduled Monument, five Conservation Areas; and
- Outer Study Area: Two Grade I Listed Buildings, 11 Grade II* Listed Buildings, 147 Grade II Listed Buildings, one Scheduled Monument, five Conservation Areas.

11.6.20 One hundred and sixty-seven non-designated assets lie within the Land Take Study Area and 90 in the Intermediate Study Area.

11.6.21 One Grade I Listed Building, five Grade II Listed Buildings and two Conservation Areas lie within an area extending 100m either side of the proposed surface access corridors.

11.6.22 A summary comparison of assets with the Study Areas for each Scheme is presented in Table 11.4, below.

Table 11.4: Comparison of Assets by Study Area within the Schemes

SCHEME	LAND TAKE*	INTERMEDIATE	OUTER**
LGW–2R	6 Grade II* and 16 Grade II Listed Buildings. 35 non-designated assets. 12 Archaeological Notification Areas	6 Grade II Listed Buildings, 2 Scheduled Monuments, 2 Conservation Areas. 20 non designated assets. 1 Archaeological Notification Area.	5 Grade I, 4 Grade II* and 144 Grade II Listed Buildings, 2 Scheduled Monuments and 5 Conservation Areas
LHR-ENR	7 Grade II Listed Buildings. 74 non-designated assets	1 II* and 22 Grade II Listed Buildings, 2 Scheduled Monuments and 5 Conservation Areas. 79 non-designated assets	4 Grade I, 5 Grade II* and 151 Grade II Listed Buildings, 1 Scheduled Monument, 6 Conservation Areas and 1 Registered Park and Garden
LHR-NWR	17 Grade II Listed Buildings, 2 Scheduled Monuments, 2 Conservation Areas.	1 Grade 1, 3 Grade II* and 44 Grade II Listed Buildings, 1 Scheduled Monument and 5 Conservation Areas	2 Grade I, 11 Grade II* and 147 Grade II Listed Buildings, 1 Scheduled Monument and 5 Conservation Areas

[27] Jacobs, 2014. *10. Place Assessment.* [online] Accessed 23/12/2015.

	67 non-designated assets	90 non-designated assets	
* Not including surface access corridors ** Note that data for non-designated assets was not collected for the Outer Study Area			

11.6.23 It should be noted that there are nationally and internationally designated sites (such as Kew Gardens World Heritage Site) outside the study area[28]. It is likely that non-designated heritage assets are present within the 2km study area for the three schemes. There is potential for previously unknown archaeological remains to be present within all of the study areas.

FUTURE BASELINE AND ISSUES

11.6.24 Both designated and non-designated heritage assets will be subject to pressure from urban development and associated transport and power generation scheme requirements. This will be both direct (physical impact and impact on setting) and indirect (eg effects of drainage).

11.6.25 The historic environment is vulnerable to a variety of issues including development pressure, lack of investment and climate change. Heritage assets could be subject to potential risk from climatic change in varying degrees[29].

11.7 MITIGATION INCLUDED IN ASSESSMENT

11.7.1 The Place Assessment Report presents heritage specific mitigation proposals[30].

LGW-2R

11.7.2 The following mitigation for the LGW-2R scheme is proposed within the AC's reports[31]:

- Scheduled Monuments either to be archaeologically investigated at some sites although with no mitigation yet proposed at others;
- Listed Buildings to be subject to a level I Historic England Building Investigation to inform further mitigation proposals;
- Conservation Areas - The exclusion of construction traffic; and
- Non-designated archaeological remains to be subject to various archaeological evaluation techniques, both intrusive and non-intrusive.

LHR-ENR

11.7.3 The following mitigation for LHR-ENR scheme is proposed within the ACs reports[32].

- Scheduled Monuments - Flight sequencing and noise respite measures;
- Listed Buildings to be subject to building recording prior to demolition; relocation following recording and some instances of flight sequencing and noise respite measures;
- Conservation Areas - Flight sequencing and noise respite measures; and
- Non-designated archaeological remains to be subject to a programme of archaeological research investigations, post-excavation analysis and public dissemination.

[28] Jacobs, 2014. *10. Place Assessment.* [online] Accessed 23/12/2015.
[29] English Heritage, 2008. *Climate Change and the Historic Environment*. [online] Accessed 23/12/2015.
[30] Jacobs, 2014. 10. *Place: Assessment*, Section 4. [online] Accessed 23/12/2015.
[31] Jacobs, 2014. 10. *Place: Assessment*, Section 4. [online] Accessed 23/12/2015.
[32] Jacobs, 2014. 10. *Place: Assessment*, Section 4. [online] Accessed 23/12/2015.

LHR-NWR

11.7.4 The following mitigation for LHR-NWR scheme is proposed within the ACs reports[33].

- Scheduled Monuments - No mitigation for direct impacts is yet proposed;
- Listed Buildings to be subject to building recording prior to demolition and the retention of selected architectural materials at a suitable museum repository;
- For Conservation Areas various options are offered including a strategy to strengthen the remaining part of the Conservation Area, or to enhance other Conservation Areas in the vicinity of those to be lost; and
- Non-designated archaeological remains to be subject to a programme of archaeological research investigations, post-excavation analysis and public dissemination.

11.7.5 It is acknowledged that at the policy level, detailed mitigation has not yet been developed and would need to be informed by further studies on the historic environment baseline and impacts when project details are known. Therefore in order to assess all options equally, the assessment in this AoS does not assume mitigation proposals for all three options are yet in place.

11.8 APPROACH TO THE ASSESSMENT OF HERITAGE ASSETS

11.8.1 The 2km study area applied here will be used as guidance only for any future assessment and in particular the assessment of setting. In accordance with the NPPF and Historic England GPA: 3[34] the extent of an asset's setting is not fixed and may change as the asset and its surroundings evolve.

11.8.2 Impacts at the strategic level have been assessed for both construction and operational phases. For instance during construction, effects covered under heritage arise from earthworks, lighting and construction activities. During operation effects would include presence of new infrastructure, buildings and effects from flight paths. This is addressed through the consideration of the duration of the impact (short medium and long term) within the assessment.

11.8.3 A high level desk-based assessment has been undertaken for heritage in line with the AC Appraisal Framework[35] and using a methodology based on guidance provided by DMRB Volume 11, Section 3 Part 2 Cultural Heritage (HA 208/07)[36.]

11.8.4 To identify the potential impacts on the setting of assets arising from changes in tranquillity, the number of assets located in the N70 daytime noise contour for 2030 and 2050 without the scheme being in place was used as a baseline, and was compared to those inside with the scheme in place for the same period.

11.8.5 Detailed assessment of the shortlisted schemes' impacts on the significance of heritage assets should be undertaken at the EIA stage following guidance set out in '*The Setting of Heritage Assets*'[37] and '*Aviation Noise Metric*'[38].

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[33] Jacobs, 2014. 10. *Place: Assessment*, Section 4. [online] Accessed 23/12/2015.
[34] Historic England, 2015. *The Setting of Heritage Assets, Historic Environment GPA: 3.* [online] Accessed 04/07/2016.
[35] Airports Commission, 2014. *Appraisal Framework*, Chapter 10 [online] Accessed 24/12/2015.
[36] The Highways Agency, 2007. *Design Manual for Roads and Bridges, Volume 11 Environmental Assessment, Section 3 Environmental Topics, Part 2, HA208/07 Cultural Heritage*. [online] Accessed 26/01/2017.
[37] Historic England, 2015. *The Setting of Heritage Assets.* [] Accessed 06/05/2016.

ASSESSMENT OF HERITAGE SIGNIFICANCE

11.8.6 An assessment of the significance of individual heritage assets has not been undertaken at strategic level but would be undertaken to support any application for Development Consent. As described above for the NPPF this should be in line with best practice. It would comprise an assessment of the significance of any heritage assets affected (including any contribution made by their setting) together with the impact of the relevant scheme on that significance and the steps that have been taken to avoid/minimise any possible harm. It is recognised that more detail on development of a preferred scheme will be available at this time so that the impact of the scheme and proposed mitigation is better understood. This will be able to inform site specific surveys and assessments. The level of detail would be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on that significance. In addition, it is important to consider possible impacts (including cumulative) upon the wider historic environment. It is expected that this will be secured by the assessment provision in the NPS.

11.8.7 At this stage it is possible to present the heritage values that would be considered in determining the significance as part of future evaluation, and which taken together will allow a full understanding of each asset. The heritage values as set out in NPPF Guidance are as shown in the Table 11.5.[39]

Table 11.5: Definition of Heritage Values

VALUE	DEFINITION
Archaeological Interest	There will be archaeological interest in a heritage asset if it holds, or potentially may hold, evidence of past human activity worthy of expert investigation at some point. Heritage assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.
Architectural Interest	To be of special architectural interest a building must be of importance in its architectural design, decoration or craftsmanship; special interest may also apply to nationally important examples of particular building types and techniques (eg buildings displaying technological innovation or virtuosity) and significant plan forms.
Artistic Interest	Interest in the design and general aesthetics of a place. It can arise from conscious design or fortuitously from the way the place has evolved. More specifically, architectural interest is an interest in the art or science of the design, construction, craftsmanship and decoration of buildings and structures of all types. Artistic interest is an interest in other human creative skill, like sculpture.
Historic Interest	To be of special historic interest a building must illustrate important aspects of the nation's social, economic, cultural, or military history and/or have close historical associations with nationally important people. There should normally be some quality of interest in the physical fabric of the building itself to justify the statutory protection afforded by listing.

[38] Historic England, 2014. Avi*ation Noise Metric – Research on the Potential Noise Impacts on the Historic Environment by Proposals for Airport Expansion in England, Project No. 6865 by Temple and Cotswold Archaeology*. [online] Accessed 06/05/2016.

[39] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.

11.9 ASSESSMENT OF SHORTLISTED SCHEMES

11.9.1 For all three schemes it is anticipated that heritage assets located within the Land Take Study Area are at greatest risk from physical impacts (the whole or partial removal of remains or fabric, above and below ground) during construction of the schemes. Where it is proposed to retain assets *in situ* there are still likely to be significant impacts on the setting of these assets during the construction and operation of the scheme. Due to the close proximity of assets within the Intermediate Study Area to the schemes there is high potential for impacts on the setting of these assets both during construction and operation. It is highly unlikely that heritage assets lying within the Outer Study Area will be at risk from direct physical impacts or impacts on settings during construction. However, there is the potential for impact on the settings during operation. This will be due to noise, air quality and impacts on tranquillity brought about by an increase in air traffic.

AoS Objective 17: Conserve and where appropriate enhance heritage assets and the wider historic environment including buildings, structures, landscapes, townscapes and archaeological remains

LGW-2R

11.9.2 The assessment identified direct, permanent, physical negative impacts of large significance on 22 nationally important designated assets within the scheme Land Take Study Area; the setting of a further ten designated assets could be subject to direct, long-term large negative impacts within the Intermediate Study Area, and from 300m to 2km (the Outer Study Area) the setting of a further 160 designated assets could potentially be affected to a moderate magnitude of direct and long-term negative impact (Significant Negative). Impacts of a magnitude of moderate and above are considered to be significant (Table 11.2).

11.9.3 There are 35 non-designated heritage assets, as identified from the HER search, within the scheme Land Take Study Area, which will be subject to direct, permanent and negative physical impacts. As the cultural heritage significance of any such assets is as yet unknown the significance of the impact cannot be quantified although a precautionary approach has been applied and the impact assessed as Significant Negative. The impact within the Intermediate Study Area will be on the setting of 20 non-designated assets.

11.9.4 No direct impacts on any designated assets are predicted to arise from the surface access corridors[40].There is potential that construction and / or operation of the surface access corridors may impact on non-designated assets, however, the design of these corridors is not sufficiently advanced to allow this to be qualified[41].

11.9.5 The following designated assets lie within the N70 Contour for 'do minimum 2030': two Conservation Areas, four Grade I Listed Buildings, 13 Grade II* Listed Buildings, 126 Grade II Listed Buildings[42]. This is because in the "do minimum" scenario, the existing effects are expected to stay the same or worsen.

11.9.6 The following designated assets lie within the N70 Contour for ''do something' 2030: two Conservation Areas, two Scheduled Monuments, eight Grade I Listed Buildings, 24 Grade II* Listed Buildings and 256 Grade II Listed Buildings[43].

[40] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[41] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[42] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[43] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.

11.9.7 By 2030, without the LGW-2R scheme in place 146 designated assets are predicted to be in the N70 Contour of "do minimum". For "do something" this is predicted to be 293. Therefore there is the potential for impacts on the tranquillity to 147 more designated assets. By 2050 this rises to 201 more designated assets[44].

11.9.8 There is potential for cumulative effects arising in combination with other major infrastructure development which is delivered in support of the National Networks NPS, or from nearby residential, commercial or infrastructure development that is planned by local authorities as part of their plans for growth, as set out in individual Local Development Plan documents. These schemes may increase noise and also adversely affect the setting of designated and non-designated heritage assets. There may also be an impact on potential archaeological remains. Major nearby road and rail schemes include the Lower Thames Crossing or improvements to the road network such as to the A27 in West Sussex or to the M25.

LHR-ENR

11.9.9 The assessment identified direct, permanent, physical negative impacts of large significance on seven nationally important designated assets within the scheme Land Take Study Area; the setting of a further thirty designated assets could be subject to direct, long-term large negative impacts within the Intermediate Study Area, and from 300m to 2km (the Outer Study Area) the setting of a further 168 designated assets could potentially be affected to a moderate level of direct and long-term negative impact. These combined negative impacts result in a Significant Negative effect.

11.9.10 Seventy-four non-designated heritage assets, as identified from the HER search, within the scheme Land Take Study Area will be subject to direct, permanent and negative physical impacts. As the cultural heritage significance of any such assets is as yet unknown the significance of the impact cannot be quantified although a precautionary approach has been applied and the impact assessed as Significant Negative. It is likely that scheme construction works will necessitate the complete destruction of the archaeological remains present. The impact within the intermediate area will be on the setting of 79 non-designated assets.

11.9.11 One Conservation Area lies within an area extending 100m either side of the proposed surface access corridors.

11.9.12 The following designated assets lie within the N70 Contour for 'do minimum 2030': 21 Conservation Areas, nine Registered Parks and Gardens, one World Heritage Site, eight Scheduled Monuments, 41 Grade I Listed Buildings, 102 Grade II* Listed Buildings, 1229 Grade II Listed Buildings[45.]

11.9.13 The following designated assets lie within the N70 Contour for 'do something' 2030: 21 Conservation Areas, ten Registered Parks and Gardens, one World Heritage Site, nine Scheduled Monuments, 61 Grade I Listed Buildings, 167 Grade II* Listed Buildings and 2053 Grade II Listed Buildings[46].

11.9.14 By 2030, without the LHR-ENR scheme in place 1411 designated assets are predicted to be in the N70 Contour of 'do minimum'. For 'do something' this is predicted to be 2322. Therefore there is the potential for impacts on the tranquillity of 911 more designated assets. By 2050 this rises to 880 more designated assets[47].

[44] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[45] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[46] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[47] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.

11.9.15 There is potential for cumulative effects arising in combination with other major infrastructure development which is delivered in support of the National Networks NPS, or from nearby residential, commercial or infrastructure development that is planned by local authorities as part of their plans for growth, as set out in individual Local Development Plan documents. These schemes may increase noise and also adversely affect the setting of designated and non-designated heritage assets and potential archaeological remains. Major nearby road and rail schemes include HS2, Crossrail and improvements to the road network including improvements to the M25.

LHR-NWR

11.9.16 The assessment identified direct, permanent, physical negative impacts of large significance on 21 nationally important designated assets within the scheme land take (not including the surface access corridors); the setting of a further 54 designated assets could be subject to direct, long-term large negative impacts within the Intermediate Study Area, and from 300m to 2km (the Outer Study Area) the setting of a further 166 designated assets could potentially be affected to a moderate level of direct and long-term negative impact (Significant Negative).

11.9.17 There are 167 non-designated heritage assets within the scheme land take, as identified from the HER search, which will be subject to direct, permanent and negative physical impacts. As the cultural heritage significance of any such assets is as yet unknown the significance of the impact cannot be quantified although a precautionary approach has been applied and the impact assessed as Significant Negative. The impact within the intermediate area will be on the setting of 90 non-designated assets.

11.9.18 One Grade I Listed Building, five Grade II Listed Buildings and two Conservation Areas lie within an area extending 100m either side of the proposed surface access corridors.

11.9.19 The following designated assets lie within the N70 Contour for 'do minimum 2030': 21 Conservation Areas, nine Registered Parks and Gardens, one World Heritage Site, eight Scheduled Monuments, 41 Grade I Listed Buildings, 102 Grade II* Listed Buildings, 1229 Grade II Listed Buildings[48].

11.9.20 The following designated assets lie within the N70 Contour for 'do something' 2030: 18 Conservation Areas, 15 Registered Parks and Gardens, one World Heritage Site, eight Scheduled Monuments, 62 Grade I Listed Buildings, 140 Grade II* Listed Buildings and 1710 Grade II Listed Buildings[49].

11.9.21 By 2030, without the LHR-NWR scheme in place 1411 designated assets are predicted to be in the N70 Contour of do minimum. For "do something" this is predicted to be 1954. Therefore there is the potential for impacts on the tranquillity to 543 more designated assets. By 2050 this rises to 622 more designated assets[50].

11.9.22 There is potential for cumulative effects arising in combination with other major infrastructure development which is delivered in support of the National Networks NPS, or from nearby residential, commercial or infrastructure development that is planned by local authorities as part of their plans for growth, as set out in individual Local Development Plan documents. These effects are explained in 11.8.16 above.

[48] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[49] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.
[50] Jacobs, 2014. 10. *Place Assessment.* [online] Accessed 23/12/2015.

SUMMARY

11.9.23 None of the schemes are likely to conserve or enhance the historic environment including landscapes, townscapes, buildings, structures and archaeological remains. However, following more detailed mitigation proposals some positive outcomes could be realised through some enhancement to Conservation Areas and through community engagement and by addressing heritage at risk (including those that become at risk as a result of the scheme), improving the setting of heritage assets and mitigating noise impacts, together with opportunities for community engagement including improving access to and/or interpretation, understanding and appreciation of the heritage assets.

11.9.24 During operation there is the potential to impact in a negative manner on the setting of heritage assets as a result of increased numbers of aircraft overflying the heritage assets within the three study areas. These impacts could extend beyond the study areas. There are likely to be increased light levels from construction and operational lighting in addition to any lights from aircraft whilst on the ground and in flight. This impact will result in loss to the significance of the assets. Designated assets to be affected include Scheduled Monuments, Listed Buildings (all Grades), a Registered Park and Garden and Conservation Areas. Historic landscape and townscape character will also be affected. There is unlikely to be an impact on below-ground archaeological remains from this kind of impact.

Objective 17: Conserve and Where Appropriate Enhance Heritage Assets and the Wider Historic Environment Including Buildings, Structures, Landscapes, Townscapes, and Archaeological Remains

Question 31: Will it affect the Significance of Internationally and Nationally Designated Assets and their Settings?

SEA CRITERIA	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (including effects on receptor)	**Land Take Study Area (including surface access corridors)** Construction activities including the demolition or partial demolition of structures will impact on 22 Listed Buildings (Grade II* and II) resulting in their total or partial loss. Total loss is substantial harm. Partial loss could result in assets being put at risk. Partial loss can also result in substantial harm. The significance of assets lying outside of the land take but associated with those within it will be at risk of harm. **Intermediate Study Area** Construction and operation will impact on the setting of two Scheduled Monuments, six Listed Buildings (Grade II) and two Conservation Areas. This will result in harm to the significance of the assets. **Outer Study Area** Operation of the scheme will impact on the setting of two Scheduled Monuments, 153 Listed Buildings (all Grades) and five Conservation Areas. This will result in harm to the significance of the assets.	**Land Take Study Area (including surface access corridors)** Construction activities including the demolition or partial demolition of structures will impact on seven Grade II Listed Buildings resulting in their total or partial loss. Total loss is substantial harm. Partial loss could result in assets being put at risk. Partial loss can also result in substantial harm. A Conservation Area will also be affected. The significance of assets lying outside of the land take but associated with those within it will be at risk of harm. **Intermediate Study Area** Construction and operation will impact on the setting of two Scheduled Monuments, 23 Listed Buildings (Grades II* and II) and five Conservation Areas. This will result in harm to the significance of the assets. **Outer Study Area** Operation of the scheme will impact on the setting of a Scheduled Monument, 160 Listed Buildings (all Grades), a Registered Park and Garden and six Conservation Areas. This will result in harm to the significance of the assets.	**Land Take Study Area (including surface access corridors)** Construction activities including the demolition or partial demolition of structures will impact on one Grade I Listed Building, 22 Grade II Listed Buildings, two Scheduled Monuments and two Conservation Areas resulting in their total or partial loss. Total loss is substantial harm. Partial loss could result in assets being put at risk. Partial loss can also result in substantial harm. The significance of assets lying outside of the land take but associated with those within it will be at risk of harm. **Intermediate Study Area** Construction and operation will impact on the setting of a Scheduled Monument, 48 Listed Buildings (all Grades) and five Conservation Areas. This will result in harm to the significance of the assets. **Outer Study Area** Operation of the scheme will impact on the setting of a Scheduled Monument, 160 Listed Buildings (all Grades) and five Conservation Areas. This will result in harm to the significance of the assets.
Direct/ Indirect/ Cumulative	**Direct and Cumulative** The demolition and partial loss are direct effects. The effects on setting will be as a direct result of construction and operations. Cumulative effects may arise from airport expansion in combination with other major infrastructure development which is delivered in support of the National Networks ("NN") NPS, or from nearby residential, commercial	**Direct and Cumulative** The demolition and partial loss are direct effects. The effects on setting will be as a direct result of construction and operations. Cumulative effects may arise from airport expansion in combination with other major infrastructure development which is delivered in support of the NN NPS, or from nearby residential, commercial or infrastructure	**Direct and Cumulative** The demolition and partial loss are direct effects. The effects on setting will be as a direct result of construction and operations. Cumulative effects may arise from airport expansion in combination with other major infrastructure development which is delivered in support of the NN NPS, or from nearby residential, commercial or infrastructure

SEA CRITERIA	LGW-2R	LHR-ENR	LHR-NWR
	or infrastructure development that is planned by local authorities as part of their plans for growth, as set out in individual local development plan documents.	development that is planned by local authorities as part of their plans for growth, as set out in individual local development plan documents.	development that is planned by local authorities as part of their plans for growth, as set out in individual local development plan documents.
Probability (High, Medium, Low, Very Low)	**High** There is a High probability that adverse effects will occur.	**High** There is a High probability that adverse effects will occur.	**High** There is a High probability that adverse effects will occur.
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Construction and Operation, Long-term** Direct effects will occur during construction and operation. The effects will be ongoing throughout the operational life of the airport.	**Construction and Operation, Long-term** Direct effects will occur during construction and operation. The effects will be ongoing throughout the operational life of the airport.	**Construction and Operation, Long-term** Direct effects will occur during construction and operation. The effects will be ongoing throughout the operational life of the airport.
Permanent/ Temporary **Irreversible/ Reversible**	**Permanent and irreversible** Some of the Direct effects are permanent and irreversible. However, it may be possible to reduce the significance of these effects through mitigation and enhancements.	**Permanent and irreversible** Some of the Direct effects are permanent and irreversible. However, it may be possible to reduce the significance of these effects through mitigation and enhancements.	**Permanent and irreversible** Some of the Direct effects are permanent and irreversible. However, it may be possible to reduce the significance of these effects through mitigation and enhancements.
Magnitude and Spatial Extent, incl. Transboundary	**Local, High** for all assets within the Land Take and Intermediate Study Area, **medium** to low in the Outer Study Area.	**Local, High** for all assets within the Land Take and Intermediate Study Area, **medium** to low in the Outer Study Area.	**Local, High** for all assets within the Land Take and Intermediate Study Area, **medium** to low in the Outer Study Area.
Assumptions and Limitation	Assessment based on the information presented in the AC's Place Assessment Individual assessment of heritage significance has not been undertaken.	Assessment based on the information presented in the AC's Place Assessment Individual assessment of heritage significance has not been undertaken.	Assessment based on the information presented in the AC's Place Assessment Individual assessment of heritage significance has not been undertaken.
Significance	**Significant Negative effect (--)**	**Significant Negative effect (--)**	**Significant Negative effect (--)**
	Direct and cumulative effects on designated sites; high probability; occurring during construction and operation; effects are permanent and irreversible; magnitude varies between low to high and extent is local.	Direct and cumulative effects on designated sites; high probability; occurring during construction and operation; effects are permanent and irreversible; magnitude varies between low to high and extent is local.	Direct and cumulative effects on designated sites; high probability; occurring during construction and operation; effects are permanent and irreversible; magnitude varies between low to high and extent is local.

Question 32: Will it affect the Significance of Non-Designated Heritage Assets and their Settings?

SEA Criteria	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (including receptor)	**Land Take Study Area (including surface access corridors)** 35 assets are present and 12 archaeological notification areas. Total removal of any archaeological remains during construction activities and earth-moving activities in particular. The significance of non-designated remains will be subject to substantial harm or total loss. **Intermediate Study Area** 20 assets are present and one archaeological notification area. Any impact within the intermediate area will be to the significance of the setting of the assets. This has the potential to result in harm to the significance of the assets. **Outer Study Area** None identified. HER search does not extend into Outer Study Area. Any impact within the outer area will be to the significance of the setting of the assets. This has the potential to result in harm to the significance of the assets.	**Land Take Study Area (including surface access corridors)** 74 assets are present. Total removal of any archaeological remains during construction activities and earth-moving activities in particular. The significance of non-designated remains will be subject to substantial harm. **Intermediate Study Area** 79 assets are present. Any impact within the Intermediate Study Area will be to the significance of the setting of the assets. This has the potential to result in harm to the significance of the assets. **Outer Study Area** None identified. HER search does not extend into Outer Study Area. Any impact within the outer area will be to the significance of the setting of the assets. This has the potential to result in harm to the significance of the assets.	**Land Take Study Area (including surface access corridors)** 167 assets are present. Total removal of any archaeological remains during construction activities and earth-moving activities in particular. The significance of non-designated remains will be subject to substantial harm. **Intermediate Study Area** 90 assets are present. Any impact within the Intermediate Study Area will be to the significance of the setting of the assets. This has the potential to result in harm to the significance of the assets. **Outer Study Area** None identified. HER search does not extend into Outer Study Area. Any impact within the outer area will be to the significance of the setting of the assets. This has the potential to result in harm to the significance of the assets.
Direct/ Indirect/ Cumulative	**Direct and Cumulative** Effects would be direct. The effects on setting will be as a direct result of construction and operations. Cumulative effects may arise from airport expansion in combination with other major infrastructure development which is delivered in support of the NN NPS, or from nearby residential, commercial or infrastructure development that is planned by local authorities as part of their plans for growth, as set out in individual local development plan documents.	**Direct and Cumulative** Effects would be direct. The effects on setting will be as a direct result of construction and operations. Cumulative effects may arise from airport expansion in combination with other major infrastructure development which is delivered in support of the NN NPS, or from nearby residential, commercial or infrastructure development that is planned by local authorities as part of their plans for growth, as set out in individual local development plan documents.	**Direct and Cumulative** Effects would be direct. The effects on setting will be as a direct result of construction and operations. Cumulative effects may arise from airport expansion in combination with other major infrastructure development which is delivered in support of the NN NPS, or from nearby residential, commercial or infrastructure development that is planned by local authorities as part of their plans for growth, as set out in individual local development plan documents.

SEA Criteria	LGW-2R	LHR-ENR	LHR-NWR
Probability (High, Medium, Low, Very Low)	**High** There is a High probability that adverse effects will occur within the Land Take. **Medium** There is a Medium probability that adverse effects will occur within the Intermediate Study Area. **Low** There is a low probability that adverse effects will occur within the Outer Study Area.	**High** There is a High probability that adverse effects will occur within the Land Take. **Medium** There is a Medium probability that adverse effects will occur within the Intermediate Study Area. **Low** There is a low probability that adverse effects will occur within the Outer Study Area.	**High** There is a High probability that adverse effects will occur within the Land Take. **Medium** There is a Medium probability that adverse effects will occur within the Intermediate Study Area. **Low** There is a low probability that adverse effects will occur within the Outer Study Area.
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Construction and Operation, Long-term** Direct effects will occur both during construction and operation. The effects will be continual for any assets within the Land Take. The effects will be ongoing throughout the operational life of the airport.	**Construction and Operation, Long-term** Direct effects will occur both during construction and operation. The effects will be continual for any assets within the Land Take. The effects will be ongoing throughout the operational life of the airport.	**Construction and Operation, Long-term** Direct effects will occur both during construction and operation. The effects will be continual for any assets within the Land Take. The effects will be ongoing throughout the operational life of the airport.
Permanent/ Temporary **Irreversible/ Reversible**	**Permanent/irreversible** Some of the Direct effects are permanent and irreversible. However, it may be possible to reduce the significance of these effects through mitigation and enhancements.	**Permanent/irreversible** Some of the Direct effects are permanent and irreversible. However, it may be possible to reduce the significance of these effects through mitigation and enhancements.	**Permanent/irreversible** Some of the Direct effects are permanent and irreversible. However, it may be possible to reduce the significance of these effects through mitigation and enhancements.
Magnitude and Spatial Extent, incl. Transboundary	**High, Local** For any assets within the Land Take	**High, Local** For any assets within the Land Take	**High, Local** For any assets within the Land Take
Assumptions and Limitations	No individual assessment of non-designated assets undertaken at the strategic stage.	No specific individual assessment of non-designated assets undertaken at the strategic stage.	No specific individual assessment of non-designated assets undertaken at the strategic stage.
Significance	**Significant Negative effect (--)**	**Significant Negative effect (--)**	**Significant Negative effect (--)**
	Direct and cumulative effects on undesignated sites; high probability; occurring during construction and operation; effects are permanent and irreversible; high magnitude and local extent.	Direct and cumulative effects on undesignated sites; high probability; occurring during construction and operation; effects are permanent and irreversible; high magnitude and local extent.	Direct and cumulative effects on undesignated sites; high probability; occurring during construction and operation; effects are permanent and irreversible; high magnitude and local extent.

Question 33: Will it Conserve or Enhance Heritage Assets and the Wider Historic Environment Including Landscapes, Townscapes, Buildings, Structures and Archaeological Remains?

SEA Criteria	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (including receptor)	No beneficial impacts have been identified. However, it is possible that following mitigation positive outcomes could be realised through some enhancement to Conservation Areas and community engagement and by addressing Heritage at Risk (including those that become at risk as a result of the scheme), improving the setting of heritage assets, together with opportunities for community engagement including improving access to and / or interpretation, understanding and appreciation of heritage assets.	No beneficial impacts are presented in the AC's report. All impacts listed are adverse. However, it is possible that following mitigation positive outcomes could be realised through some enhancement to Conservation Areas and community engagement and by addressing Heritage at Risk (including those that become at risk as a result of the scheme), improving the setting of heritage assets, together with opportunities for community engagement including improving access to and/or interpretation, understanding and appreciation of heritage assets.	No beneficial impacts are presented in the AC's report. All impacts listed are adverse. However, it is possible that following mitigation positive outcomes could be realised through some enhancement to Conservation Areas and community engagement and by addressing Heritage at Risk (including those that become at risk as a result of the scheme), improving the setting of heritage assets, together with opportunities for community engagement including improving access to and/or interpretation, understanding and appreciation of heritage assets.
Direct/ Indirect/ Cumulative	**Indirect** (Conservation or enhancement)	**Indirect** (Conservation or enhancement)	**Indirect** (Conservation or enhancement)
Probability (High, Medium, Low, Very Low)	**Medium** Overall there is medium probability of beneficial effects	**Medium** Overall there is medium probability of beneficial effects	**Medium** Overall there is medium probability of beneficial effects
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Medium-term**	**Medium-term**	**Medium-term**
Permanent/ Temporary **Irreversible/ Reversible**	**Uncertain**	**Uncertain**	**Uncertain**
Magnitude and Spatial Extent, incl. Transboundary	**Uncertain**	**Uncertain**	**Uncertain**
Assumptions and Limitations	No detailed mitigation or enhancement proposals	No detailed mitigation or enhancement proposals	No detailed mitigation or enhancement proposals

SEA Criteria	LGW-2R	LHR-ENR	LHR-NWR
Significance	**Significant Negative effect (--)**	**Significant Negative effect (--)**	**Significant Negative effect (--)**
	Indirect effects on heritage assets and wider historic environment through potential mitigation and off-site benefits, uncertainty as to nature of effects as proposals would need to be specified at the next stage of design.	Indirect effects on heritage assets and wider historic environment through potential mitigation and off-site benefits, uncertainty as to nature of effects as proposals would need to be specified at the next stage of design.	Indirect effects on heritage assets and wider historic environment through potential mitigation and off-site benefits, uncertainty as to nature of effects as proposals would need to be specified at the next stage of design.

Question 34: Will it harm the Significance of Heritage Assets for Example from the Generation of Noise, Pollutants and Visual Intrusion?

SEA Criteria	LGW-2R	LHR-ENR	LHR-NWR
Description of Impact (including receptor)	There is likely to be increased light and noise levels from construction and operation, in addition to any lights and noise from aircraft whilst on the ground and in flight. The setting of ten designated heritage assets could be affected within 300m of the scheme area (six Grade II Listed Buildings, two Scheduled Monuments and two Conservation Areas) and from 300m to 2km the setting of a further 160 designated assets could potentially be affected (five Grade I, four Grade II*, 144 Grade II Listed Buildings, two Scheduled Monuments and five Conservation Areas. The setting of twenty non-designated assets could be affected. Historic landscape and townscape character will be affected. There is unlikely to be an impact on below-ground archaeological remains. Data was only available for the Intermediate Study Area ie 300m of the scheme area.	There is likely to be increased light and noise levels from construction and operation, in addition to any lights and noise from aircraft whilst on the ground and in flight. The setting of 30 designated heritage assets could be affected within 300m of the scheme area (one Grade II* Listed buildings 22 Grade II, two Scheduled Monuments and five Conservation Areas) and from 300m to 2km the setting of a further 168 designated assets could potentially be affected (four Grade I, five Grade II* and 151 Grade II Listed Buildings, one Scheduled Monuments and six Conservation Areas and one Registered Park and Garden. The setting of seventy-nine non-designated assets could be affected. Historic landscape and townscape character will be affected. There is unlikely to be an impact on below-ground archaeological remains Data was only available for the Intermediate Study Area ie 300m of the scheme area.	There is likely to be increased light and noise levels from construction and operation, in addition to any lights and noise from aircraft whilst on the ground and in flight. The setting of a further 54 designated heritage assets could be affected within 300m of the scheme area (one Grade II Listed Buildings, three Grade II*, 44 Grade II, one Scheduled Monuments and five Conservation Areas) and from 300m to 2km the setting of a further 166 designated assets could potentially be affected (two Grade I, eleven Grade II* and 147 Grade II Listed Buildings, one Scheduled Monuments and five Conservation Areas. The setting of ninety non-designated assets could be affected. Historic landscape and townscape character will be affected. There is unlikely to be an impact on below-ground archaeological remains. Data was only available for the Intermediate Study Area ie 300m of the scheme area.
Direct/ Indirect/ Cumulative	**Direct, Indirect and Cumulative** The works will affect the identified receptors. Cumulative effects on the setting of heritage assets may arise with other major infrastructure development.	**Direct, Indirect and Cumulative** The works will affect the identified receptors. Cumulative effects on the setting of heritage assets may arise with other major infrastructure development.	**Direct, Indirect and Cumulative** The works will affect the identified receptors. Cumulative effects on the setting of heritage assets may arise with other major infrastructure development.
Probability (High, Medium, Low, Very Low)	**Medium** It is likely that there will be increased lighting and noise; however this will be influenced by the construction programme and detailed design. There is uncertainty regarding the details of flight routes and therefore the assets which may be affected.	**Medium** It is likely that there will be increased lighting and noise; however this will be influenced by the construction programme and detailed design. There is uncertainty regarding the details of flight routes and therefore the assets which may be affected.	**Medium** It is likely that there will be increased lighting and noise; however this will be influenced by the construction programme and detailed design. There is uncertainty regarding the details of flight routes and therefore the assets which may be affected.

SEA Criteria	LGW-2R	LHR-ENR	LHR-NWR
Phase, Duration (Long-term, Medium-term, Short-term), Frequency	**Construction and Operation, Long-term, Continuous** The Direct effects on heritage assets and their settings will occur both during construction and operation.	**Construction and Operation, Long-term, Continuous** The Direct effects on heritage assets and their settings will occur both during construction and operation.	**Construction and Operation, Long-term, Continuous** The Direct effects on heritage assets and their settings will occur both during construction and operation.
Permanent/ Temporary **Irreversible/ Reversible**	**Temporary and Reversible** The effects are reversible as lighting can be removed or reduced and impacts on tranquillity inclusive of noise are dependent on the routes and frequency of the over flight.	**Temporary and Reversible** The effects are reversible as lighting can be removed or reduced and impacts on tranquillity inclusive of noise are dependent on the routes and frequency of the over flight	**Temporary and Reversible** The effects are reversible as lighting can be removed or reduced and impacts on tranquillity inclusive of noise are dependent on the routes and frequency of the over flight.
Magnitude and Spatial Extent, incl. Transboundary	**Medium, Regional** The effects of noise and light pollution will be experienced outside the immediate locality of the airport and within all three study areas.	**Medium, Regional** The effects of noise and light pollution will be experienced outside the immediate locality of the airport and within all three study areas.	**Medium, Regional** The effects of noise and light pollution will be experienced outside the immediate locality of the airport and within all three study areas.
Assumptions and Limitations	There remains significant uncertainty regarding the details of routes due to both the detailed design issues associated with the scheme development and application of the UK Future Airspace Strategy. The classification of significant is a worst case scenario.	There remains significant uncertainty regarding the details of routes due to both the detailed design issues associated with the scheme development and application of the UK Future Airspace Strategy. The classification of significant is a worst case scenario.	There remains significant uncertainty regarding the details of routes due to both the detailed design issues associated with the scheme development and application of the UK Future Airspace Strategy. The classification of significant is a worst case scenario.
Significance	**Significant negative effect (--)**	**Significant negative effect (--)**	**Significant negative effect (--)**
	Direct, indirect and cumulative effects on heritage assets; medium probability as uncertainty in aspects such as flight paths; occurring during construction and operation; effects are temporary and reversible; medium magnitude and potential regional extent.	Direct, indirect and cumulative effects on heritage assets; medium probability as uncertainty in aspects such as flight paths; occurring during construction and operation; effects are temporary and reversible; medium magnitude and potential regional extent.	Direct, indirect and cumulative effects on heritage assets; medium probability as uncertainty in aspects such as flight paths; occurring during construction and operation; effects are temporary and reversible; medium magnitude and potential regional extent.

11.10 MITIGATION

11.10.1 The mitigation proposed by promoters should be reviewed and revised following an assessment of the significance of the heritage assets and any contribution made by their setting. Mitigation should be undertaken at project level but this should be considered earlier, at the design and planning level, to allow consultation, formulation of a strategy and programming. Guidance is provided by Historic England within *'Managing Significance in Decision-Taking in the Historic Environment GPA: 2'*[51]. Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and importance of the significance of a heritage asset and the contribution of its setting early in the process is very important to an applicant in order to conceive of and design a successful development and to the local planning authority in order to make decisions in line with legal requirements and the objectives of the development plan and the policy requirements of the NPPF.

11.10.2 At EIA level assessment of the significance of the historic environment will need to be undertaken so the cultural heritage significance of the assets and the contribution of their setting can be determined prior to a mitigation strategy being applied at project level. This would include direct effects from construction, traffic, noise and visual intrusion in addition to the application of these effects from surface access and flightpaths remote from the scheme. This should follow guidance set out in '*The Setting of Heritage Assets*'[52] and '*Aviation Noise Metric*'[53].

11.10.3 It is possible that the assessment of the significance of buried archaeological remains subject to direct physical impact will need to be intrusive (evaluation excavation). Any potential impact will be considered in terms of harm to the significance of the heritage asset. In line with NPPF[54] degrees of harm comprise substantial harm to or loss of significance of a designated heritage asset and less than substantial harm to the significance of the asset. This process applies similarly to non-designated assets.

11.10.4 It is essential that through careful design and planning proposals should seek to avoid or minimise impacts upon the significance of heritage assets and their setting. This includes works in relation to the implementation of proposals (eg during construction). Any resulting mitigation strategy should cover all stages of development, planning, implementation and operation; and should be sufficiently tailored to reflect the sensitivities of those heritage assets affected. The use of generic measures should be avoided, but where duplication occurs, then this may acceptable if it is appropriate and proportionate to the significance of the asset and the impact being mitigated against.

11.10.5 Where this is not possible, then it is necessary to demonstrate the need for harm to be caused, in line with national policy paragraphs 132-136 and 139 of the NPPF.[55] Where heritage assets are to be lost (wholly or in part) then in line with government's national policy paragraph 141 of the NPPF, the developer needs to record and advance understanding of the significance of any heritage assets harmed in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible. However, it should be stressed that the ability to record evidence of the heritage asset should not be a factor in deciding whether such loss should be permitted.

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[51] Historic England, 2015. *Managing Significance in Decision-Taking in the Historic Environment GPA: 2.* [online] Accessed 04/07/2016.
[52] Historic England, 2015. *The Setting of Heritage Assets.* [] Accessed 06/05/2016.
[53] Historic England, 2014. A*viation Noise Metric – Research on the Potential Noise Impacts on the Historic Environment by Proposals for Airport Expansion in England, Project No. 6865.* [] Accessed 06/05/2016.
[54] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.
[55] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.

11.10.6 The following best practice hierarchy of mitigation could be considered across all three schemes:

11.10.7 Avoidance: The first course of mitigation for all statutorily designated heritage assets or those non-designated assets of proven similar significance is avoidance. NPPF states that substantial harm or loss of a Grade II Listed Building should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably Scheduled Monuments and Grade I and Grade II* Listed Buildings should be wholly exceptional[56]. For non-designated assets a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the asset.

11.10.8 Assessment: No detailed mitigation can be proposed until a full investigation of the cultural heritage significance of the assets and the contribution made by their setting has been undertaken. This should be applied using the NPPF heritage values (artistic, architectural, archaeological and historical) along with the appropriate form of fieldwork investigation. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. In addition, it is important to consider possible impacts (including cumulative) on the wider historic environment and to undertake rural and urban historic characterisation studies.

11.10.9 For non-designated assets the immediate approach will be to provide detail of the types of asset, ie locally Listed Buildings or areas of special character, and to categorise the importance of each asset to be affected (local / neighbourhood, county / regional, national). This information can then be linked to the Historical Landscape Characterisation for the region / counties[57].

11.10.10 A process of research through archaeological studies and HERs will identify potential sensitive areas and / or known archaeological assets and allow a discussion of their significance. Where potential archaeological interest is identified field evaluation may be necessary to determine significance. Reference will be made to the relevant Archaeological Research Framework objectives. The assessment of significance should include a setting assessment following Historic England guidance[58]. This states that the importance of setting to the significance of the heritage assets depends on a wide range of physical elements within, as well as perceptual and associational attributes pertaining to, the heritage asset's surroundings. General considerations include cumulative change; change over time; appreciating setting; buried assets and setting; designated settings; setting and urban design and economical and social viability. The significance of the setting of all heritage assets will be considered.

11.10.11 Design and Enhancement: Should substantial public benefits of the scheme outweigh the harm or loss to the assets then the next course of action would be mitigation through design and / or enhancement. Historic England would seek to encourage opportunities to enhance the significance of heritage assets through the design, planning and implementation of a proposal. Possibilities for maximising the enhancement of heritage assets should be explored at project design level. This applies to all assets lying outside of the zone of physical impact. Good examples include the enhancement of Conservation Areas. Adopting the use of green space in areas of high or known archaeological potential will also contribute to enhancement. Addressing the issues of heritage at risk (including those assets that become at risk as a result of the scheme), mitigating noise impacts and impact upon the setting of heritage assets are further considerations. Opportunities for community engagement including improved access to and / or interpretation, understanding and appreciation of heritage assets are further examples. This could include opportunities to improve the conditions of existing heritage assets that may not be directly lost (eg demolished), but which are currently on the Historic England HARR,

[56] Department for Communities and Local Government, 2014. *Planning Practice Guidance*. [online] Accessed 04/07/2016.
[57] Historic England, 2016. *Historic Landscape Characterisation*. [online] Accessed 17/05/2016.
[58] Historic England, 2015. *The Setting of Heritage Assets, Historic Environment GPA: 3*. [online] Accessed 04/07/2016.

other 'at risk' registers, the planning authority local list, and local knowledge on heritage assets most at risk through neglect, decay or other threats (including those that become at risk as a result of the scheme).

11.10.12 For the enhancement of the setting of heritage assets Historic England[59] suggests:

- The removal or re-modelling of an intrusive building or feature;
- Replacement of a detrimental feature by a new and more harmonious one;
- Restoring or revealing a lost historic feature or view;
- Introducing a wholly new feature that adds to the public appreciation of the asset;
- Introducing new views that add to the public experience of the asset; or
- Improving public access to, or interpretation of, the asset including its setting.

11.10.13 The application of periods of predictable respite could also be assessed at the project stage. Consideration could be given to whether this would benefit the significance of heritage assets in relation to their setting.

11.10.14 Recording: Should the impacts of the scheme be physical, ie the demolition of a building, then following assessment of significance, and assuming that relocation of the building to an appropriate museum is not an option, a Historic Building investigation should be undertaken following Historic England 2016 guidance[60]. The updating of the list entries for Listed Buildings and the HARR could also be undertaken at this level.

11.10.15 Where preservation of archaeological remains is not an option then there is a need to assess the archaeological significance in the context of a 'research strategy' to identify appropriate mitigation strategies. Reference should be made to Historic England's Management of Research Projects in the Historic Environment (MoRPHE) guidance[61]. For archaeological remains proven to be of national importance the avoidance principle will apply. Interpretation of the sites to be lost and those that can be retained would go some way towards mitigation of the effects. Community participation and engagement should be considered throughout the archaeological mitigation process.

11.11 ASSUMPTIONS AND LIMITATIONS

11.11.1 Information on non-designated heritage assets within the Land Take and Intermediate Study Area have been compiled from the relevant HER for each scheme. The AC's Place Assessment refers to non-designated assets in generic terms. The HER data will also be used to inform the EIA.

11.11.2 The assessment of setting for individual heritage assets has not been undertaken at a strategic level and so this is based on a study area approach. It is acknowledged that effects may extend beyond this area, particularly indirect effects generated by surface or aviation traffic (noise and visual). A precautionary principle has therefore been applied in the assessment. A setting assessment could also inform the EIA but is not suggested for strategic level.

11.11.3 Individual condition surveys for built heritage assets to inform their level of cultural heritage significance have not been undertaken at strategic level.

[59] Historic England, 2015. *The Setting of Heritage Assets, Historic Environment GPA: 3.* [online] Accessed 04/07/2016.
[60] Historic England, 2016. *Understanding Historic Buildings: a guide to good recording practice*. [online] Accessed 04/07/2016.
[61] Historic England, 2015. *Management of Research Projects in the Historic Environment*: The MoRPHE Project Managers' guide. [online] Accessed 04/07/2016.

11.11.4 The assessment of heritage value using NPPF heritage interests (archaeological, architectural, artistic and historic) has not been undertaken, and therefore the nature of the cultural heritage significance of the assets remains unknown. This would need to be further developed at the EIA.

11.11.5 Although the land-take for the surface access corridors is indicative at this stage it is recognised there is potential that construction and/or operation of the surface access corridors may impact on designated and non-designated assets. However, the design of the corridors is not detailed and this should be assessed further at EIA.

11.12 CONCLUSIONS

AoS Objective 17: Conserve and where appropriate enhance heritage assets and the wider historic environment including buildings, structures, landscapes, townscapes and archaeological remains

11.12.1 The historic environment topic assessment looked at the impact of the schemes on nationally important heritage assets with statutory designation (it is possible for a nationally important heritage asset to be non-designated) known to be present within each Land Take Study Area; within the Intermediate Study Area, and in the Outer Study Area. The assessment found that a World Heritage Site (Kew Gardens) is present (although this lies just outside of the Outer Study Area).

11.12.2 The nationally important designated heritage assets include Scheduled Monuments, all Grades of Listed Buildings (Grade I, II* and II), Conservation Areas and a Registered Park and Garden. The potential for historic landscapes, townscapes and non-designated assets such as archaeological remains is noted but not explored in depth. Of these there are four Scheduled Monuments, 181 Listed Buildings, and seven Conservation Areas recorded relating to the LGW-2R. Three Scheduled Monuments, 190 Listed Buildings one Registered Park and Garden and 11 Conservation Areas relate to LHR-ENR. Finally, four Scheduled Monuments, 225 Listed Buildings and 12 Conservation Areas relate to LHR-NWR.

11.12.3 The assessment identified a number of key impacts which will affect individual designated heritage assets and their settings. It determined that the magnitude of the impacts and consequently the significance of the effect would differ dependent upon the location of the heritage asset and the distance of the assets from the Land Take Study Area for each scheme. There is no direct physical impact on assets outside of this Study Area (and the surface access corridors) but rather effects on the settings of the heritage assets. The magnitude of the impact upon the importance of the setting of a heritage asset will not diminish by distance, in this case up to 2km (Outer Study Area), as the discussion on impacts relating to tranquillity has suggested. The nature and magnitude of the key impacts will be consistent between the three schemes. The key impacts identified will be as direct result of the schemes and fall into two categories – construction and operation.

11.12.4 Although the significance of the effect on the designated assets does not vary by scheme the number of heritage assets and their settings affected does vary. Based on a quantitative assessment of the designated assets LGW-2R has the lowest number of negative impacts (192) and LHR-NWR the highest (247).

11.12.5 The assessment results for LGW-2R identified potential for (22) negative effects on designated assets within the Land Take Study Area (including surface access corridors). The setting of a further ten designated heritage assets could be affected within the Intermediate Study Area for the LGW-2R scheme and within the Outer Study Area the setting of a further 160 designated assets could potentially be affected at LGW-2R. In total there will be negative effects on 192 designated heritage assets and their settings as a result of this scheme.

11.12.6 The assessment results for LHR-ENR identified the lowest (8) potential for negative effects on designated assets within the Land Take Study Area (including surface access corridors). The setting of a further 30 designated heritage assets could be affected within the Intermediate

Study Area for the LHR-ENR scheme and within the Outer Study Area the setting of a further 168 designated assets could potentially be affected. In total there will be negative effects on 206 designated heritage assets and their settings which are higher than LGW-2R but lower than LHR-NWR.

11.12.7 The assessment results for LHR-NWR identified the highest (27) potential for negative effects on designated assets within the Land Take Study Area (including surface access corridors). The setting of a further 54 designated heritage assets could be affected within the Intermediate Study Area for the scheme and within the Outer Study Area the setting of a further 166 designated assets could potentially be affected. In total there will be negative effects on 247 designated heritage assets and their settings which are higher than LGW-2R and LHR-ENR.

11.12.8 The loss of non-designated assets and potential unrecorded archaeological remains (numbers unknown) within the Land Take Study Area for all three schemes is also likely. Thirty-Five non-designated assets and 12 archaeological notification areas are present at LGW-2R. Seventy-Four non-designated heritage assets are present at LHR-ENR and 167 at LHR-NWR, which again is the highest number of negative effects.

11.12.9 It should be noted that the number of heritage assets affected alone does not necessarily reflect the relative performance of schemes against each other as information on significance of the asset and characteristics of effect are not known at this stage.

11.12.10 The impact of the construction activities in the Land Take Study Area will impact all heritage assets including Scheduled Monuments, Conservation Areas, Listed Buildings and below-ground archaeological remains. The loss or partial loss of Listed Buildings, their fabric and below-ground remains will have a negative impact, or cause harm to the cultural heritage significance of these assets. The loss of an asset which is associated with another asset could impact on, or cause harm to, the significance of that asset. Although all types of heritage assets will be affected through harm to their setting this could be avoided or mitigated possibly through good design. Whether the avoidance of harm will be complete or partial is dependent upon the shortlisted scheme details.

11.12.11 During operation there is the potential to impact in a negative manner on the setting of heritage assets as a result of increased numbers of aircraft overflying the heritage assets within the three study areas. There are likely to be increased light levels from construction and operational lighting in addition to any lights from aircraft whilst on the ground and in flight. This impact will result in loss to the significance of the assets. Designated assets to be affected include Scheduled Monuments, Listed Buildings (all Grades), a Park and Garden and Conservation Areas. Non-designated assets will also be affected as will historic landscape and townscape character. There is unlikely to be an impact on below-ground archaeological remains from this kind of impact.

11.12.12 In accordance with best practice (as set out in the NPPF) substantial harm or loss of a Grade II Listed Building should be exceptional. Substantial harm to or loss of designated heritage assets of the highest significance, notably Scheduled Monuments and Grade I and Grade II* Listed Buildings should be wholly exceptional. Not all elements of a Conservation Area will necessarily contribute to its significance. In this case it needs to be demonstrated that any substantial harm or loss is necessary to achieve substantial public benefits that outweigh that harm or loss. The effect on the significance of non-designated heritage assets should also be taken into account. Paragraph 139 of the NPPF states that non-designated heritage assets of archaeological interest that are demonstrably of equivalent significance to Scheduled Monuments, should be considered subject to policies for designated assets.

11.12.13 The assessment acknowledges that the level of harm to the significance of the heritage assets and their settings must be considered. In order to do this there needs to be an assessment of the significance of any heritage assets (including any contribution made by their setting) together with the impact of the proposed development on that significance and the steps that have been taken to avoid / minimise any possible harm. The level of detail should be

proportionate to the asset's importance and no more than is sufficient to understand the potential impact of the proposal on their significance. In addition it is important to consider possible impacts (including cumulative) on the wider historic environment in order to move away from an assessment simply based on individual heritage assets through the use of rural and urban historic characterisation studies, for example. This detailed level of assessment will serve to inform any subsequent design proposals and mitigation strategy.

11.12.14 The schemes can contribute to the conservation or enhancement of the historic environment including landscapes, townscapes, buildings, structures and archaeological remains. Following more detailed mitigation proposals positive impacts could be realised through addressing heritage at risk (including those assets that become at risk as a result of the scheme), enhancement to Conservation Areas, improving the setting of heritage assets, mitigating noise impacts, community engagement, improving access to/or interpretation of assets and understanding and appreciation of assets. In addition adopting the use of green space in areas of high or known archaeological potential will also contribute to enhancement.