Assessment of Plans and Projects under Regulation 63 of the Conservation of Habitats and Species Regulations 2017

Case title:	Outline planning application for the development of Bristol Airport to enable a throughput of 12 million terminal passengers in any 12 month calendar period: Habitats Regulations Assessment – Appropriate Assessment		
Assessment made by:	Sarah Dale for North Somerset Council	**Finalised on:**	05/09/2019
Agreed by	Amanda Grundy for Natural England		19/09/2019

HRA Contents:

PART A: Introduction and Information about the plan or project and an initial assessment of credible risk to European Sites

A1. Introduction

This report is a 'Habitats Regulations Assessment' (HRA) for a proposal to increase the consented throughput of passengers at Bristol Airport to 12 million passengers per annum. The application has been submitted to North Somerset Council – application reference 18/P/5118/OUT. North Somerset Council, as the competent authority, are required to complete a 'Habitats Regulations Assessment' to meet Regulation 63 of the Conservation of Habitats and Species Regulations 2017 for any plans or proposals which have the potential to negatively impact on European Designated Sites. European Designated Sites include Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Ramsar sites. The assessment has been agreed with Natural England.

This assessment considers on-site components as a result of land use change and capital works as well as off-site impacts resulting from the proposals.

The assessment is based on a 'shadow' Habitats Regulations Assessment (sHRA) completed by Johns Associates for application 18/P/5118/OUT. The shadow Assessment is provided in Appendix 11J of the *Environmental Statement* (Wood, 2018). The Assessment has been supported by other documents which provide the evidence base to this assessment.

In making its HRA, North Somerset Council as the competent authority, may only undertake the project where it is able to ascertain *either*:

a) that it will not have a likely significant effect on a European site (either alone or in-combination with other plans and projects), or;
b) that it will have no adverse effect on the integrity of a European Site following an Appropriate Assessment.

If such effects cannot be ruled out, the proposal cannot proceed unless the further tests given in Regulations 64 and 68 of the Habitats Regulations can be satisfied.

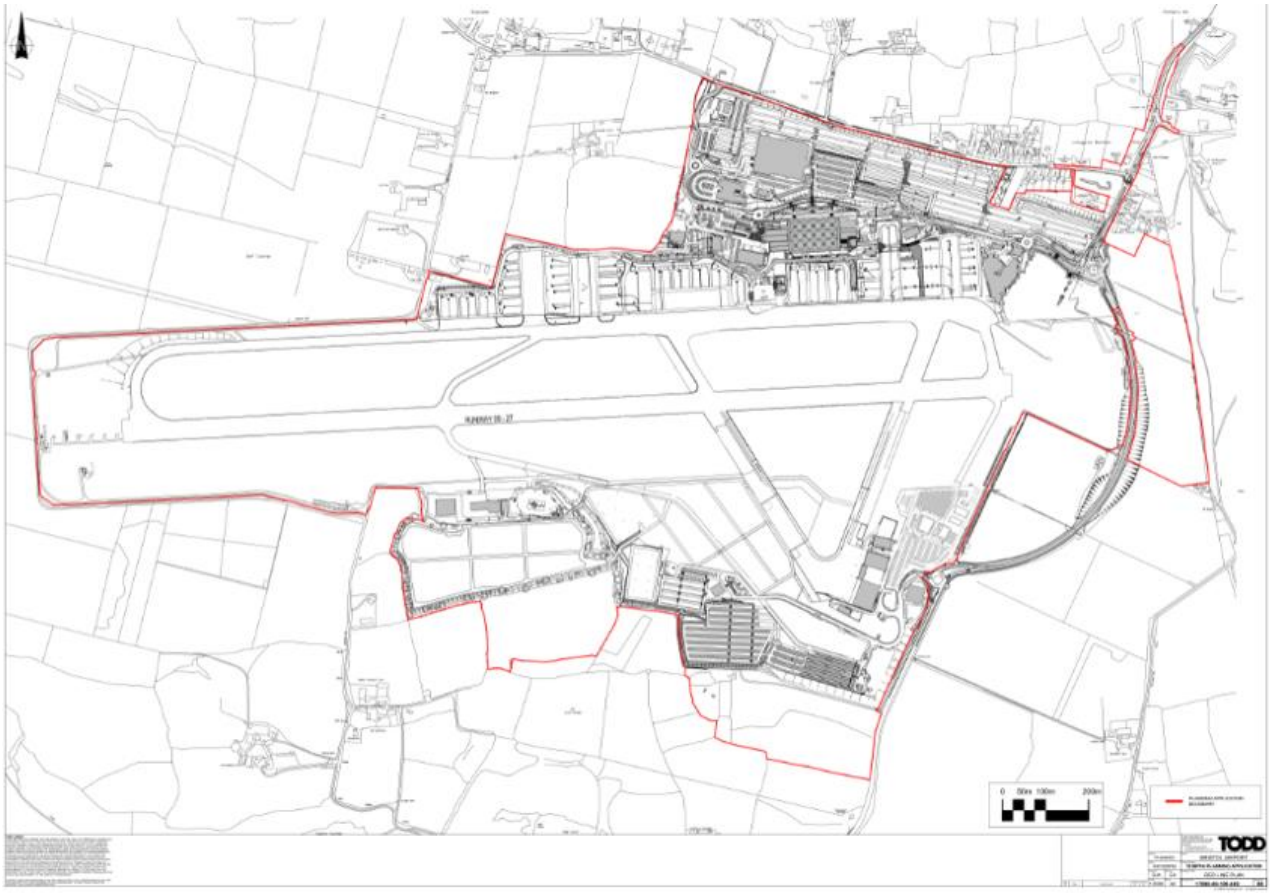
A2. Details of the Plan or Project

Applicant: Bristol Airport Limited, via Project Manager Elizabeth Higgins.

Location: Bristol Airport, Red Hill (A38), BS48 3DY

Central Ordnance Survey Grid Reference: ST503651

Figure 1 – Location of the Project



Description of the plan or project:
A planning application (application reference 18/P/5118/OUT) has been submitted by Bristol Airport (the Airport / the Applicant) to North Somerset Council (the Council) for works relating to increasing the throughput of passengers to 12 million passengers per annum. The current consent (09/P/1020/OT2) is for 10 million passengers per annum. Please note that this HRA relates specifically to an assessment of impacts relating to the proposed *increase* in passenger numbers, flights, proposed development to facilitate the increase in passengers and associated impacts including enabling works. Other applications for previous development and operations at the airport will have been subject to separate consenting processes which are not directly under consideration, except in relation to in-combination effects (see Section D4).

Bristol Airport Limited is seeking planning permission to increase the permitted passenger cap from 10 million passengers per annum (mppa) to 12 mppa. To accommodate the additional 2 mppa, it is proposed that existing infrastructure will be upgraded, new

infrastructure delivered and current operations amended (the Proposed Development). The following constitute the main elements of the Proposed Development:

• **Flight Operations**: An additional 10,420 flights per year (based on 2017 totals) and a rolling annual cap of 4,000 night flights. This matches the number of night flights currently consented, but the new application seeks to impose an annual cap without the current seasonal restrictions. Night flights are categorised as occurring between the hours of 23:30 to 06:00.

• **Terminal Building**: Alterations to the main terminal building comprising:

- a four-storey, 13.5m high extension on the western side, with a footprint of 0.48ha and finished floorspace of circa 10,400m^2;
- a two-storey (8.5m high) extension on the southern side, with a footprint of 0.2ha and finished floorspace of circa 3,600m^2;
- a new canopy over the forecourt of the main terminal building; and
- new arrivals area.

• **Pier and Walkway**: A new walkway to the east pier with a total floorspace of circa 3,900m^2 and a height of approximately 10.1m and a new 10.6m high pier connected to the eastern walkway for passenger access to the eastern stands with a total floorspace of circa 3,815m^2.

• **Acoustic Fence**: Installing a 5m high timber acoustic fence.

• **Service Yard**: A new service yard is proposed to the north and western walkway and east of the current airside access security building. The footprint will be approximately 0.4ha.

• **Multi-Storey Car Park**: A multi-storey car park with a footprint of around 1.12ha to provide approximately 2,150 spaces over 5 levels in the northern area of the site, adjacent to the current multi-storey car park and with wind turbines atop.

• **Gyratory Road**: Phased construction of a new, two-lane (one-way) gyratory within the northern area of Bristol Airport.

Changes to airside infrastructure and facilities are proposed to support aircraft movements, passenger transportation and aircraft servicing for an additional 2mppa. These include:

• **Taxiway Link**: A new eastern taxiway link at the far eastern end of the runway, with a footprint of approximately 0.51ha.

• **Taxiway Widening**: Taxiway widening to the southern edge of the northern-most taxiway, comprising approximately 1.81ha.

• **Aircraft Stands 38 and 39**: Changes to current restrictions around the operational use of aircraft stands 38 and 39 to align with stands 34-37.

• **Landscape and Associated Works**

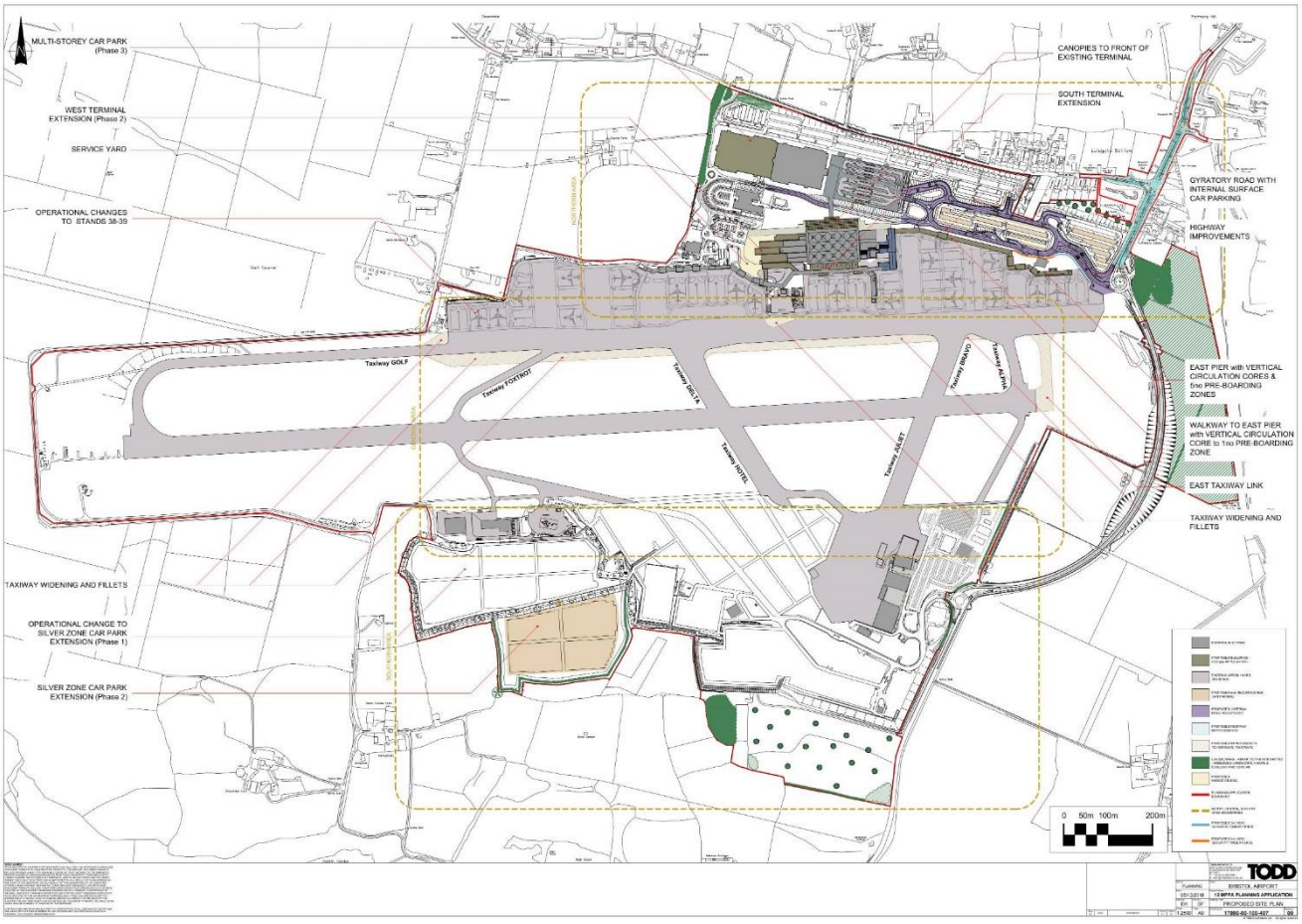
Within the southern area of Bristol Airport, the Proposed Development comprises the following:

• **Silver Zone Car Park**: Operational extension to allow year-round operation of this facility, which will necessitate the installation and operation of fixed lighting and CCTV. An extension to the existing Silver Zone Car Park to provide approximately 2,700 spaces immediately south of the existing facility occupying a footprint of approximately 3.73ha is also proposed.

• **Local improvements to the A38:** Alternations are proposed to the Downside Road and West Lane junctions as well as carriageway improvements to a section of the existing A38 to accommodate the additional traffic generated by an extra 2 mppa. The alterations would result the removal of 0.16ha of sycamore dominated woodland edge located on the boundary of the A38 and Downside Road Junction.

Implementation of the proposals is a long-term plan to facilitate increased passenger demand. It is proposed that the elements of the scheme are implemented over a six year period between 2019-2025. Ecological mitigation and enhancement proposals will be implemented over the first 1-3 years of this period, with ongoing monitoring and management.

Figure 2 Proposed Site Plan



A3. Initial Assessment of Risk to European Sites

This section considers the designated European sites in which the plan or project might credibly pose a risk. This is based on an assessment of the location of European Sites in relation to the plan or project and the nature, type and scale of the plan or project in question.

The Competent Authority needs to identify and consider the European Sites shown in Table 1 which are capable of being affected by the plan or project.

Table 1 European Sites Potentially Affected by the Plan or Project

Site	Designation	Distance from the project
North Somerset and Mendip Bats	SAC	2.0km west

The North Somerset and Mendip Bats SAC has been scoped in for consideration because horseshoe bat populations range widely from their home roosts. The populations of horseshoe bats rely on functionally-linked habitat, otherwise the colonies could not be supported. Details of supporting habitat to the SAC are clearly set out in *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features* for North Somerset and Mendip Bats Special Area of Conservation (SAC) Site Code: UK0030052 (Natural England, March 2019). Supporting habitat includes foraging land such as grazed pasture, woodland and wetland areas and dispersal corridors, particularly dark vegetated habitat corridors. 'Rhynes' (wet drainage ditches) are also important dispersal corridors in the local context.

King's Wood and Urchin Wood Site of Special Scientific Interest (SSSI) is the closest component unit of the Bat SAC at 2.0km west of the application site. The SSSI is designated due to the presence of a sizeable maternity colony of greater horseshoe *Rhinolophus ferrumequinum* bats. The woodland also supports hibernating and summer day roosts for lesser horseshoe *Rhinolopus hipposideros* and greater horseshoe bats in a series of former mine shafts. The most recent peak count for the site was 117 greater horseshoe bats emerging from the maternity roost in a former mine seam in July 2019 (author attended the survey). A second component unit, Brockley Hall Stables SSSI, is 2.4km north-west and supports a very large maternity roost of greater horseshoe bats. The most recent available count data from 2017 recorded 554 adult and 265 juvenile bats (pers. comm. Vincent Wildlife Trust. Although not designated as SSSIs, there are a number of maternity colonies of lesser horseshoe bats within 5km of the airport. These colonies are part of the wider SAC population.

There are additional component units over 5km to the south and south-west of the Airport site, mostly designated due to populations of hibernating lesser and greater horseshoe bats. The Cheddar Complex also supports a maternity roost of greater horseshoe bats of unknown size (based on the Conservation Objectives).

As an important point, it should be noted that the area of physical changes to habitats within the airport is approximately 3.4km south-east of Brockley Hall Stables SSSI, approximately

4.5km east of the King's Wood and Urchin Wood SSSI and 3.4km of the extent of the King's Wood and Urchin Wood SSSI.

The Competent Authority needs to identify and consider the European Sites listed in Table 2 but can likely rule them out as being capable of being affected by the plan or project.

Table 2 European Sites Scoped Out of Potential Effects of the Plan or Project

Severn Estuary	SAC	10.7km west
Severn Estuary	SPA	10.7km west
Severn Estuary	Ramsar	10.7km west
Chew Valley Lake	SPA	6.5km south-east

There is no suitable habitat for wetland and wading birds within the scheme or immediate vicinity. The nature of the proposals will result in an increase in flights in the wider area (approximately 10,420 additional flights per year). The potential impact of disturbance to wetland bird populations using the Severn Estuary European Marine Site or Chew Valley Lake as a result of aircraft overflying these sites at an altitude which may cause disturbance has been considered.

Evidence to demonstrate that there will not be any risk of significant impacts has been provided in Appendix 11G – *Technical Note: Birds* of the *Environmental Statement*, with further details provided in the subsequent document *Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum: Response to Comments from North Somerset Council on Biodiversity* (Johns Associates, 2019). The documents demonstrate that flights below 1000ft pose a risk of significant disturbance to wetland birds. In a sampled month at a busy time of year, no aircraft overflew designated sites for wetland bird populations below 1000ft. Most aircraft were at 2000-3000ft or above when overflying the Estuary or Chew Valley Lake. Therefore, impacts on the Severn Estuary SAC, SPA and Ramsar site and Chew Valley SPA can be scoped out. These sites are not considered further in this assessment as there is not a credible risk of impacts to site integrity or Conservation Objectives of any of the European sites.

Other European sites more than 10km away are not designated for interest features to which the proposals would pose any risk of significant negative impacts.

PART B: Information about the European Site(s) which could be affected

B1. Brief description of the European Sites(s) and their Qualifying Features

There is or may be a credible risk that the plan or project subject to an assessment *might* undermine the conservation objectives of the following European Sites;

European site: - North Somerset and Mendip Bats SAC (UK0030052)

Annex I habitats that are a primary reason for selection of this site

6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*) (* important orchid sites)

9180 *Tilio-Acerion* forests of slopes, screes and ravines

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

8310 Caves not open to the public

Annex II species that are a primary reason for selection of this site

1303 Lesser horseshoe bat *Rhinolophus hipposideros*

1304 Greater horseshoe bat *Rhinolophus ferrumequinum*

Citation available at:
http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030052

B2. European Site Conservation Objectives

The overarching Conservation Objectives for every European Site in England are to ensure that the integrity of each site is maintained or restored as appropriate, and that each site contributes to achieving the aims of the Habitats and/or Wild Birds Directive, by either maintaining or restoring (as appropriate):

- The extent and distribution of their qualifying natural habitats,
- The structure and function (including typical species) of their qualifying natural habitats,
- The supporting processes on which their qualifying natural habitats rely,
- The supporting processes on which the habitats of their qualifying features rely,
- The population of each of their qualifying features; and
- The distribution of their qualifying features within the site.

In light of the European Site which could be affected by the plan or project, this assessment will be informed by the North Somerset & Mendip Bats SAC Conservation Objectives. This is published at: -
http://publications.naturalengland.org.uk/publication/6252034999189504

It is estimated that the North Somerset and Mendip Bats SAC supports 3% of the UK greater horseshoe bat population. However, this was assessed at the time of citation in the 1980s. It should be noted that the large maternity roost at Brockley Hall Stables SSSI has increased significantly in population since the citation. Counts at the two greater horseshoe bat maternity roosts indicate that 900-1000 greater horseshoe bats are likely to be present (including juveniles). The population will be larger when individual (male) and any satellite roosts are considered. The most recent population estimate for this species provided by Vincent Wildlife Trust (VWT) was approximately 10,000 bats. Therefore, when the additional maternity roost at Gough's Cavern in Cheddar is taken into consideration, the SAC population is now likely to comprise at least 10% of the national population. Lesser horseshoe bat populations at Tyntesfield and Barrow Hospital have also been reported to be increasing. Nationally, VWT estimate a UK population of 50,000 lesser horseshoe bats.

PART C: Screening of the Plan or Project for Appropriate Assessment

To check whether an Appropriate assessment is necessary, there are two screening tests required by the assessment provisions of the Habitats Regulations. These are set out below. This stage of the assessment is known as the Habitats Regulations Assessment (Test of Likely Significant Effects).

C1. Is the plan or project either directly connected with or necessary to the (conservation) management of the European Site's qualifying features?

This HRA relates to a planning application to increase the capacity of Bristol Airport. All terrestrial works proposed within the airport are some 3.4km distant from the nearest SSSI component unit of the North Somerset and Mendip Bats SAC. Replacement habitat provision proposed is also not within the SAC itself.

The project is therefore **not** directly connected with or necessary to the management of the European Site's qualifying features.

C2. Is there a likelihood [or risk] of significant [adverse] effects ('LSE')?

This section details whether those constituent elements of the plan or project which are:
(a) not directly connected with or necessary to the management of the European Site(s) features; and
(b) could conceivably adversely affect a European site and would have a **likely significant effect,** either alone or in combination with other plans and projects, which could undermine the achievement of the conservation objectives of the European site referred to in section B2.

In accordance with European case law, this HRA has considered an effect to be 'likely' if it '*cannot be excluded on the basis of objective information'* and is 'significant' if it *'undermines the conservation objectives'* (Case C127-02 *Waddenzee* para. 45 and 47*).* In accordance with Defra guidance on the approach to be taken to this decision, the Test asks whether the plan or project '*may'* have a significant effect i.e. there is a risk or a possibility of such an effect.

This assessment of risk therefore takes into account the precautionary principle where there is scientific doubt. The assessment excludes, at this stage, any measures proposed and outlined in the submitted details of the plan/project that are specifically intended to avoid or reduce harmful effects on a European site(s). As set out by the People over Wind and Sweetman v Coillte Teoranta ruling (April 2018), mitigation proposals cannot be taken into consideration in the HRA Test of Likely Significant Effect (the 'screening stage').

Each of the project elements has been tested in view of the European Site Conservation Objectives and against each of the relevant European site qualifying features. An assessment of potential effects using best available evidence and information has been made in the following sections below.

C2.1 Risk of Significant Effects Alone

The first step is to consider whether any elements of the project are likely to have effects upon a European site which may be significant 'alone'. Impacts are considered in the context of the prevailing environmental conditions at the site but in isolation of the combined effects of any other 'plans and projects'.

Not all qualifying features of the SAC are present in all SSSI units and not all features are potentially impacted by the proposals. With regards to the two units of the SAC within 5km, Brockley Hall Stables SSSI comprises a maternity roost for greater horseshoe bats and does not support other qualifying features of the SAC. King's Wood and Urchin Wood SSSI is a large and varied woodland site of 128.1 hectares. The woodland contains very little semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia*). Only very occasional pockets of the woodland could be considered to be *Tilio-Acerion* woodland of slopes, screes and ravines, although there are over 80 mine entrances within the woodland. The habitat types included within the SAC citation are more extensive elsewhere within the SAC such as at the Cheddar Complex SSSI which is over 9.5 km from Bristol Airport.

The proposals will not impact directly on woodland, grassland and cave habitats for which the SAC is designated. Given the proximity of qualifying habitats from the redline boundary, although some minor indirect impacts (e.g. pollutant deposition) onto habitats within the SAC citation are possible, these do not have the potential to result in a significant negative impact which would affect the Conservation Objectives of the SAC. This is confirmed by Chapter 6: *Traffic and Transportation,* Chapter 7: Noise and Vibration, Chapter 8: *Air Quality*, Chapter 12: *Surface Water and Flood Risk* and Chapter 13: *Groundwater* of the *Environmental Statement*. Therefore, this assessment only considers the greater and lesser horseshoe bat populations as qualifying features which may be significantly impacted.

Some elements of the scheme are not of relevance to the horseshoe bat populations. Proposals which are considered to have trivial or inconsequential effects on horseshoe bat populations are:

- Alterations to the main terminal building, which is in a well-lit and built up area of the site;
- New pier and walkway (conditions as above);
- Installation of acoustic fence which require removal of less than 0.1 hectare of amenity grassland and 10 scattered car park trees;
- New taxiway link and taxiway widening as this area is currently illuminated;
- Changes to use of Aircraft stands 38 and 39; and
- Other ancillary development.

Therefore, these specific elements of the proposals are not considered further within this HRA, although construction requirements as a whole have been considered.

Elements of the proposals which may have an impact on horseshoe bat populations include:

- Flight operations, with potential impacts from noise, vibration and lighting;
- Construction of multi-storey car park and gyratory road as a result of potential impacts from additional light spill onto treelines and habitats bordering Downside Road;
- Landscaping and associated works, where foraging or commuting habitat will be lost;

- Silver Zone Car Park as a result of loss of foraging and commuting habitat; and
- Local improvements to the A38 as a result of loss of foraging and commuting habitat.

This HRA has focused on three elements of the project: -

- Implementation of the scheme including construction impacts (C2.1.1);
- Use and operation of external lighting (C2.1.2); and
- Changes to habitats as a result of the scheme footprint and landscaping works resulting in loss of potential foraging and commuting habitat for horseshoe bats (C2.1. 3).

The results of this assessment, taking account of each qualifying feature of each site and in view of each site's Conservation Objectives, are set out in the tables below. Where Likely Significant Effects cannot be ruled out, the tables identify a need for further consideration through an 'Appropriate Assessment'.

C2.1.1 - Construction Works to Create the Capacity for 12mmpa

Table 3 Screening Assessment of Potential Impacts of Construction Works

European Site: North Somerset and Mendip Bats SAC				
European site qualifying feature	**Proposed activity/ element of the project**	**Directly connected with necessary to management?**	**Reasons for decision**	**Carry forward activity to AA?**
Lesser horseshoe bat (LHB)	Temporary loss/disturbance of roost sites during construction	No	No roosts are present within or immediately adjacent to the construction site boundary and no change to roost sites for LHB are predicted from the development proposals.	No
	Temporary loss/degradation of foraging habitat during construction	No	Construction of the car park in the SW of the airport and the junction improvement works at the A38 and Downside Road will result a net loss of 3.86ha of suitable foraging habitat for LHB. Grazed pasture and woodland are well used foraging and commuting habitats for LHB.	Yes
	Temporary noise and vibration disturbance	No	During works construction noise could cause disturbance of bats along foraging and commuting lines. There are occasionally used LHB roosts 220m from the scheme boundary within the landholding which could potentially be indirectly impacted by noise and vibration.	Yes
	Severance of flight lines or exclusion from foraging habitat as a result of temporary construction lighting	No	During works, temporary construction lighting could cause disturbance of bats, possibly impacting on the local LHB population, by altering commuting lines and or foraging areas.	Yes
Greater horseshoe bat (GHB)	Temporary loss/disturbance of roost sites during construction	No	No roosts are present within or adjacent to the construction site boundary and no change to roost sites for GHB are predicted from the development proposals.	No
	Temporary loss/degradation of foraging habitat during construction	No	Construction of the car park in the SW of the airport and the junction improvement works at the A38 and Downside Road will result a net loss of 3.86ha of suitable foraging habitat for GHB. Grazed pasture and woodland are optimal foraging and commuting habitats for GHB.	Yes
	Temporary noise and vibration disturbance	No	During works construction noise could cause disturbance of bats along foraging and commuting lines. There are no known GHB roosts in close proximity to the proposals.	Yes
	Severance of flight lines or exclusion from foraging habitat as a result of temporary construction lighting	No	During works, temporary construction lighting could cause disturbance of bats, possibly impacting on the local GHB population, by altering commuting lines and or foraging areas.	Yes

C2.1.2 – Operation of External Lighting

Table 4 Screening Assessment for Potential Impacts of External Lighting During Operation

European Site: North Somerset and Mendip Bats SAC				
European site qualifying feature	**Proposed activity/ element of the project**	**Directly connected with or necessary to management? (Y/N)**	**Reasons for decision**	**Carry forward activity to AA?**
Lesser horseshoe bat (LHB)	Permanent light disturbance during operation	No	There is potential for disturbance effects to foraging and commuting LHB within and immediately adjacent to the site as a result of newly introduced lighting. Potential increases in lighting as a result of flights over the SAC bat roosts are scoped out of assessment as a result of the height of flights in this area.	Yes
Greater horseshoe bat (GHB)	Permanent light disturbance during operation	No	There is potential for disturbance effects to foraging and commuting GHB within and immediately adjacent to the site as a result of newly introduced lighting. Potential increases in lighting as a result of flights over the SAC bat roosts are scoped out of assessment as a result of the height of flights in this area.	Yes

C2.1.3 – Scheme Footprint and Landscaping Proposals

Table 5 Screening Assessment for Potential Impacts of Scheme Footprint and Landscaping

European Site: North Somerset and Mendip Bats SAC				
European site qualifying feature	**Proposed activity/ element of the project**	**Directly connected with or necessary to management? (Y/N)**	**Reasons for decision**	**Carry forward activity to AA?**
Lesser horseshoe bat (LHB)	Permanent loss/disturbance of roost sites during operation	No	No roosts are present within or adjacent to the construction site boundary and no change to roost sites for LHB are predicted from the development proposals.	No
	Permanent loss/degradation of foraging habitat during operation	No	The proposals will result in a loss of 3.86ha of woodland and grazed pasture which is suitable foraging habitat for LHB.	Yes
	Permanent severance of flight lines during operation	No	As well as the 3.89ha of woodland and grazed pasture, 175m of linear habitat features will be removed as a result of the proposals. Many potential flight lines such as the vegetated northern boundary and Silver Zone bunds will however be retained. Lighting impacts are considered separately (Section C.1.2).	Yes
	Permanent noise and vibration disturbance during operation	No	There are occasionally used LHB roosts 220m from the scheme boundary within the landholding. These roosts and other known summer and hibernation LHB roosts nearby have the potential to be impacted by additional noise and vibration as a result of increase traffic, human activity and additional flights. There is potential for noise and vibration to deter LHB from commuting or foraging in the immediate vicinity of the site. Potential for distant noise and vibration impacts at SAC roosts during operation are scoped out of assessment. This is due to the height of aircraft at SAC roost locations and existing tolerance and habituation of bats to indirect disturbance by aircraft at the roosts.	Yes
Greater horseshoe bat (GHB)	Permanent loss/disturbance of roost sites during operation	No	No roosts are present within or adjacent to the construction site boundary and no change to roost sites for GHB are predicted from the development proposals.	No
	Permanent loss/degradation of foraging habitat during operation	No	The proposals will result in a loss of 3.86ha of woodland and grazed pasture which is optimal foraging habitat for GHB.	Yes
	Permanent severance of flight lines during operation	No	As well as the 3.86ha of woodland and grazed pasture, 175m of linear habitat features will be removed as a result of the proposals. Many potential flight lines such as the vegetated northern boundary and Silver Zone bunds will however be retained. Lighting impacts are considered separately (Section C.1.2).	Yes

	Permanent noise and vibration disturbance during operation	No	There is potential for nearby GHB roosts to impacted by additional noise and vibration caused by an increase in flights. There is potential for noise and vibration to deter GHB from commuting or foraging in the immediate vicinity of the site. Potential for distant noise and vibration impacts at SAC roosts during operation are scoped out of assessment. This is due to the height of aircraft at SAC roost locations and existing tolerance and habituation of bats to indirect disturbance by aircraft at the roosts.	Yes

Conclusion:

This plan or project alone is likely to (or *may* have a significant effect) without mitigation on the following qualifying features of the European Site(s);

North Somerset and Mendip Bats SAC

Lesser horseshoe bat *Rhinolophus hipposideros*

Greater horseshoe bat *Rhinolophus ferrumequinum*

C3. Overall Screening Decision for the Plan/Project

On the basis of the details submitted by Bristol Airport, the project has been considered under Regulation 24(1) or 64(1)(a) of the Habitats Regulations. An assessment has been made of whether it will have a likely significant effect on a European site, either alone or in combination with other plans and projects.

In light of sections C1 and C2 of this assessment above, it is concluded that this plan or project is likely to (or *may* have) significant effects on some or all of the Qualifying Features of the European Site(s) 'alone'. Therefore, an Appropriate Assessment of the project 'alone' is required.

As there is potential for significant effects on site integrity alone, in-combination effects are considered in Section D4 after mitigation is taken into consideration in the Appropriate Assessment.

PART D: Appropriate Assessment and Conclusions on Site Integrity

D1. Scope of Appropriate Assessment

In light of the screening decision above in section C3, an 'Appropriate Assessment' of the implications of the plan or project in view of the Conservation Objectives for the European Site(s) at risk needs to be undertaken.

The Sites and the Qualifying Features for which significant effects (whether 'alone' or 'in combination') are likely or cannot be ruled out and which are initially relevant to this appropriate assessment are shown in Table 6.

Table 6 Sites and Qualifying Features Subject to Potential Significant Effects

European Site	Qualifying Feature	Decision
North Somerset and Mendip Bat SAC	Semi-natural dry grassland and scrubland facies on calcareous substrates (*Festuco-Brometalia)*	Screened out
	Tilio-Acerion forests of slopes, screes and ravines	Screened out
	Caves not open to the public	Screened out
	Lesser horseshoe bat (*Rhinolophus hipposideros*)	Taken forward for Appropriate Assessment
	Greater horseshoe bat (*Rhinolophus ferrumequinum*)	Taken forward for Appropriate Assessment

D2. Existing Evidence

Extensive baseline ecological surveys of the site have been completed since 2005, more recently by Johns Associates, including bat scoping, emergence and activity surveys in the past five years.

Information of relevance to horseshoe bats can be found in:

- Wood (2018) with ecology reports by Johns Associates (2018).
  Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum Environmental Statement
  - *Chapter 11: Biodiversity*
  - *Appendix 11A: Desk Study*
  - *Appendix 11B: Extended Phase 1 Habitat Survey*
  - *Appendix 11E: Bats – Baseline*
  - *Appendix 11F: Bats SPD Considerations*
- Johns Associates (2018).
  Outline SAC/SPD Ecological Management Plan for North Somerset and Mendips Bat SAC SPD Species and Wider Biodiversity.
- Johns Associates (2019).

Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum: Response to Comments from North Somerset Council on Biodiversity.

- Johns Associates (2019).
  Development of Bristol Airport to Accommodate 12 Million Passengers per Annum: Additional Information for Natural England.
- Wood (2018)
  Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum: Environmental Statement. Chapter 8: Air Quality
- Wood (2018)
- Hydrock (2018). Technical Design Note.
  Bristol Airport 12mppa Extension. Lighting Impact Assessment
  Document reference 09194-HYD-XX-GF-RP-ME-0001
- Hydrock (2019).
  Lighting Impact Assessment - Additional Study. Document C-09194_P01 (in relation to Downside Road).
- Wood (August 2019).
  Integrated/embedded Landscape, Visual and Ecology Mitigation Masterplan
  Update to Appendix 11K of *Environmental Statement.*
- Johns Associates (2019).
  Planning Application: 18/P/5118/OUT. Further Clarification: Biodiversity.
- Wood (2018)
  Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum: Environmental Statement. Chapter 18: Cumulative Impact Assessment.

As previous development and mitigation measures will have affected the distribution of horseshoe bats and as bat activity can change over time, the 2018 survey information is of most relevance to this assessment and is referenced below unless otherwise stated.

In January 2018, the *North Somerset and Mendip Bats Special Area of Conservation (SAC) Guidance of Development: Supplementary Planning Document* (SPD) was adopted by North Somerset Council. This built on previous survey and mitigation guidance including *Bat Surveys for Professional Ecologists – Good Practice Guidelines* 3rd Edition (Collins Ed., 2016) and *Bat Mitigation Guidelines* (Mitchell-Jones, 2004), making recommendations specific to the local Bat SAC. Guidance on lighting has also changed as supported by the SPD. Additional lighting guidance now includes Institute of Lighting Professionals and the Bat Conservation Trust (2018) *Bats and Artificial Lighting in the UK*. Previous applications for Bristol Airport met a 1 lux threshold but studies have since demonstrated that the tolerance of horseshoe bats to light pollution is usually taken to be at levels below 0.5 lux (as referenced in the SPD).

The scope of the 2018 bat activity surveys included Extended Phase 1 Habitat Surveys/bat habitat suitability assessment, roost assessments (trees and buildings), emergence and re-entry surveys, automated detector studies and walked transect surveys. Detailed information is provided in Appendix 11E of the *Environmental Statement*. The buildings and trees did not have potential to support horseshoe bats. Two transect routes were surveyed in 10 visits between April-October 2018, with each visit lasting three hours and at least one visit per month. The transects were designed to sample all habitats potentially impacted by the proposals with moderate

or high suitability for bats. This included the A38 junction and proposed Silver Zone Car Park (Phase 2). Eight survey visits were also completed to monitor potential crossing points of the A38 between June-October 2018. Twelve static detector deployment locations were used, with recording for at least 10 nights per month at each location between April-October 2018. The best practice guidance detailed above was followed as well as the methodology detailed in WC1060 *Development of a cost-effective method for monitoring the effectiveness of mitigation for bats crossing linear transport infrastructure* (Altringham and Berthinussen, 2015) for crossing point surveys.

The surveys focused on areas of suitable habitat for greater and lesser horseshoe bats as informed by best practice guidance and the SPD. Small, isolated and well-lit areas were excluded from the survey. The northern vegetated boundary along Downside Road was not included in the scope of surveys. The justification for the survey scope is provided in Sections 11.4.1, 11.4.2 and 11.4.6 of the *Environmental Statement*. Further information was requested with regards to existing and potential light levels onto the northern boundary vegetation (distant from the A38 proposals) and adjacent habitats to support scoping out these areas. Hydrock (2019) *Lighting Impact Assessment - Additional Study* demonstrates that levels of light spill along the northern boundary with Downside Road and Downside Meadow will be at least as low as present, with improvements made in some areas (e.g. north-west corner) (see Figure 3 and Figure 4). Therefore, further surveys are not required for this area of the site.

A total of 199 greater horseshoe bat (GHB) and 259 lesser horseshoe bat (LHB) records were identified within 5km. Some of these records are likely to be repeated annual colony counts for the same roosts. The majority of GHB records are associated with the wooded landscape extending from the west to the north. This includes the GHB maternity roosts at King's Wood and Urchin Wood SSSI and Brockley Hall Stables SSSI. There is a record of a hibernation roost for GHB to the north west of Bristol Airport at Downside, as well as numerous other known hibernation sites within 5km. Roost records for LHB are concentrated predominantly within woodland to the west and to the north of Bristol Airport. A sizeable maternity roost for lesser horseshoe bats is present in Barrow Wood, approximately 3.5-4.5km north-east. There are known hibernation sites in the area including King's Wood and Urchin Wood, Brockley Wood, a site at Dundry and a site near Regil. Both GHB and LHB have been recorded in previous surveys within the Airport landholding. Presence of GHB and LHB roost and field records within 2km of Bristol Airport indicate that the application site lies within the Core Sustenance Zone of known roosts supporting this species. The application site lies within Band B of the horseshoe bat density banding in the SPD.

As horseshoe bats have very specific roosting requirements, none of the buildings or trees directly affected by the proposals for this application have potential to be used by horseshoe bats. The former latrine building and air raid shelter in Cornerpool Wood have been modified to support LHB. Low numbers of LHB are present in summer and winter. The roosts are over 220m from the red line boundary of the proposals.

Suitable habitats which could be used by foraging and dispersing (commuting) horseshoe bats within the site include:

- A 0.16 ha area of deciduous woodland dominated by sycamore adjacent to the Downside Road and A38 junction.
- A 3.7 ha field of cattle-grazed pasture adjacent to Silver Zone Car Park (Phase 1) with surrounding hedgerows and scattered scrub.
- Vegetated boundaries, hedgerows and tree lines; for example, the vegetated boundary along Downside Road.

Although not within the site, there are suitable habitats for horseshoe bats including Downside Meadow, cattle-grazed pasture, hedgerows, tree lines and nearby woodland in immediate proximity.

At least 12 bat species including lesser and greater horseshoe bats were recorded using the site during the surveys. The overall number of horseshoe bat calls recorded during 2018 bat surveys is shown in the Table 7.

Table 7 Summary of Horseshoe Bat Passes

SPECIES	Total Passes	Average Passes per Hour	Percentage of Total Passes
Greater horseshoe	2265	0.882	8.8%
Lesser horseshoe	5436	0.368	3.6%

The surveys completed by Johns Associates determined the following:

- **Proposed Extension to the Silver Zone car park**: Small numbers of horseshoe bat species have been recorded in previous surveys in the Silver Zone Car Park (Phase 1 and 2) areas. In the 2018 transects, there was a cluster of GHB records along the western field boundary with additional individual passes recorded to the west of the scrub matrix within the grassland and along the northern bund. No LHB passes were recorded during the transects. During static detector surveys, GHB and LHB activity levels indicated foraging and commuting in nearly all locations across the proposed Silver Zone Car Park extension.
- **Location of A38 Highway Improvements**: During the 2018 transects, 2 GHB passes were recorded in the centre and to the south of the woodland parcel. No LHB passes were recorded during the transects. No horseshoe bats were recorded crossing the A38 at either location surveyed. During static detector surveys, GHB and LHB activity levels indicated foraging and commuting by both species at canopy, ground level and edge habitats in the woodland adjacent to the A38 and Downside Road junctions.

For GHB, activity within the natal period indicates that the site could provide a foraging resource for breeding roosts associated with the North Somerset and Mendip Bats SAC. Levels of LHB activity were high in the post-natal period in the woodland and also at lower levels within the natal period implying that the Site could provide a foraging resource for roosts associated with the North Somerset and Mendip Bats SAC. Detailed analysis including locations recorded is provided in Appendix 11E of the Environmental Statement.

Taking into account the number of call registrations recorded, it is considered that;

- The footprint of Silver Zone Car Park is of **high value for horseshoe bats at a district level;** and
- The woodland by the A38 junction of **high value for horseshoe bats at a district level**.

D3. Assessment of Potential Adverse Effects Considering the Plan or Project 'Alone'

D3.1 Assessment of Potentially Adverse Effects, Considering Any Incorporated Mitigation Measures

This section considers the risks identified at the screening stage in Section C and assesses whether adverse effects can be ruled out, having regard to the manner in which the plan or project, as submitted and described in Section A2, would be carried out if permission was granted.

Consideration is given in this section to any measures specifically intended to avoid or reduce the potential for harmful effects occurring from the plan or project that have been proposed by the applicant and incorporated into the submitted details of the plan or project.

In reviewing the ability of any incorporated measures to avoid harmful effects, North Somerset Council, as the competent authority, needs to consider the likely effectiveness, reliability, timeliness, certainty and duration over the full lifetime of the plan or project. A precautionary view has been taken where there is doubt or uncertainty regarding these measures.

Mitigation Strategy

The address the potential impacts on horseshoe bat populations using the site, the following mitigation measures have been proposed:

1) **Sensitive construction lighting**: All construction works will be restricted to daylight hours when bats are active (April-October). Sensitive construction lighting to avoid all light spill greater than 0.5 lux onto retained flight lines and adjacent habitat suitable for horseshoe bats. Details to be included in Construction Environmental Management Plan.

2) **Construction Environmental Management Plan (CEMP)**: Implementation of construction and air quality management measures including: a Dust Management Plan (DMP) as part of a Construction Environmental Management Plan (CEMP), agree and enforce a strict routeing agreement for incoming and outgoing Heavy Goods Vehicles (HGV), locating stockpiles away from the application site boundary/receptors, covering or damping down stockpiles, stockpile maintenance/management, and removal of materials from the application site. Also, enforce a "no unnecessary idling" policy for all vehicles on the application site. All construction works to be restricted to the redline boundary i.e. not within 220m of the nearby lesser horseshoe bat roosts in Cornerpool Wood. Construction works to be restricted to daylight hours during the period when horseshoe bats are active.

3) **Operational Management**: Implementing a range operational air quality management measures including planning of aircraft arrival and departure scheduling to avoid, where possible, overlong idling, taxiing and hold times. The airfield layout has been designed to minimise times for taxiing and holding. Encourage use of reduced-engine taxiing. Use of Fixed Electrical Ground Power to

minimise engine/auxiliary power unit (APU) use. Flight paths will remain similar to existing, with aircraft unlikely to be 1000ft or below when overflying designated GHB and LHB roost sites within the SAC.

4) **Retention and Management of Hedgerows and Hedgerow Trees**: Full retention and ongoing management of the existing perimeter hedgerows and hedgerow trees, with the exception of the A38 at the north-east corner of the airport boundary and 175m of shrub/hedgerow along the eastern boundary. Removal of vegetation along the eastern boundary will be temporary to facilitate highway improvements. The planting will comprise 197m length along the upper eastern boundary and 102m along the lower eastern boundary. The planting will be established as soon as the road has been widened and the embankment regraded and stabilised. Where feasible, the removal of this vegetation will occur in the winter with planting in place prior to the end of March. It should be noted that the boundary is currently of very low suitability for horseshoe bats due to existing lighting along the A38. No horseshoe bats were recorded crossing the A38 during bat activity surveys. There will also be 47m of new hedge and 120m of new understory/shrub planting around the A38/Downside Road junction. The Silver Zone Car Park extension (Phase 2) has been restricted to the centre of the field with boundary hedgerows retained and augmented.

5) **Bunds in Silver Zone**: Bunds surrounding the Silver Zone Car Park extension will be planted with native trees/hedges with wildflower margins to be of benefit to horseshoe bats.

6) **Lighting** – **Silver Zone:** Lighting regime in the proposed Operational Extension to the Silver Zone Car Park (Phase 1) and the proposed extension of footprint (Phase 2) are designed and installed to ensure that lux levels at the security fence perimeter are less than 0.5 lux at the boundary of the proposed Silver Zone Car Park Extension (Phase 2). This will be achieved through the use of specific lighting design criteria and guidelines. Lighting proposals for this area are shown in Figure 5.

7) **Lighting – A38 highway works:** Lighting associated with the highway improvements along the A38/ Downside Road junction to be no greater than current levels and <0.5 lux within and above the future woodland boundary/canopy. This will be achieved through the use of specific lighting design criteria and guidelines as well the use of planting of holly and yew, and fencing to reinforce the woodland edge/light penetration if necessary. Lighting proposals for this area are shown in Figure 4.

8) **Lighting – northern boundary**: The northern boundary habitats suitable for horseshoe bats include a densely vegetated treeline along Downside Road and adjacent habitats including Downside Meadow and the A38 woodland. Lighting proposals for this area are shown in Figure 3 and Figure 4 and will not result in a significant increase in light spill. In some areas, there will be a reduction in light spill.

9) **Replacement Habitat – A38 woodland:** Provision of parkland trees within Downside Meadow to directly replace the loss of circa 0.16 ha associated with the A38/Downside Road junction. Protection and management of existing woodland east of the A38 roundabout and main airport entrance and provision of circa 0.34ha of

new broad-leaved woodland. The SPD HEP Calculations are provided in *Environmental Statement* Appendix 11F. Both existing and planted woodland will be improved in quality for horseshoe and other bat species. Woodland management to improve structure and composition, any necessary tree surgery, remove non-native invasive species and to plant native local species including hazel, yew and holly along the woodland margin to increase ecological functionality and to help reduce light ingress into the woodland.

10) **Replacement Habitat – Off-Site Area:** The Airport have acquired an area of nearby mixed woodland which can be managed to optimise conditions for horseshoe bats. This meets the criteria for replacement habitat as defined within the SPD. Circa 4.38 hectares of woodland located in the Band A of the SAC will be managed and optimised for greater and lesser horseshoe bats, amongst other species. This woodland will be improved in quality from a current limited level of opportunities for horseshoe bats (conifer plantation (WC0) with canopy cover 75-90% (WF111) currently unmanaged) to an optimised condition (Mixed woodland (WB0) with canopy cover <20% (WF114) within 10 years). Management activities to enhance the woodland will commence before any removal of suitable foraging habitat on site. The woodland will be in favourable condition for horseshoe bats before any removal of suitable foraging habitat on site. Any amendment to the approach would need to be proposed in writing with a detailed management plan and would need to meet the SPD. The revised approach would need to be agreed in writing with NSC and Natural England. A detailed management and implementation plan can be secured by condition.

Additional Habitat Creation

Additional habitat creation measures as shown on the *Integrated/Embedded Landscape, Visual and Ecology Mitigation Masterplan* (Wood, August 2019) (see Figure 6) which are relevant for horseshoe bats include:

1 Reinforcing existing tall native hedgerow with hedgerow, scrub and standard trees. Extend scrub planting at northern boundary with Downside Road with provision for rides in scrub.

2 Reinforce woodland planting on the top and northern side of bund in NW corner. Plant climbers on trellis along northern side of acoustic wall.

3 Limited amount of tree planting in Downside Meadow, provision of mown paths and information board.

4 Existing woodland copse to east of A38 to have management regime amended to thin internal areas of woodland.

5 Extend woodland copse east of A38 (4) to east and scallop eastern edge.

7 Reinforce and thicken existing hedgerow and allow to grow to a maximum of 1.5m height.

8 Reinforce and thicken existing hedgerow and allow to grow to a maximum of 1.5m height.

9 Introduce extra heavy standard trees into A38 boundary hedgerow and allow hedgerow section to grow out to maturity.

10 Introduce small copses in the south-eastern and south-western corners of Gruffy's Field around existing building bat roosts. Ensure that in combination with (11) the total area of scrub/tree cover within field does not exceed 15% of surface area (for horseshoe bats). Extend and enhance existing bat roosts.

11 Introduce parkland trees to Gruffy's Field to enhance existing patches of scrub so that the total area of scrub/tree cover within field does not exceed 15% of surface area.

12 Reinforce and thicken existing hedgerow and allow to grow to full maturity.

13 Existing woodland copse to be managed to benefit horseshoe bats. New building bat roost.

14 Silver Zone Car Park (Phase 2) – see measures (5) and (6) of Mitigation Strategy above.

15 Restore existing pond to enhance conditions for lesser horseshoe bats.

16 Woodland management adjacent to A38/Downside junction - see measure (9) of Mitigation Strategy above.

Figure 3 – External Lighting Proposals for North West Boundary

Figure 4 – External Lighting Proposals for North East Boundary

Figure 5 – External Lighting Proposals for Silver Zone Car Park (Phase 1 and Phase 2)

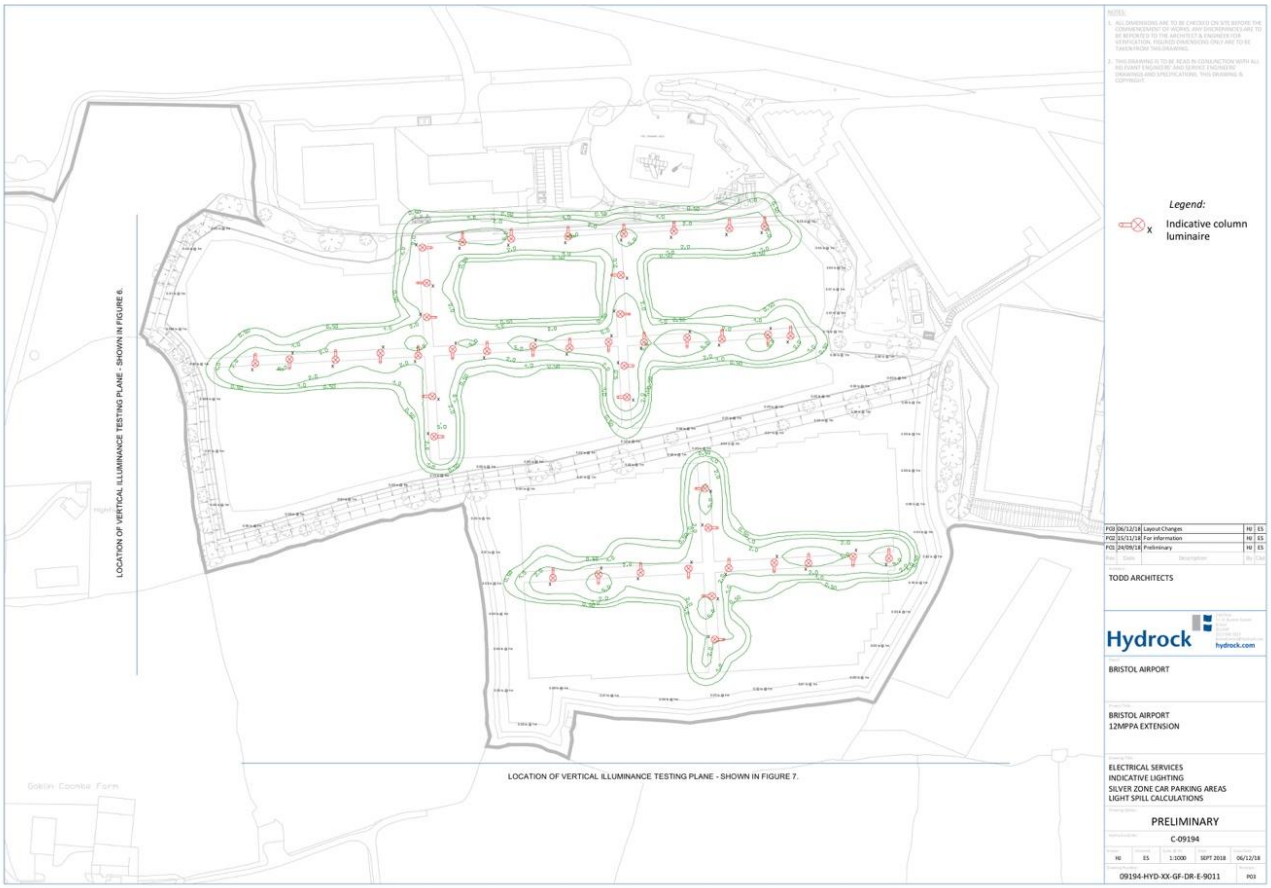
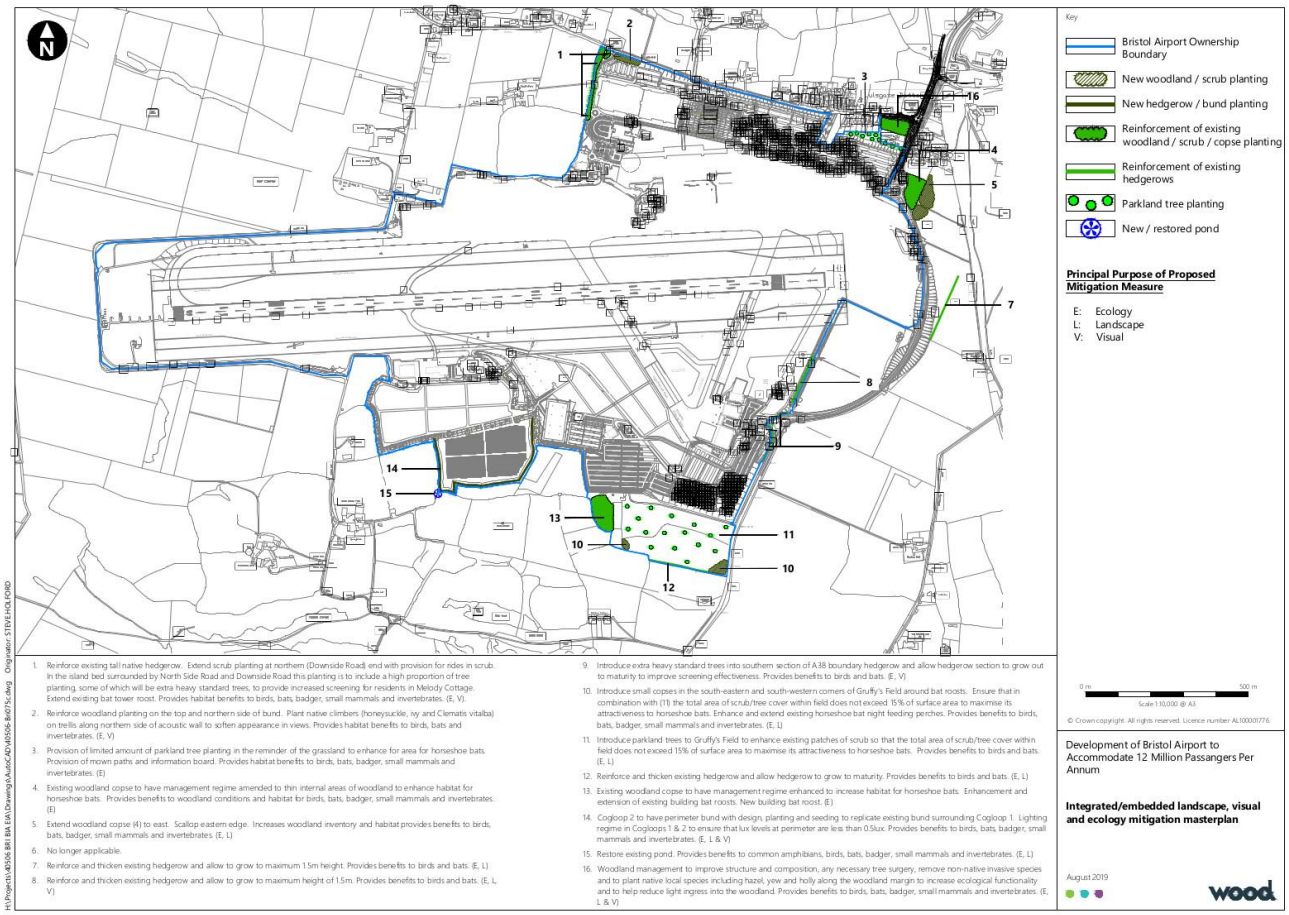


Figure 6 – Landscape, Visual and Ecology Mitigation Masterplan



D3.1.1 - Construction to Create the Capacity for 12mmpa

North Somerset and Mendip Bats SAC

D3.1.1.1 – Lesser Horseshoe Bat

Conservation Objectives

The Conservation Objectives for the Lesser Horseshoe Bat (LHB) population of the North Somerset and Mendip Bats SAC are set out below. The SAC population is considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: -

i. the abundance of the population is maintained at a level of above 75 bats LHB at designated hibernation sites and avoid deterioration from recent mean peak counts;

ii. the distribution and continuity of Lesser Horseshoe Bat populations and their supporting habitat is maintained;

iii. the extent of supporting habitat within the SAC is maintained;

iv. the favourable condition of the underground sites for LHB is maintained;

v. the presence, structure and quality of any linear landscape features which function as flight lines into surrounding habitat and foraging areas is maintained;

vi. any core areas of off-site core feeding habitats outside of the SAC boundary that are critical to LHBs are maintained;

vii. the number and function of access points to roosts are maintained;

viii. the ability of supporting habitat to adapt or evolve to wider environmental change is maintained;

ix. Airborne nutrient and contaminant loads are below levels which would pose a risk to the ecological objectives described above;

x. Conservation management measures necessary to maintain habitats for horseshoe bats are implemented;

xi. Unauthorised public access to roost sites is controlled and minimised; and

xii. Wetland features associated with the SAC units or supporting habitat to be kept in favourable condition.

Table 8 Appropriate Assessment of Potential Impacts of Construction Works: Lesser Horseshoe Bat

Project element and impact	Likely effect on Conservation Objectives attribute(s)	Extent, magnitude or scale of the effect	Analysis of incorporated measures that can avoid or reduce the effects on the attribute	Can 'no adverse effect' on the feature be ascertained? (Y/N) Give reasons.
Temporary loss/degradation of foraging habitat during construction	Loss of 3.86 hectares of supporting foraging habitat.	Short term (but see Section D3.1.3 impacts), at a district scale	Suitable replacement habitat will be provided ahead of the loss of any foraging habitat suitable for LHB (Appendix 11F: Bats - SPD Considerations). Additional integrated / embedded mitigation and enhancement measures will ensure that there is no net loss of LHB habitat.	Yes – SPD compliant approach for replacement habitat provided. Appropriate management and details of approach to be secured through condition.
Temporary noise and vibration disturbance	Loud noise or vibration as a result of construction activity could deter bats foraging, passing through the site or roosting nearby.	Short term, at a district scale	LHB roosts on site are 220m from the works. All works including enabling works to be within redline boundary. No night time working when bats will be active.	Yes. No night working when LHB are active and no works in proximity to LHB roosts in Cornerpool Wood. To be secured by condition for CEMP.
Severance of flight lines or exclusion from foraging habitat as a result of temporary construction lighting	Use of insensitive construction lighting could deter bats from using flight lines or foraging habitat	Short term, At a district scale	No night time construction lighting will be used adjacent to retained perimeter features used by LHB.	Yes. There will not be light spill above 0.5 lux onto retained perimeter features and adjacent habitats as a result of construction lighting.

D3.1.1.2 - Greater Horseshoe Bat

Conservation Objectives

The conservation objectives for the Greater Horseshoe Bat (GHB) population of the North Somerset and Mendip Bats SAC are set out below. The SAC population is considered to be in favourable condition when, subject to natural processes, each of the following conditions are met: -

i. the abundance of the population is maintained at a level of above 200 bats at designated hibernation sites and avoid deterioration from recent mean peak counts;

ii. the abundance of the population is maintained at a level of above 350 bats at designated maternity sites and avoid deterioration from recent mean peak counts;

iii. the structural integrity of roost areas including buildings and mines is maintained;

iv. consistently cool (8-12 ºC) and dark conditions with a relatively humidity of over 90% are maintained at hibernation sites;

v. appropriate light levels, humidity, temperature and ventilation are maintained at maternity roost sites;

vi. the extent of supporting habitat within the SAC is maintained;

vii. the presence, structure and quality of any linear landscape features which function as flight lines into surrounding habitat and foraging areas is maintained;

viii. any core areas of off-site core feeding habitats outside of the SAC boundary that are critical to LHBs are maintained;

ix. the number and function of access points to roosts are maintained;

x. the ability of supporting habitat to adapt or evolve to wider environmental change is maintained;

xi. airborne nutrient and contaminant loads are below levels which would pose a risk to the ecological objectives described above;

xii. conservation management measures necessary to maintain habitats for horseshoe bats are implemented;

xiii. unauthorised public access to roost sites is controlled and minimised; and

xiv. wetland features associated with the SAC units or supporting habitat to be kept in favourable condition.

Table 9 Appropriate Assessment of Potential Impacts of Construction Works: Greater Horseshoe Bat

Project element and impact	Likely effect on Conservation Objectives attribute(s)	Extent, magnitude or scale of the effect	Analysis of incorporated measures that can avoid or reduce the effects on the attribute	Can 'no adverse effect' on the feature be ascertained? (Y/N) Give reasons.
Temporary loss/degradation of foraging habitat during construction	Loss of 3.86 hectares of supporting foraging habitat.	Short term (but see Section D3.1.3 impacts), at a district scale	Suitable replacement habitat will be provided ahead of the loss of any foraging habitat suitable for GHB (Appendix 11F: Bats - SPD Considerations). Additional integrated / embedded mitigation and enhancement measures will ensure that there is no net loss of horseshoe bat foraging habitat.	Yes – SPD compliant approach for replacement habitat provided. Appropriate management and details of approach to be secured through condition.
Temporary noise and vibration disturbance	Loud noise or vibration as a result of construction activity could deter bats foraging, passing through the site or roosting nearby.	Short term, at a district scale	No GHB roosts in close proximity. No night time working when bats will be active.	Yes. No night working when GHB are active. To be secured by condition for CEMP.
Severance of flight lines or exclusion from foraging habitat as a result of temporary construction lighting	Use of insensitive construction lighting could deter bats from using flight lines or foraging habitat	Short term, At a district scale	No night time construction lighting will be used adjacent to retained perimeter features used by GHB.	Yes. There will not be light spill above 0.5 lux onto retained perimeter features and adjacent habitats as a result of construction lighting.

D3.1.2 - Operation of External Lighting

North Somerset and Mendip Bats SAC

D3.1.2.1 – Lesser Horseshoe Bat

Table 10 Appropriate Assessment for Potential Impacts of External Lighting During Operation: Lesser Horseshoe Bat

Project element and impact	Likely effect on Conservation Objectives attribute(s)	Extent, magnitude or scale of the effect	Analysis of incorporated measures that can avoid or reduce the effects on the attribute	Can 'no adverse effect' on the feature be ascertained? (Y/N) Give reasons.
Permanent light disturbance during operation	Potential severance of flight lines and displacement of bats from foraging habitat, potentially reducing the amount of supporting habitat available and key flight lines	Long term, at a district scale	Car park lighting will be modelled, designed and installed in accordance with best practice measures. Lux level at the perimeter of the Silver Zone Car Park Extension will not exceed a limit of 0.5 lux (vertical and horizontal) at the perimeter with light levels decreasing beyond this. Lighting associated with the highway improvements along the A38/Downside Road junction will be no greater than current levels and <0.5 lux within and above the future woodland boundary/canopy. As well as lighting design, planting and fencing to reinforce avoiding woodland edge/light penetration will be implemented. Lighting will be designed so that the vegetated northern boundary with Downside Road remains a viable flight line for LHB, with light levels below 0.5 lux within part of the hedgerow/treeline. Lighting from planes overflying LHB roosts will not have an impact as flights will be at least 1000ft above known important roosts.	Yes. Light spill of below <0.5 lux onto perimeter features or no additional light spill above existing levels. Detailed lighting design to meet lux contour plans as shown in Figures 3, 4 and 5 to be secured by condition.

D3.1.2.2 – Greater Horseshoe Bat

Table 11 Appropriate Assessment for Potential Impacts of External Lighting During Operation: Lesser Horseshoe Bat

Project element and impact	Likely effect on Conservation Objectives attribute(s)	Extent, magnitude or scale of the effect	Analysis of incorporated measures that can avoid or reduce the effects on the attribute	Can 'no adverse effect' on the feature be ascertained? (Y/N) Give reasons.
Permanent light disturbance during operation	Potential severance of flight lines and displacement of bats from foraging habitat, potentially reducing the amount of supporting habitat available and key flight lines	Long term, at a district scale	Car park lighting will be modelled, designed and installed in accordance with best practice measures. Lux level at the perimeter of the Silver Zone Car Park Extension will not exceed a limit of 0.5 lux (vertical and horizontal) at the perimeter with light levels decreasing beyond this. Lighting associated with the highway improvements along the A38/Downside Road junction will be no greater than current levels and <0.5 lux within and above the future woodland boundary/canopy. As well as lighting design, planting and fencing to reinforce avoiding woodland edge/light penetration will be implemented. Lighting will be designed so that the vegetated northern boundary with Downside Road remains a viable flight line for GHB, with light levels below 0.5 lux within part of the hedgerow/treeline. Lighting from planes overflying GHB roosts will not have an impact as flights likely to be at least 1000ft above known important roosts.	Yes. Light spill of below <0.5 lux onto perimeter features or no additional light spill above existing levels. Detailed lighting design to meet lux contour plans as shown in Figures 3, 4 and 5 to be secured by condition.

D3.1.3 – Scheme Footprint and Landscaping Proposals

D3.1.3.1 – Lesser Horseshoe Bat

Table 12 Appropriate Assessment for Potential Impacts of Scheme Footprint and Landscaping: Lesser Horseshoe Bat

Project element and impact	Likely effect on Conservation Objectives attribute(s)	Extent, magnitude or scale of the effect	Analysis of incorporated measures that can avoid or reduce the effects on the attribute	Can 'no adverse effect' on the feature be ascertained? (Y/N) Give reasons.
Permanent loss/degradation of foraging habitat during operation	Removal of 3.86 ha of woodland and grazed pasture which are foraging habitat	Long-term. At the District scale	The incorporated mitigation and enhancement measures and the Replacement Habitat / Additional Mitigation will deliver the ongoing management improvement of the suitable replacement habitat both on site and off site, that is compliant with the North Somerset and Mendip Bat SAC SPD during the operational period in perpetuity. The replacement habitat will be in positive conservation management before loss of habitat on site.	Yes. There will be no net loss of foraging habitat. Delivery of mitigation, appropriate management and detailed approach to be secured through condition.
Permanent severance of flight lines during operation	Removal of 175m of linear habitat which could be dispersal corridors for LHB, albeit sub-optimal due to existing lighting	Long-term, At the District Scale	Incorporated mitigation and enhancement measures will ensure that existing flight lines are retained and protected during operation. Removed flight lines along the A38 boundary will be reinstated as soon as possible after removal along the new site alignment to ensure a continuous corridor for bats. The provision of the new planted landscape bund in the Proposed Extension to the Silver Zone Car Park (Phase 2), as part of the construction period, will further enhance the functionality of the perimeter habitats and provide enhanced alternative flight lines. No change in the ecological	Yes. Most linear features retained or replaced – to be secured by condition and protection measures to be detailed in CEMP.

			functionality of connected bat habitat across the A38 is predicted as a result of operational usage of the road because of the lack of recorded LHB at this location and continuation of high levels of lighting.	
Permanent noise and vibration disturbance during operation	Loud noise or vibration as a result of construction activity could deter LHB foraging, passing through the site or roosting nearby.	Long-term, at the District Scale	LHB roosts onsite are more than 220m from the operational boundary. These roosts have been colonised despite being a similar distance from car parking along the entire southern boundary and additional disturbance is not anticipated. LHB roosts associated with the SAC and constituent SSSIs are characterised with buildings and caves/mines and are well insulated from external noise. Current levels of activity as a result of overflights do not appear to be disturbing the bats. An additional 29 flights per day on average is unlikely to cause significant additional disturbance. Flights will not need to be routed in closer proximity to LHB roosts. LHB have been recorded in increasing numbers around Silver Zone, despite noise and vibration from human activity e.g. car movements.	Yes. No additional impacts anticipated from the capital works or increase in flight activity. LHB appear to be tolerating existing levels of airport activity. Additional levels of activity are not anticipated to change the type of disturbance or to cause abandonment of roosts or perimeter dispersal corridors.

D3.1.3.2 – Greater Horseshoe Bat

Table 13 Appropriate Assessment for Potential Impacts of Scheme Footprint and Landscaping: Greater Horseshoe Bat

Project element and impact	Likely effect on Conservation Objectives attribute(s)	Extent, magnitude or scale of the effect	Analysis of incorporated measures that can avoid or reduce the effects on the attribute	Can 'no adverse effect' on the feature be ascertained? (Y/N) Give reasons.
Permanent loss/degradation of foraging habitat during operation	Removal of 3.86 ha of woodland and grazed pasture which are optimal foraging habitat for GHB	Long-term. At the District scale	The incorporated mitigation and enhancement measures and the Replacement Habitat / Additional Mitigation will deliver the ongoing management improvement of the suitable replacement habitat both on site and off site, that is compliant with the North Somerset and Mendip Bat SAC SPD during the operational period in perpetuity. The replacement habitat will be in positive conservation management before loss of habitat on site.	Yes. There will be no net loss of foraging habitat. Delivery of mitigation, appropriate management and detailed approach to be secured through condition.
Permanent severance of flight lines during operation	Removal of 175m of linear habitat which could be dispersal corridors for GHB, albeit sub-optimal due to light spill	Long-term, At the District Scale	Incorporated mitigation and enhancement measures will ensure that existing flight lines are retained and protected during operation. Removed flight lines along the A38 boundary will be reinstated along the new site alignment as soon as possible after removal to ensure a continuous corridor for bats. The provision of the new planted landscape bund in the Proposed Extension to the Silver Zone Car Park (Phase 2), as part of the construction period, will further enhance the functionality of the perimeter habitats and provide enhanced alternative flight lines. No change in the ecological functionality of connected bat habitat across the A38 is predicted as a result of operational usage of the road because of the lack of recorded GHB at this location and continuation of high levels of lighting.	Yes. Linear features retained or replaced – to be secured by condition and protection measures to be detailed in CEMP.

Permanent noise and vibration disturbance during operation	Loud noise or vibration as a result of construction activity could deter GHB foraging, passing through the site or roosting nearby.	Long-term, at the District Scale	GHB roosts associated with the SAC and constituent SSSIs are characterised with buildings and caves/mines and are well insulated from external noise. Current levels of activity as a result of overflights do not appear to be disturbing the bats. An additional 29 flights per day on average is unlikely to cause significant additional disturbance. Flights will not need to be routed in closer proximity to GHB roosts. GHB have been recorded in increasing numbers around Silver Zone, despite noise and vibration from human activity e.g. car movements.	Yes. No additional impacts anticipated from the capital works or increase in flight activity. GHB appear to be tolerating existing levels of airport activity. Additional levels of activity are not anticipated to change the type of disturbance or to cause abandonment of roosts or perimeter dispersal corridors.

Summary of Potentially Adverse Effects Considering the Project 'Alone'

The tables above show that the proposals have the potential to impact on foraging habitat and flight lines for Lesser Horseshoe and Greater Horseshoe bats. The assessment has identified that the following mitigation measures will address the potential adverse effects:-

- Sensitive approach to construction including pollution reduction measures, lighting to avoid spill of above 0.5 lux onto retained and adjacent features and daytime working when horseshoe bats are active;
- Retaining and protecting perimeter vegetation;
- Sensitive external lighting plan to minimise light spill onto retained features and habitats suitable for horseshoe bats with no additional light spill;
- Provision of on-site and off-site replacement habitat to provide no net loss and to achieve overall net gain of beneficial horseshoe bats; and
- Site management to benefit horseshoe bats.

With this mitigation in place, it can be concluded that the project alone would not have an adverse effect on site integrity of the European sites.

Appropriate planning conditions will be recommended to secure these measures if planning consent is granted.

D4. Assessment of Potentially Adverse Effects Considering the Project 'In Combination' with Other Proposed Plans and Projects

The need for further assessment of the risk of in-combination effects is considered here. The appreciable effects (from a proposed plan or project) that are not themselves considered to be adverse alone which must be further assessed to determine whether they could have a combined effect significant enough to result in an adverse effect on site integrity. The cumulative effect could arise from current or future plans or projects.

The definitions used in Section C3 of *The Habitats Regulations Assessment Handbook* (DTA, 2019) have been used to define the scope of known plans or projects which have been considered.

The Shadow assessment of cumulative impacts completed by Johns Associates and provided in *Environmental Statement* Appendix 11J has been fully reviewed. Potentially significant inter-related effects on the SAC from other plans and projects are as follows:

1. Change in air quality (dust, NOx, acid deposition) and noise pollution from vehicle and aircraft emissions and movements that results in damage to vegetation and habitats, including to designated sites and Priority Habitats, with indirect effects on horseshoe bats. This includes the potential effects of journeys to and from Bristol Airport in combination with transport infrastructure for the wider area;
2. Cumulative impacts of loss of foraging habitat used by horseshoe bats as a result of other plans or projects; and
3. Cumulative impacts of loss of dispersal corridors and resulting fragmentation and connectivity as a result of lighting, physical removal or changes to the structure of flight corridors for horseshoe bats.

An assessment of inter-related effects on biodiversity has been considered within the main assessment of effects within Chapter 11: *Biodiversity* (Sections 11.10 to 11.16) and Chapter 18: *Cumulative Impact Assessment* of the *Environmental Statement*. This includes a 15km radius for scoping of a long-list of plans and projects and 5km radius for short-list criteria. This has been reviewed in the context of the author's and Natural England's knowledge of the local area, focusing on an 8km radius from component roosts of the SAC (in accordance with the Bat SPD). Any more recent proposals for plans or projects have also been taken into consideration.

Plans or projects scoped in for consideration are provided in Table 14.

Table 14 Plans and Projects Scoped into the In-Combination Assessment

Application	Location	Summary
19/P/0704/FUL	Junction 21, M5	Park and Ride for Bristol Airport
18/P/2691/RM 16/P/1291/O	Cox's Green, Wrington, BS40 5QR	55 residential dwellings
Various	Barrow Hospital, BS48 3SE	215 dwellings & associated works
DCO	Bridgwater to Seabank (Hinkley C Connection)	Upgrading electricity infrastructure & associated works
15/P/0519/OUT	Cobthorn Way, Congresbury	38 dwellings & associated works
16/P/1521/OUT	Wrington Lane, Congresbury	50 dwellings & associated works
18/P/5234/OUT	Trendlewood Way, Nailsea	24 dwellings & associated works

16/P/0147/F	Venus Street, Congresbury	14 dwellings & associated works
18/P/3905/OUT 17/P/5592/FUL	Smallway, Yatton	Proposal for 21 dwellings New medical centre
Housing allocation	Land south of the Uplands, Nailsea	50 dwellings
18/P/2532/OUT	Station Road, Congresbury	13 dwellings & associated works
17/P/1250/F	Engine Lane, Nailsea	185 dwellings & associated works
16/P/1677/OT2	Land north of Youngwood Lane, Nailsea	Up to 450 dwellings & associated works
18/P/3659/FUL	Former UTAS Site, Claverham	77 dwellings & associated works
17/P/0787/EIA1	Causeway View, Nailsea	195 dwellings & associated works
15/P/1916/O	Moor Lane, Backwell	65 dwellings & associated works
Various including 15/P/0946/O 15/P/1488/O 14/P/0191/O	North End, Yatton (including Arnold's Way)	Up to approx. 550 dwellings & associated works
17/P/1894/RM	Land off Pudding Pie Lane and Stock Lane, Langford	141 dwellings & associated works
18/P/3625/OUT	Land to the north of Greenhill Lane, Sandford	85 dwellings & associated works
15/P/0583/O	Greenhill Road, Sandford	118 dwellings & associated works
17/P/0887/O	Land To The North Of Greenhill Road Sandford	93 dwellings & associated works
DCO to be submitted autumn 2019	Portishead rail link	Upgrade and creation of rail link between Portishead and Bristol Temple Meads
N/A	Joint Spatial Plan (SDLs including Whitchurch, Backwell, Banwell, Churchill and Nailsea)	Various proposals including four Strategic Development Locations within North Somerset totalling up to 8000 dwellings
N/A	Local Plan 2036: Issues and Options Document	Various strategic development proposals and policies, including associated transport infrastructure

Table 15 includes plans and projects specifically relating to Bristol Airport, including recent applications and known projects not implemented or partially-implemented before baseline surveys were completed in 2018. All of these applications have been considered in a cumulative impact assessment.

Table 15 Bristol Airport Plans and Projects Scoped into the In-Combination Assessment

Application	Location	Summary
Various permitted development applications	Across Bristol Airport	Various including building extensions, layout changes and temporary buildings.
18/P/5175/NMA	Southern taxiway	Amendment to planning permission 09/P/1020/OT2 to revise layout of hardstanding that comprises the airport's southern link taxiway
18/P/4969/RM	Southern taxiway	Development of the southern link taxiway and apron
18/P/4206/FUL	Terminal building	Extension to food and beverage area in terminal building
18/P/4198/NMA	Multi-storey car park	Amendment to planning permission 16/P/1455/F with regards to minor details of five storey multi-storey car park
18/P/4007/FUL	Silver Zone Phase 1	Variation of condition no.3 of planning permission
16/P/1486/F	Silver Zone Phase 1	To allow year-round use of car park for one year
18/P/3950/FUL	Eastern apron	Draining mitigation scheme in connection with the development of the eastern apron
18/P/3570/NMA and 18/P/3562/RM	Eastern apron	Revision of layout and landscaping of aircraft stands of far eastern apron
18/P/3571/NMA	Site W	Revision to position of noise attenuation wall
18/P/3171/RM	Silver Zone	Reserved matters application for car parking, washing and refuelling facilities.
17/P/5015/F	West of A38	Discharge of conditions 5 and 6 (in January 2019).
09/P/1020/OT2	Entire airport	Capacity of 10mmpa and associated works.

In relation to Bristol Airport applications, a Habitats Regulations Assessment was completed for 09/P/1020/OT2 which concluded no likely significant effects. However, the assessment methodology has changed considerably due to guidance and legislation updates since 2009. Many elements of the outline permission have also been implemented, particularly elements with potential impacts on horseshoe bats. Therefore, impacts have been reconsidered even for applications (such as Reserved Matters) relating to the previous Outline Application.

The majority of these applications relate to well-lit and built-up areas of Bristol Airport and do not have the potential to impact on horseshoe bats. Ecological comments have been submitted for applications 18/P/4969/RM, 18/P/4007/FUL and 18/P/3950/FUL. Additional information in an *Ecology Technical Note* (Johns Associates, July 2019) for application 18/P/4969/RM has been provided. This demonstrates that habitat within the site boundary of the taxiway reconfiguration works has negligible suitability for use by horseshoe bats. Although additional lighting will be installed, a lux plan has been provided. This shows that light levels along the eastern boundary of the area will be less than 20 lux, with very low levels in the north-east corner. Surrounding areas are generally very well lit, with the exception of farmland and grassland to the north-east/east. The lux plan demonstrates that there will be no light spill onto features suitable for use by horseshoe bats to the east. These features are also separated from the site by buildings and car parking. Therefore, there will be no cumulative negative impacts on horseshoe bats as a result of this application.

It should also be noted for applications which have been implemented or partially-implemented (such as 09/P/1020/OT2), the mitigation designed into schemes appears to have been effective. Hence, the continued use of the Bristol Airport landholding by horseshoe bats. Where monitoring has been completed, continued and potentially increased use of suitable on-site habitat by horseshoe bats has been recorded.

It is therefore considered that there are no residual and appreciable effects likely to arise from this project which have the potential to act in-combination with those from other plans or projects known at this time within the airport site. It has therefore been excluded, on the basis of objective information, that the project could have an adverse effect on site integrity in-combination with other plans or projects proposed by Bristol Airport.

In terms of other plans or projects in the wider area:

1) Cumulative Pollution Impacts
In relation to cumulative impacts of pollution, none of the applications above relate to aircraft movements or a potential significant increase in local pollution levels which may impact on horseshoe bats. There are roads in relatively close proximity to the Brockley Hall Stables SSSI, but there are not anticipated to be such significant increases in traffic that there would be a risk as a result of air or noise pollution to Brockley Hall Stables. Alone, there are not anticipated to be any negative impacts of any quantifiable degree to SAC units and functionally-linked habitat critical to site integrity as a result of noise pollution.

2) Loss of Foraging Habitats
A total of 3.86 hectares of horseshoe bat habitat will be lost as a result of the scheme. The foraging habitat lost is within Band B of the North Somerset and Mendip Bat SAC and therefore, not within the core sustenance zone for juveniles and lactating females. Loss of foraging has been addressed through the provision of replacement habitat in compliance with the North Somerset and Mendip Bat SAC SPD. The proposed replacement habitat does not conflict and is not in close proximity to any plans or proposals detailed above. There are no plans or projects which could result in an obstruction of accessibility to the proposed replacement foraging habitat. The proposed location is within SPD Band A and within a large continuous band of semi-natural ancient and mixed woodland. Most of the woodland is secured through SSSI or Local Wildlife Site designations.

Although many of developments also have potential impacts on horseshoe bats as a result of loss of potential horseshoe bat habitat, any consented schemes will now have to comply with the requirements of the SPD and have been assessed through the HRA process. Historic schemes and schemes being assessed by PINS (such as Hinkley C and Portishead Rail Line) may not comply with the SPD. However, the replacement habitat is at an optimal location and management proposed is of sufficient quality to ensure that there will be no cumulative significant negative impacts on site integrity. It is possible that the proposed off-site habitat may provide more optimal opportunities, depending on appropriate woodland restoration and management, given that the site is within the Juvenile Sustenance Zone, resulting in a positive impact to site integrity. There are no cumulative additive impacts anticipated as a result of the proposals over and above SPD compliance and the HRA process.

3) Physical Loss or Increased Inaccessibility of Linear Corridors

The proposals have very limited impact on potential and known dispersal corridors at the site level alone. Although the Bat SPD states that linear habitat features need to be retained and accessible (light spill before 0.5 lux) for bats, it is inevitable that there will be some adverse impacts on horseshoe bats as a result of known plans and projects. For example, the HRA/AA for the JSP and a component site (Engine Lane), concluded that cumulative adverse impacts are possible or likely to have a significant effect on SAC site integrity. There are no proposals in immediate proximity to the Airport which are connected to on-site corridors which have the potential to directly result in cumulative effects. The on-site dispersal corridors could potentially become more important as a result of landscape-scale changes or horseshoe bats e.g. temporary hedgerow removal for Hinkley C, fragmentation and lighting as a result of SDL (JSP/emerging Local Plan) proposals, etc. However, very limited changes will be made to any existing dispersal routes on site. Some linear corridors (e.g. Downside Road and bunds in Silver Zone extension) are likely to be subject to less light spill as a result of mitigation secured. Therefore, there is reasonable scientific certainty that no significant adverse cumulative impacts on SAC site integrity will occur.

It has been concluded beyond reasonable scientific doubt that there will be no cumulative impacts on the integrity of roost sites and functionally-linked habitat for lesser and greater horseshoe bat populations within the North Somerset and Mendip Bats SAC.

D5. Conclusions on Site Integrity

On the basis of the details agreed with North Somerset Council, this shadow HRA has carried out an appropriate assessment as required under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 to ascertain whether or not it is possible to conclude that there would be no adverse effect on the integrity of a European Site(s).

With the appropriate measures and mitigation in place it can be concluded there will be **no adverse effect on integrity of the North Somerset and Mendip Bats SAC** as a result of the proposals either alone or in combination with other plans and projects.

PART D: Recommended Conditions

D1. Schedule of Conditions

To be finalised in consultation with the Case Officer. Appropriately--worded conditions including the following are recommended to deliver mitigation/compensation sufficient to ensure no significant negative impact on the North Somerset and Mendip Bats SAC:

1) CEMP
A Site Enabling and Construction Environmental Management Plan (CEMP) shall be submitted to and approved by the Local Planning Authority before works commence. This shall include:

- Details of protection measures including barrier fencing to ensure that boundary features suitable for horseshoe bats are retained and protected during works;
- Details of the timing and phasing of vegetation removal to ensure that flight lines suitable for use by horseshoe bats are retained;
- Details of any construction lighting proposed including security lighting; and
- Schedule and timescale of works to demonstrate that no night working is proposed during the period when horseshoe bats are active.

The above wording solely relates to horseshoe bats and the CEMP will be much more wide ranging to cover protected and notable species and Habitats of Principle Importance.

2) Mitigation (or combine into other conditions)
The development shall proceed in accordance with the outline avoidance, mitigation, compensation and enhancement measures outlined in [REFERENCE RELEVANT DOCUMENTS AND FINAL DRAWINGS INC MITIGATION STRATEGY DRAWING – to include non-SAC related ecological mitigation]. If amendments to the report recommendations are required, details of the changes must be submitted in writing and agreed by the Local Planning Authority before relevant works proceed. The development shall then be implemented in accordance with the agreed changes.

Reason: To ensure compliance with the Conservation of Habitats and Species Regulations 2017, the Wildlife and Countryside Act 1981 (as amended), North Somerset's Core Strategy policy CS4 and Site and Policies Plan Part 1, Development Management policy DM8.

3) LEMP
In advance of or current with any Reserved Matters application for the site, a Landscape and Ecological Management Plan (LEMP) shall be submitted to, and approved in writing by, the local planning authority, The content of the LEMP shall include the following.

a) Description and evaluation of on-site features to be managed.
b) Description of the off-site features to be managed including replacement habitat for horseshoe bats as detailed in *Outline SAC/SPD Ecological Management Plan for North Somerset and Mendip Bat SAC SPD* (Johns Associates, 2018).
a) Details of habitat creation and enhancement measures, including specifications for establishment.
b) Ecological trends and constraints that might influence management.

c) Aims and objectives of management.
d) Appropriate management options for achieving aims and objectives.
e) Prescriptions for management actions.
f) Prescription of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).
g) Details of the body or organisation responsible for implementation of the plan.
h) Ongoing monitoring and remedial measures including a monitoring schedule for the off-site replacement habitat for horseshoe bats as detailed in *Outline SAC/SPD Ecological Management Plan for North Somerset and Mendip Bat SAC SPD* (Johns Associates, 2018).

The LEMP shall also include details of the legal and funding mechanism(s) by which the long-term implementation of the plan will be secured by the developer with the management body(ies) responsible for its delivery. The plan shall also set out (where the results form monitoring show that conservation aims and objectives of the LEMP are not being met) contingencies and/or remedial action will be identified, agreed and implemented so that the development still delivers the fully functioning biodiversity objectives of the originally approved scheme. The approved plan will be implemented in accordance with the approved details.

4) Lighting

In advance of or concurrent with any reserved matters application for the site, a detailed external lighting design strategy shall be submitted to and approved in writing by the local planning authority. The strategy shall be consistent with the framework provided in *Lighting Impact Assessment* (Hydrock, December 2018) and Technical Design Note *Bristol Airport 12mppa Extension. Lighting Impact Assessment* (in relation to Downside Road) *Document reference 09194-HYD-XX-GF-RP-ME-0001* (Hydrock 2019) and shall include:

a) Identification of areas/features on site that are particularly sensitive for bats; and
b) Details of the type and location of the proposed lighting;
c) Existing lux levels affecting the site;
d) The predicted lux levels; and
e) Lighting contour plans.

All external lighting shall be installed in accordance with the specifications and locations set out in the strategy, and these shall be maintained thereafter in accordance with the strategy. Under no circumstances should any other external lighting be installed without prior consent from the local planning authority.

References to Science and Evidence

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Institute of Lighting Professionals (2018). *Bats and Artificial Lighting in the UK.* Bats and the Built Environment Series Guidance Note 08/18

JNCC, North Somerset and Mendip Bats SAC - http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0030052

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Mitchell-Jones, A.J. (2004). *Bat Mitigation Guidelines.*

Natural England (2019). European Site Conservation Objectives: Supplementary advice on conserving and restoring site features. North Somerset and Mendip Bats Special Area of Conservation (SAC) Site Code: UK0030052.

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HRA/AA Document Amendment Record

Version	Amendment detail	Amendment made by	Date
1.0	Draft HRA/AA	Sarah Dale on behalf of North Somerset Council	17/05/2019
1.0	Response to initial draft	Amanda Grundy (Natural England)	14/06/2019
2.0	Draft HRA/AA – Comments addressed and draft conditions added	Sarah Dale on behalf of North Somerset Council	21/06/2019
3.0	Final Draft HRA/AA – all comments addressed (minor formatting remaining). Sent to NE for agreement.	Sarah Dale on behalf of North Somerset Council	05/09/2019
3.0	Agreed by Natural England and issued to Case Officer	Sarah Dale	26/09/2019