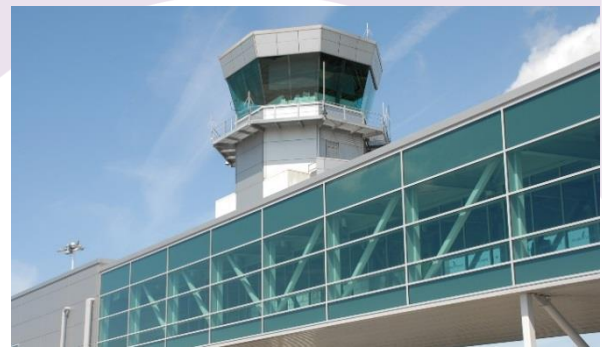


Bristol Airport Limited

## Development of Bristol Airport to accommodate 12 million passengers per annum

Non-Technical Summary



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## Report for

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## Document revisions

No.	Details	Date
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2	Revised Draft	Dec 2018
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# 1. Introduction

## 1.1 Introduction and Document Purpose

- 1.1.1 Bristol Airport Limited intend to expand Bristol Airport (the 'Proposed Development'). The Proposed Development will seek to increase the existing passenger cap of 10 million passengers per year to 12 million passengers per year. This expansion would make use of the existing airport site and provide additional infrastructure necessary for the growth of 2 million passengers per year.
- 1.1.2 To support the planning application, an Environmental Impact Assessment has been undertaken to understand the potential environmental effects that the expansion of Bristol Airport may have on the surrounding environment and community during construction and subsequent operation at 12 million passengers per year.
- 1.1.3 The Environmental Impact Assessment process identifies the key environmental effects of a development and identifies ways that these effects can be reduced and/or managed. An Environmental Impact Assessment is required by law for large developments that have the potential to cause significant environmental effects. The findings of this process are reported in a document called an Environmental Statement. The Environmental Statement will be in the public domain for anyone to view.
- 1.1.4 This Environmental Statement has been prepared in accordance with *The Town and Country Planning (Environmental Impact Assessment) Regulations 2017* (the 'EIA Regulations'). It presents the likely environmental effects of the proposals for Bristol Airport, to enable decision makers, consultees and members of the public to understand the likely significant effects of the Proposed Development on the environment.
- 1.1.5 This Non-Technical Summary sets out a brief summary of the findings reported in full in the Environmental Statement.



## 2. The Proposed Development

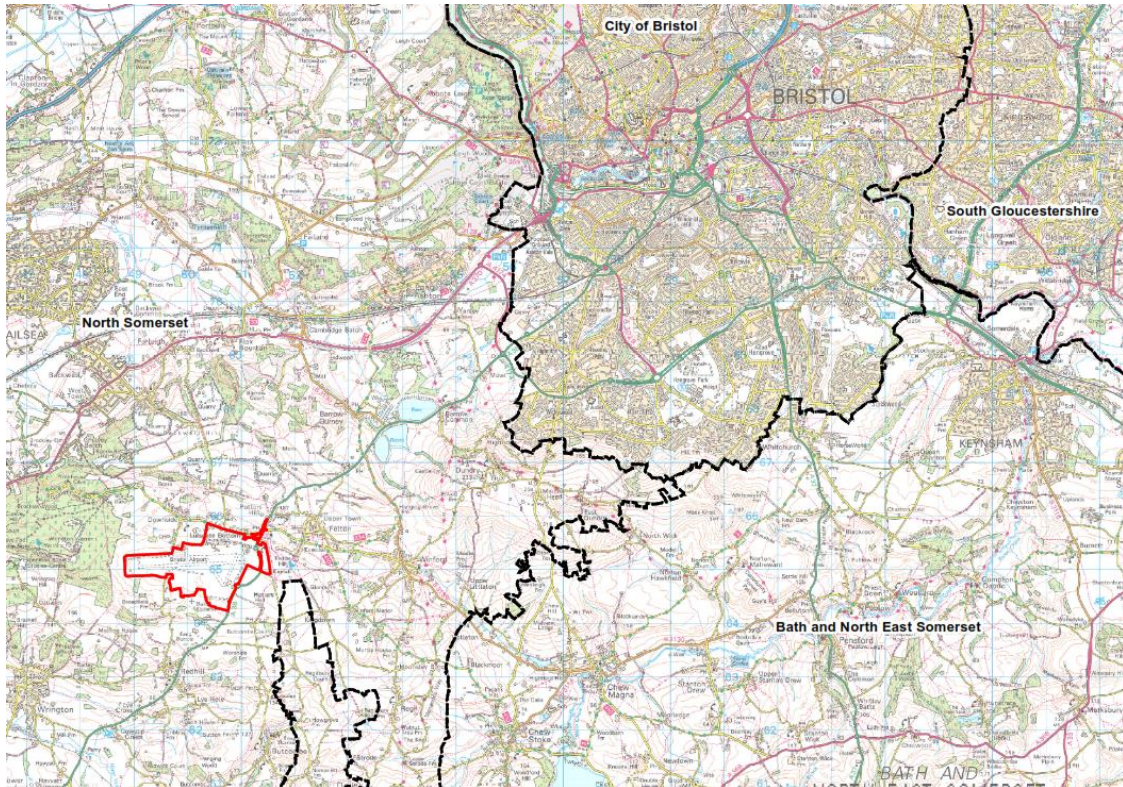
### 2.1 Background to the Proposed Development

- 2.1.1 Bristol Airport is the main airport for the South West of England, providing a range of international and domestic flights to 120 destinations across 34 countries.
- 2.1.2 In 2011, Bristol Airport Limited was granted outline planning permission by North Somerset Council to expand its capacity to handle 10 million passengers per annum. In 2017, Bristol Airport handled over 8.2 million passengers, making it the ninth busiest airport in the UK and the third largest regional airport in England. Passenger demand is forecast to reach 10 million passengers per year by 2021, beyond this passenger numbers are projected to rise further to 15 million passengers per year by the mid-2030s and 20 million passengers per year by the mid-2040s.
- 2.1.3 Due to the continued demand, Bristol Airport Limited is preparing a new Master Plan. This will be a comprehensive plan setting out the strategy for future phased growth at Bristol Airport to meet future passenger demands by the mid-2040s. As part of the approach set out in recent Master Plan documentation published in 2018, Bristol Airport Limited are seeking permission for an initial phase of growth beyond 10 million passengers per year to 12 million passengers per year. This would allow for growth in passenger numbers up to at least 2026.

### 2.2 Where is the Proposed Development?

- 2.2.1 Bristol Airport is located on the A38, approximately 11km south-west of Bristol city centre (shown in **Figure A**) and within the boundary of North Somerset Council.
- 2.2.2 The airport is situated on a ridge of high ground called Broadfield Down, with the A370 Bristol to Weston-super-Mare carriageway 4km to the north and the M5 motorway 11km to the west. The existing site access is via two roundabout junctions with the A38 carriageway, which is directly adjacent to the airport on its eastern extent.

Figure A Site Location Plan (the red line indicates the boundary of the site location)



- 2.2.3 The area surrounding Bristol Airport is predominately open countryside. Extensive wooded areas are located to the west of the airport and form a key feature of the wider landscape. Elsewhere, the landscape is characterised by arable farmland and moderately sized villages or smaller clusters of residential properties. To the north-east, the most prominent settlements are Felton, Pottershill and Lulsgate bottom, while to the south, the closest village is Redhill.
- 2.2.4 The site itself covers an area of 196 hectares and comprises a combination of buildings and hardstanding, expanses of grassland and landscaping. This is shown in **Figure B**.

Figure B Bristol Airport Site



## 2.3 What is the Proposed Development?

- 2.3.1 As part of the Master Plan that is being prepared, Bristol Airport Limited are seeking permission for an initial phase of growth beyond the current limit of 10 million passengers per year (as explained in **Section 2.1**) to 12 million passengers per year.
- 2.3.2 To support the proposed increase in passenger numbers and ensure safe and efficient passenger movement to and around Bristol Airport, the Proposed Development includes a number of new infrastructure components, improvements to existing facilities and a number of operational changes.
- 2.3.3 A summary of the works and changes to be undertaken as part of the Proposed Development are presented below. **Figure C** shows the Proposed Development:
- An increase of 10,420 flights per year resulting from an additional 2 million passengers per year growth;
  - Removal of the existing seasonal constraint on night flights to allow a rolling annual cap of 4,000-night flights;
  - A four-storey extension to the existing terminal building on the western side;
  - A two-storey extension to the existing terminal building on the southern side;
  - An East Pier and new walkway connecting to the East Pier;
  - A larger service yard;
  - A multi-storey car park providing approximately 2,150 spaces over five levels;
  - A two lane, one-way, gyratory road with internal surface parking;
  - A new eastern taxiway link;



- Widening of Taxiway Golf and the addition of fillets to Taxiways Foxtrot and Taxiway Delta;
- Changes to operational restrictions on Stands 38 and 39 to align with stands 34-37;
- Removal of the seasonal restriction on the Silver Zone Car Park extension for year-round use;
- An extension to the Silver Zone Car Park to provide approximately 2,700 additional spaces; and
- Highway Improvements: a proposed design which included junction improvements at Downside Road and West Lane on the A38 whilst also minimising land take'

2.3.4 These works which comprise the scale of the development for Bristol Airport to handle 12 million passengers per year is illustrated in **Figure C**.

## 2.4 Why is the Proposed Development Required?

2.4.1 The need for the Proposed Development is influenced by the following factors:

- The demand demonstrated by forecasted passenger growth;
- The economic importance of a growing Bristol Airport within the wider aviation sector to the local and regional economy;
- Policy support for airport growth, in particular, making the best use of existing airport capacity; and
- Department for Transport forecasts that indicate additional regional airport capacity will be required to meet passenger demand and support economic development.

2.4.2 Bristol Airport has experienced significant growth since planning permission was granted for expansion of the airport to 10 million passengers per year; this has been supported by considerable investment in airport infrastructure (for example walkways), facilities (such as upgraded baggage systems) and surface access (including key junction improvements outside the airport boundary). Reflecting projected international, national and regional trends for the aviation sector, this growth is forecast to continue up to 20 million passengers per year by the mid-2040s.

2.4.3 As part of the phased approach to the continuing sustainable development of Bristol Airport, the Proposed Development will enable Bristol Airport to grow beyond 10 million passengers per year to 12 million passengers per year by making the best use of the existing airport site. This will accommodate forecasted passenger demand up to around 2026 and will ensure that Bristol Airport continues and enhances its role as the main international gateway for the South West region and a significant economic driver, in accordance with national aviation policy and local policy.

2.4.4 In the event of Bristol Airport not increasing its capacity there will be insufficient capacity to cater for demand in the south west of England with two likely outcomes. First a negative impact on the economy of the south west and second there is likely to be 'leakage' to other airports with the potential for unplanned consequences.

## 2.5 What are the Main Alternatives?

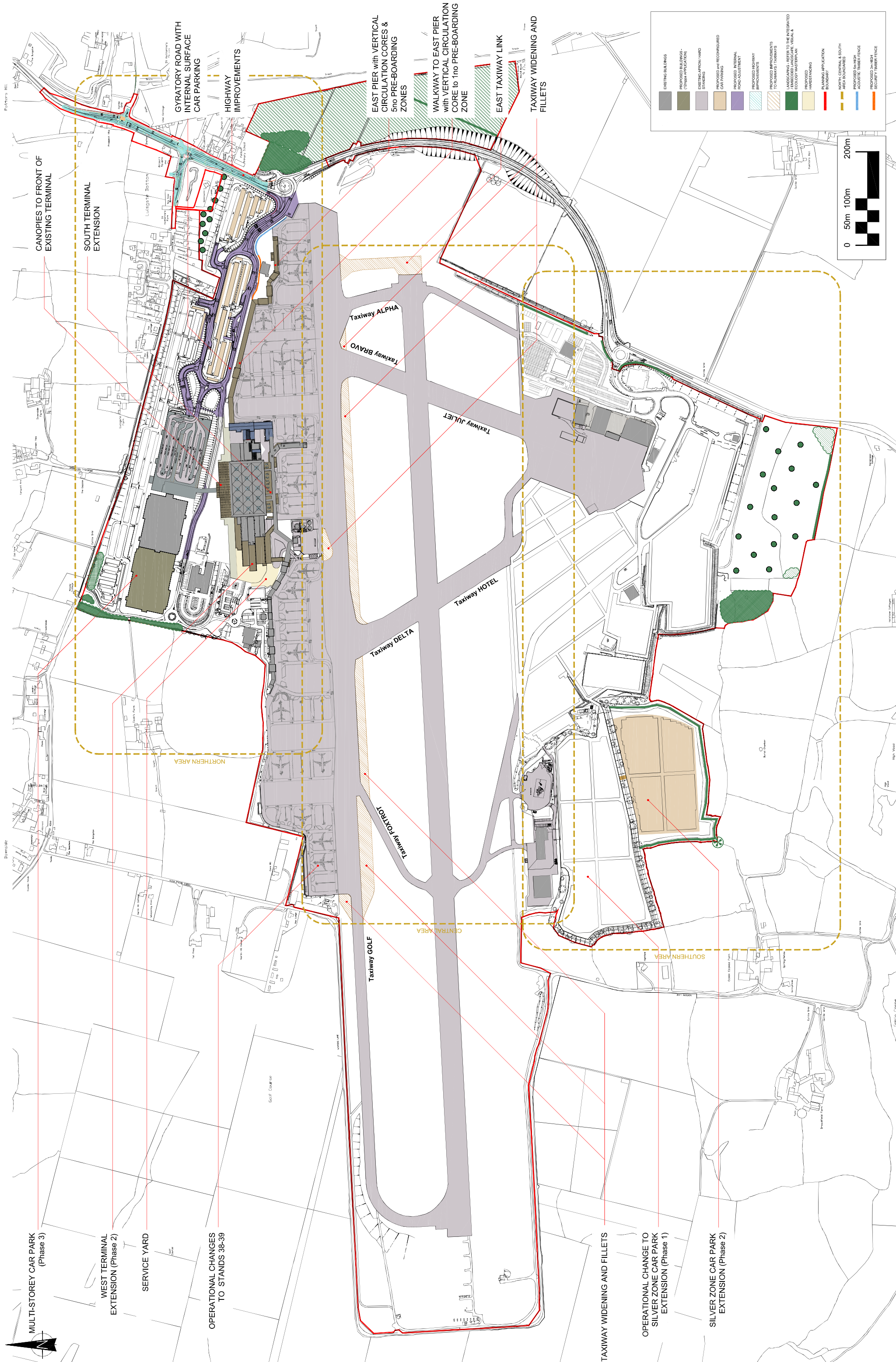
2.5.1 In identifying reasonable alternatives to meeting the need for the Proposed Development, the following option types have been considered:

- 'Do Nothing' alternative, where the Proposed Development is not progressed;
- Strategic alternatives; and

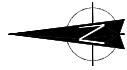
- Alternative design or layouts, in the context of the design evolution.

- 2.5.2 The 'Do Nothing' alternative would constrain both operations and investment at Bristol Airport, limit improvements to passenger experience and, importantly, would not deliver the economic benefits to the local and wider region associated with airport expansion to 12 million passengers per year. As a result, this alternative was rejected.
- 2.5.3 In terms of strategic alternatives, growth above or below 12 million passengers per year would not reflect current, independently validated, passenger forecasts. By developing the airport almost entirely within the current site boundary, Bristol Airport Limited will be able to deliver an airport with a capacity of 12 million passengers per year, securing a viable and thriving operation until the mid to late 2020s whilst retaining the flexibility to allow a consideration of a variety of future options for further expansion at a later date. As a result, an alternative involving different passenger throughput capacity limits were rejected.
- 2.5.4 Taking into account the analysis of other airports in the region displacing the growth proposed at Bristol Airport to competing airports was also not considered to be a viable alternative as even the most ambitious growth projections of those other airports would not cater for the demand forecasted by the DfT for the region.
- 2.5.5 In developing proposals, consideration has also been given to on-site alternatives for individual elements and components of the Proposed Development. This has been undertaken as part of the on-going development evolution and design process, which is documented in the Design and Access Statement that accompanies the planning application.
- 2.5.6 Reflecting upon existing limitations, the consideration of alternatives has focused on options relating to the terminal building extensions, passenger car parking and highways improvements to the A38. The review of these options has taken into account a wide range of factors including deliverability, suitability and environmental constraints within the context of the design objectives set out in the Design and Access Statement. On this basis, the following preferred options have been taken forward as part of the Proposed Development:
- Terminal extension: West terminal extension and south terminal extension;
  - Passenger car parking: a preferred car parking solution comprising of further multi-storey car park provision to the northside of the airport, the year-round use of the existing seasonal Silver Zone car park and further extension to the Silver Zone car park; and
  - Highway improvements: an online improvement to Downside Road, with widening only on its southside.









MULTI-STORY CAR PARK  
(PHASE 3)

WEST TERMINAL EXTENSION  
(Phase 2)

SERVICE YARD

CANOPIES TO FRONT OF  
EXISTING TERMINAL

SOUTH TERMINAL EXTENSION

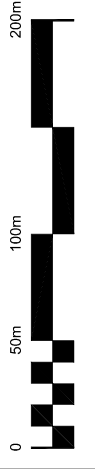
HIGHWAY IMPROVEMENTS

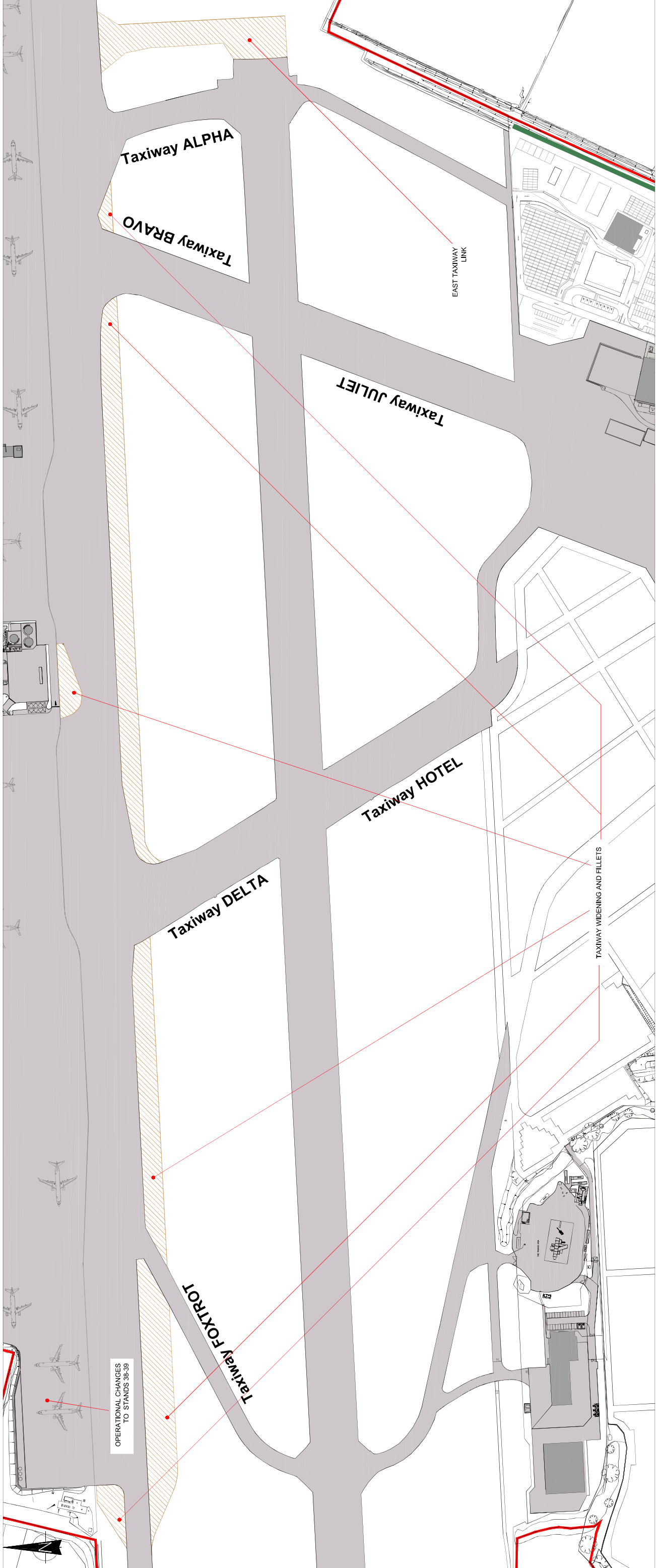
GYRATORY ROAD WITH  
INTERNAL SURFACE CAR  
PARKING

WALKWAY TO EAST PIER WITH  
VERTICAL CIRCULATION CORE  
to 1no PRE-BOARDING ZONE

EAST PIER WITH VERTICAL CIRCULATION  
CORES & 5no PRE-BOARDING ZONES

- EXISTING BUILDINGS
- PROPOSED BUILDINGS - (TEMP APPLICATION)
- EXISTING ASPHALT / HARD STANDING
- PROPOSED ARE RECONFIGURED CAR PARKING
- PROPOSED INTERNAL ROAD ADJUSTMENT
- PROPOSED HIGHWAY IMPROVEMENTS
- PROPOSED IMPROVEMENTS TO RUNWAYS / TAXWAYS
- LANDSCAPING - REFER TO THE INTEGRATED EMBEDED LANDSCAPE VISUAL & ENVIRONMENTAL STATEMENT
- PROPOSED ASPHALT / HARD STANDING
- PLANNING APPLICATION BOUNDARY
- PROPOSED 3m-HIGH SECURITY FENCE





EXISTING BUILDINGS

EXISTING APRON HARD  
STANDING

PROPOSED  
IMPROVEMENTS TO  
RUNWAYS / TAXIWAYS

LANDSCAPING - REFER TO THE  
LANDSCAPE ARCHITECTURE  
DRAWING FOR LANDSCAPE  
DESIGN & ECOLOGY MASTERPLAN

PLANNING APPLICATION  
BOUNDARY

0

50m

100m

200m





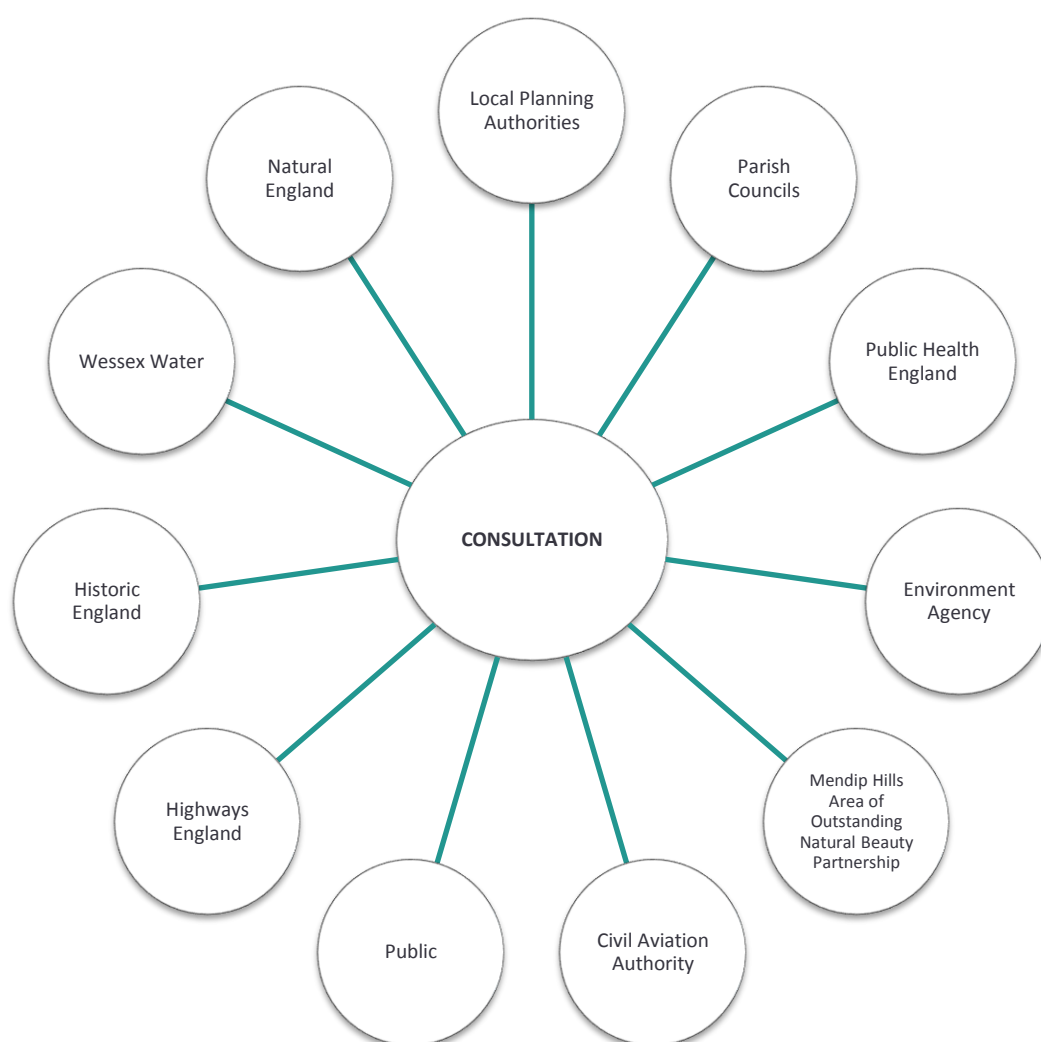
## 3. The EIA Process

### 3.1 Background to the Environmental Statement

3.1.1 The EIA Regulations require certain types of development to undertake an Environmental Impact Assessment before planning permission can be granted. In the case of Bristol Airport, due to legislative requirements<sup>1</sup> an EIA is required, and the planning application therefore needs to be accompanied by an Environmental Statement.

3.1.2 The Environmental Statement documents the findings of the Environmental Impact Assessment. The scope of this assessment, including the environmental topics to be included, the baseline information, surveys and technical assessments, was agreed with North Somerset Council. This was agreed through the formal submission of a Scoping Report in June 2018 and receipt of a Scoping Opinion from North Somerset Council in August 2018, in accordance with the EIA Regulations, and following consultation with a number of consultees. Many stakeholders have contributed to defining the scope of the assessment, as shown in **Figure C**.

Figure C Examples of Consultees



<sup>1</sup> See Schedule 2 10(e) of the EIA Regulations, which lists 'Construction of airfields... (i) The development involves an extension to a runway; or (ii) the area of the works exceeds 1 hectare' as requiring EIA.



- 3.1.3 The Environmental Statement brings together information about any likely significant environmental effects resulting from the Proposed Development. This Non-Technical Summary summarises its key findings. The topics addressed in the Environmental Statement are outlined in **Table 1**.

Table 1 Topics addressed in the Environmental Statement

Topics in the EIA Regulations	Topics in the Environmental Statement
<b>Population</b>	Landscape and Visual (Chapter 9), Traffic and Transport (Chapter 6), Noise (Chapter 7) and Socio-Economics (Chapter 15)
<b>Human health</b>	Human Health (Chapter 16)
<b>Biodiversity</b>	Biodiversity (Chapter 11)
<b>Land</b>	Land Quality (Chapter 10)
<b>Soil</b>	Land Quality (Chapter 10)
<b>Water</b>	Surface Water and Flood Risk (Chapter 12) and Groundwater (Chapter 13)
<b>Air</b>	Air Quality (Chapter 8)
<b>Noise</b>	Noise and Vibration (Chapter 7)
<b>Greenhouse gases</b>	Carbon and Other Greenhouse Gas Emissions (Chapter 17)
<b>Climate</b>	Considered within the relevant technical chapters
<b>Material assets</b>	Description of the Proposed Development (Chapter 2)
<b>Cultural heritage</b>	Historic Environment (Chapter 14)
<b>Landscape</b>	Landscape and Visual (Chapter 9)
<b>The inter-relationship between the above factors</b>	These are discussed within each chapter as relevant and within the Cumulative Effects Assessment (Chapter 19)
<b>Vulnerability to major accidents or disasters</b>	Scoped out of the assessment

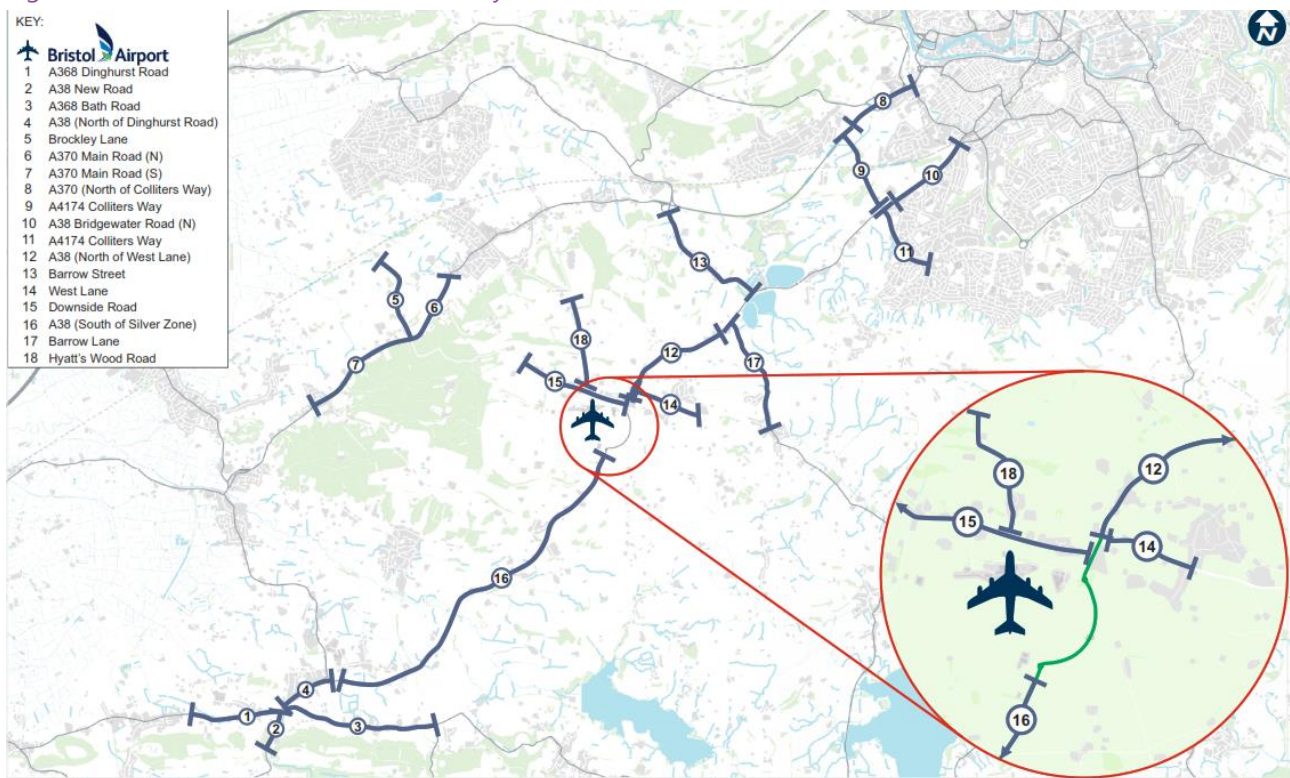
## 4. Environmental Effects

- 4.1.1 The topics, as detailed in Table 1, are required to be assessed and as such are reported in the Environmental Statement. The assessment analyses the significance of the likely effects (positive or negative) of each topic area in relation to people and environmental resources (referred to as receptors) as a result of the construction and operation of the Proposed Development. This section provides an overview of the key findings from each of the topics in the Environmental Statement.

### 4.2 Traffic and Transport

- 4.2.1 Traffic and Transport considers the effects of the Proposed Development in terms of the effects of traffic together with other transport means and access such as pedestrians and cyclists.
- 4.2.2 Data on passenger flows and staff travel has been gathered along with a number of traffic surveys which have been completed on the highways network surrounding Bristol Airport. This has fed into an understanding of current traffic flows and junction operations. The locations of surveyed roads are shown on **Figure D**.

Figure D Locations of Traffic Surveys



- 4.2.3 Primary access to Bristol Airport is provided by two roundabouts on the A38 (see **Figure B**).
- 4.2.4 Footways and designated crossing points in the vicinity of Bristol Airport are limited, which reflects not only its rural location but also the small number of pedestrian movements in the area around the airport. There is one pedestrian footway on one or both sides of the A38 from Bristol City Centre to Bristol Airport, however, this does not extend south of Bristol Airport for any substantial distance.

- 4.2.5 In addition to pedestrian footways, there are designated cycle links surrounding the airport. To the north of Bristol Airport is National Cycle Route 410 (Avon Cycleway); this is an on-road cycle route which has a small traffic free section where it runs along the A38 through Lulsgate Bottom. There is also an on-road cycle path (~1m wide) at the Downside Road/A38 junction which does not form part of this route.
- 4.2.6 Bristol Airport also hosts a number of bus services which provide a range of connections to Bristol, Weston-super-Mare, Bath and to surrounding local towns and villages. Coach services to more distant destinations such as Cardiff, Plymouth, London and Penzance are also available. There is no rail station located at Bristol Airport, however, there are nine stations located within 25km, many of which can be reached by bus services available from Bristol Airport.
- 4.2.7 During the construction phase, traffic will increase slightly, however, such increases are predicted to be less than 5% compared to those which will be experienced at 10 mppa. Since this level of variance can occur naturally on a daily basis, this change is not considered to be significant. Avoiding effects is also helped by the introduction of restricted routing for construction traffic, limiting them to major roads such as the A38.
- 4.2.8 In terms of the Proposed Development, during operation, no significant effects are anticipated in relation to severance, pedestrian and cyclist delay and amenity, fear and intimidation and accidents and road safety. This is due to traffic increases being lower than 10% compared to those experienced at 10 mppa. The re-design of the A38 and Downside Road and A38 West Lane junctions will likely bring benefits, reducing delay times for drivers by more than 90 seconds once the improvement works are completed. There will also be benefits for pedestrians due to the introduction of new crossing facilities at both junctions.
- 4.2.9 Despite the limited effects of the Proposed Development, a number of additional mitigation measures are planned, including the implementation of a revised Workplace Travel Plan and Airport Surface Access Strategy. These plans will help assure the use of more sustainable forms of transport and reduce the number of single occupant car trips generated by staff, visitors and passengers.

## 4.3 Noise and Vibration

- 4.3.1 The assessment of noise and vibration considers the effects on occupiers of residential properties within the vicinity of the airport and changes in the noise environment of local communities. Specifically, it considers the following:
- Air Noise: This relates to the effects of flights into and out of Bristol Airport;
  - Ground Noise: This relates to aircraft activities at Bristol Airport, such as taxiing;
  - Road Traffic Noise: This relates to noise origination from traffic on the road network near to Bristol Airport; and
  - Construction Noise: Noise associated with the construction of the Proposed Development.
- 4.3.2 The assessment has involved modelling the current baseline (taken as 2017) and future situations with the Proposed Development in place. It has also considered the current passenger cap (10 million passengers per year) and proposed passenger cap (12 million passengers per annum) in this process. This is because the airport still has room to grow to its current permissible passenger limit of 10 million passengers. Therefore, it is important to examine the baseline, when Bristol Airport is expected to reach 10 million passengers per year and in 2026, with and without growth of 12 million passengers per year. The results of the modelling have been compared to criteria which considers national policy and published guidance to determine potential impacts.

- 4.3.3 The assessment finds that approximately 20 properties are currently significantly affected by daytime air noise. This is predicted to reduce to 10 properties in the future under both the current and proposed passenger caps, largely due to the introduction of quieter aircraft over time. As such no significant daytime air noise effects are identified.
- 4.3.4 Around 150 properties are found to be significantly affected by night-time air noise. This is predicted to increase to approximately 300 under the current passenger cap for Bristol Airport and to around 350 under the proposed passenger cap. However, the increases in noise levels at the individual properties due to the Proposed Development are not considered to be significant.
- 4.3.5 One property is found exposed to significant levels of daytime and night-time ground noise. Under the current passenger cap this is predicted to increase to two properties, increasing to three when modelling with the proposed passenger cap. However, the increases in air noise levels due to the Proposed Development are small and therefore are not considered to be significant.
- 4.3.6 All the properties exposed to significant levels of air or ground noise, both in 2017 and under all future scenarios, are eligible for Bristol Airport Limited's current sound insulation scheme. This gives homeowners the option to reduce noise levels inside their homes through grants for high-performance windows and acoustic ventilators. This scheme is to be enhanced as part of the Proposed Development.
- 4.3.7 Around 20 properties are assessed as being significantly affected by background road traffic noise around Bristol Airport. This is predicted to increase to around 30 properties in the future under both the current and proposed passenger caps. However, the increase in noise from road traffic sources are anticipated to be small and therefore are not significant.
- 4.3.8 The construction noise assessment found that no significant noise effects are expected to arise from night-time construction activity. It found that there is potential for significant daytime noise effects for properties next to the A38 due to the highway improvement works. This is also the case for properties at the east end of Downside Road, with noise originating from the construction works on the gyratory road. Mitigation measures have been recommended which would be expected to avoid the any significant effects from arising.
- 4.3.9 No significant vibration effects are expected to arise from construction activity.

## 4.4 Air Quality

- 4.4.1 Air Quality refers to the concentrations of pollutants in the air that people breathe. Poor air quality is associated with health problems, especially respiratory conditions which affect breathing. It can also affect vegetation and animals. Legally binding limits on key pollutants are set out in European and UK law to protect human health and the environment.

- 4.4.2 The main pollutants of concern for the Proposed Development include gases, oxides of nitrogen ( $\text{NO}_x$ ) and nitrogen dioxide ( $\text{NO}_2$ ), and fine particulate matter ( $\text{PM}_{10}$  and  $\text{PM}_{2.5}$ ).

$\text{NO}_x$ : A family of gases which can be emitted from cars, trucks and non-road vehicles as well as industrial sources.

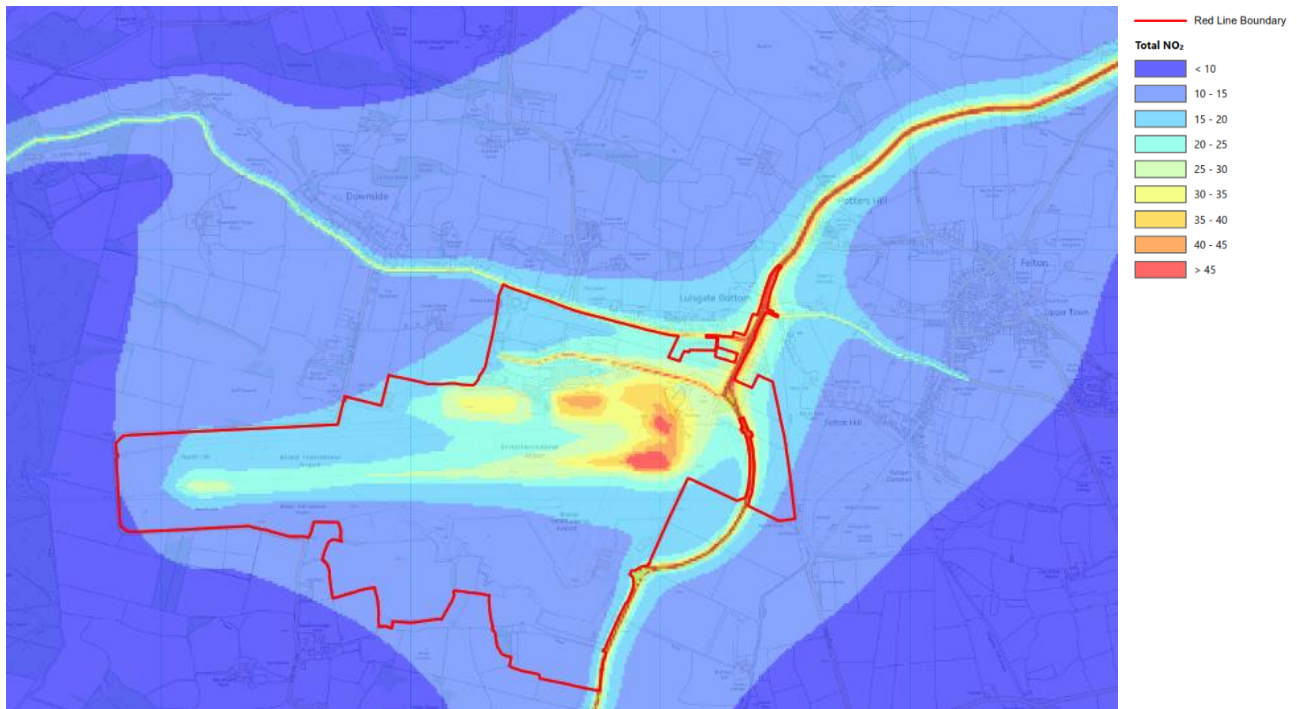
$\text{NO}_2$ : A gas which is part of the  $\text{NO}_x$  family,

Particulate Matter: A mixture of small particles and liquid particles. The particle pollution is made up of a number of components, including acids, organic chemicals, metals and soil or dust particles. Particles are grouped into two categories:

- $\text{PM}_{10}$ : found near roadways and dusty industries are larger than 2.5 micrometers but smaller than 10 micrometers.
- $\text{PM}_{2.5}$ : found in smoke and haze are 2.5 micrometers and smaller. They can form via gases reaction in the air or be directly emitted from sources such as forest fires.

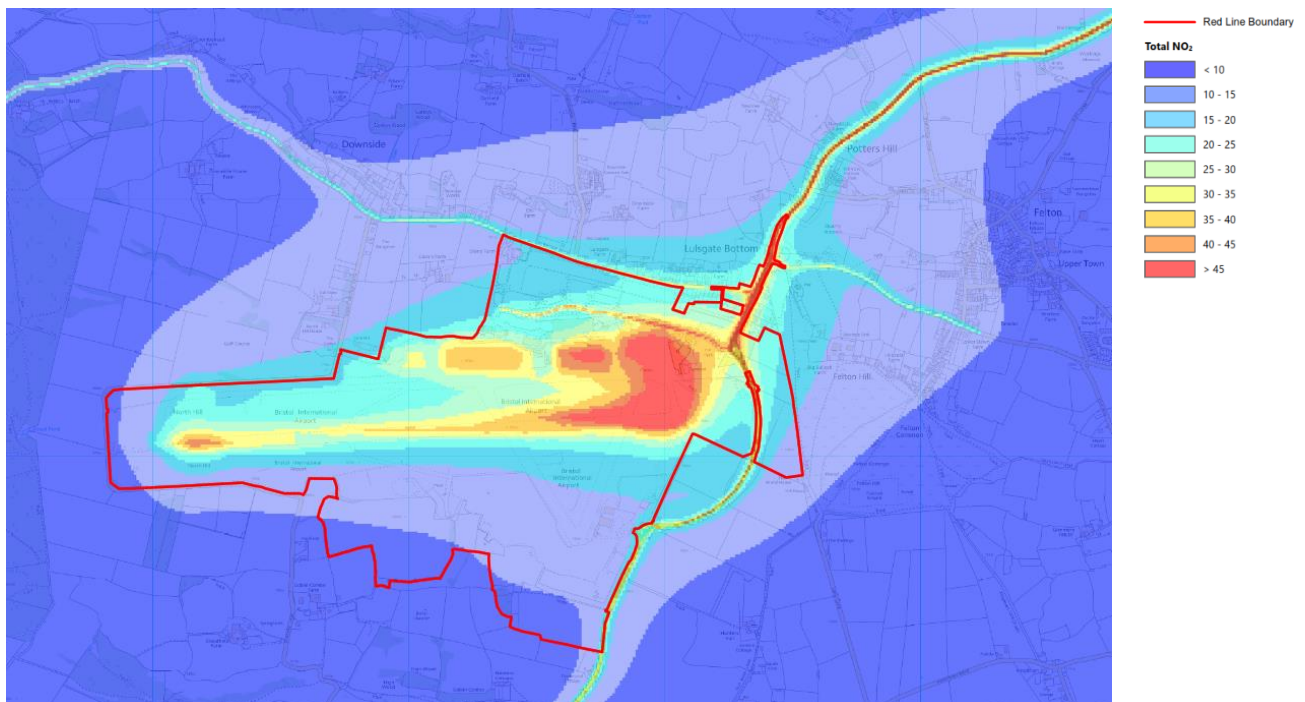
- 4.4.3 There is good evidence to suggest that increased levels of  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  have significant health effects, but concentrations (the amount contained within the air) are within legal limits across most of the country. There is more scientific uncertainty about the health effects of  $\text{NO}_2$ , and concentrations of this pollutant are close to or above the legal limit in some urban areas.  $\text{NO}_x$  is not believed to have impacts on human health, however it can affect the environment. Concentrations of air pollutants are generally decreasing in most places in the UK in response to actions to reduce emissions and improve air quality.
- 4.4.4  $\text{NO}_2$  and  $\text{NO}_x$  are produced by burning fuel; this includes aircraft engines, vehicle engines and boilers for heating homes and offices.  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  are produced by the same processes in addition to wear from tyres and brakes on road vehicles and aircraft.
- 4.4.5 In the largely rural surroundings of Bristol Airport, air quality is generally good and within legal limits. In the city centres of Bristol and Bath and close to major roads, concentrations of  $\text{NO}_2$  are high and can be close to or above legal limits. However, these urban areas are located at such a distance from Bristol Airport that impacts of the Proposed Development will be very small.
- 4.4.6 This assessment makes a number of worst-case assumptions, which means that air quality impacts are likely to be over-estimated. To assess how significant the impacts are the recommendations from the Institute of Air Quality Management and the Environment Agency have been followed.
- 4.4.7 Existing concentrations of  $\text{NO}_2$  around Bristol Airport are generally low. Upwind of Bristol Airport, monitored concentrations are typical of rural England. Immediately downwind of Bristol Airport, concentrations are higher but drop rapidly with distance from the airfield. At kerbside locations on the A38 near Bristol Airport, they are approaching the legal limit, but concentrations drop substantially a few metres from the road. This is shown on **Figure E**.



Figure E Annual Mean NO<sub>2</sub> concentrations (current)

4.4.8

The Proposed Development will cause small increases in NO<sub>2</sub> concentrations downwind of the airfield and close to roads that carry airport-related traffic (shown in **Figure F**). Moderate impacts are predicted for seven properties close to the A38, north of the airport near to Downside Road, with a further 50 anticipated to receive slight impacts. However, all concentrations will remain comfortably within all legal limits and any breaches of these limits are predicted to be very unlikely. All other properties are not expected to see any noticeable impact or change in air quality.

Figure F Annual Mean NO<sub>2</sub> concentrations (predicted with the Proposed Development)

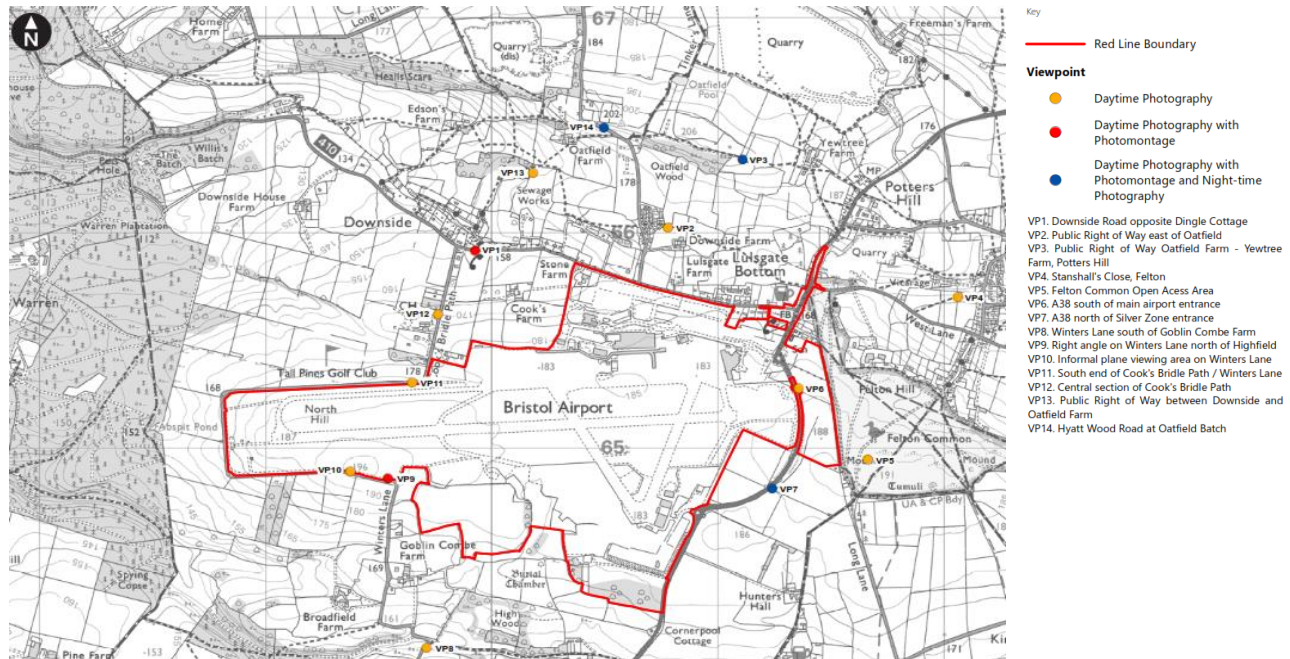
- 4.4.9 Impacts from NO<sub>x</sub>, nitrogen build-up and acid build-up, at all ecological sites not predicted to be significant.
- 4.4.10 Concentrations of PM<sub>10</sub> and PM<sub>2.5</sub> around Bristol Airport are low and the Proposed Development will make only a small additional contribution to pollutant concentrations. Concentrations will remain comfortably within legal limits.

## 4.5 Landscape and Visual

- 4.5.1 Landscape and Visual effects are closely related; however, they are considered separately when you assess them. The first describes landscape and areas of landscape character while the second describes the effects on views and visual attractiveness as experienced by people.
- 4.5.2 Bristol Airport has been a feature of the surrounding landscape and people's views for nearly 90 years. Owing to this, it is thought to have a "profound influence" on the character of the wider area.
- 4.5.3 The landscape assessment has considered the potential for the Proposed Development to result in significant landscape effects on areas of unique landscape characteristics, as identified by local authorities. It also includes an assessment of special qualities in the Mendip Hills Area of Outstanding Natural Beauty.
- 4.5.4 The visual assessment is based upon changes in the views that will be experienced by groups of people. This includes:
- Residents in nine settlements;
  - 11 individual properties or small groups of properties;
  - Walkers on long distance trails and footpaths;
  - Cyclists on designated cycle routes; and
  - Visitors to public areas such as Felton Common.
- 4.5.1 The various elements of the Proposed Development will come forward for construction at different times. This, in combination with works being spread across the airport site means that any construction effects are not expected to be significant. Even with the continued operation of Bristol Airport and the simultaneous construction of some elements of the Proposed Development, it is not expected that any significant effects will arise.
- 4.5.2 During operation, the landscape assessment concludes that the Proposed Development will result in no significant effects. There will be some limited changes and an increase in existing activities in the local landscape, however, for more distant landscape areas, changes will be minimal or will not arise at all.
- 4.5.3 The potential for tranquillity, dark skies and views looking out from the Mendip Hills Area of Outstanding Natural Beauty being affected is limited. This is because even with the Proposed Development, Bristol Airport will still be unlikely to be visible from this area or, if visible, would not be easily identified as the view would be limited, and a small proportion of flights and associated traffic passes over or through the Area of Outstanding Natural Beauty currently. As such, it is predicted that there will be no noticeable changes.
- 4.5.4 The visual assessments cover two periods, the first being when the Proposed Development is built-out and the second being when any planting proposed for screening or habitat enhancement will be mature.

- 4.5.5 The visual assessment has been guided by photographs showing current daytime, winter views from 20 viewpoints close to Bristol Airport or within the Area of Outstanding Natural Beauty. At five of these viewpoints, night-time photographs were also taken and for a further seven, photomontages showing the completed Proposed Development were produced. Locations of where photographs were taken are shown in **Figure G**.

**Figure G** Photography Locations



- 4.5.6 During operation, the visual assessment predicts that all significant negative effects will be minimised: residents in just one property on Downside Road, opposite Bristol Airport, will temporarily experience significant adverse visual effects until tree and scrub planting matures. All the other changes to views will be small-scale, since individuals will be distant from Bristol Airport or will benefit from screening from tree and scrub planting, or existing buildings. The local landform and extensive planting along the northern boundary of Bristol Airport is particularly important in limiting peoples' views of the Proposed Development. People with views of some larger components, such as the east walkway and terminal extension, will see these alongside the existing buildings at Bristol Airport which have the same scale, height and architectural style.
- 4.5.7 Despite the small-scale nature of effects, a suite of mitigation and enhancement measures have been developed, which focus upon reinforcing sections of existing hedgerows and tree cover at key locations along the airport boundary.

## 4.6 Land Quality

- 4.6.1 Land Quality considers existing contaminated land and potential for a pollutant linkage to be present during the construction and operation phases of the Proposed Development. If a linkage is established. Then the level of risk is outlined alongside any mitigation measures that are required to measure, manage or reduce the risk. Potential significant effects associated with agricultural land and soils are also considered.
- 4.6.2 Currently, no intrusive investigations have been undertaken within the airport. Following consent, intrusive investigation will be completed to identify the presence or absence of contamination so that appropriate measures can be incorporated into the construction phase.



- 4.6.3 The airport is underlain by Made Ground, which is associated with the existing buildings and hardstanding on site. Beneath this are deposits of clay which sit on top of harder and older bedrock. This bedrock also contains a body of groundwater which is used for public drinking water supply and must be protected from pollution. To the south of the airport is an area of moderate quality agricultural land.

Made Ground: Areas where material is known to have been placed by man on existing land. This land may be natural or artificial.

Bedrock: Hard, solid rock beneath surface materials such as soil and gravel.

Radon Area: Radon is a colourless, odourless radioactive gas formed by the radioactive decay of the small amounts of uranium that occur naturally in all rocks and soils across the entire country. Maps have been published which show the levels of radon in different parts of the country.

- 4.6.4 Several potentially contaminative historical and current site uses have been identified at the airport. These are summarised as follows:
- The airport has numerous manmade deposits associated with previous development and infilling or level-raising, which, alongside its use as an airport increases the risk of contamination of the wider environment;
  - Bristol Airport was used as an RAF airfield during World War Two. There is the potential for leftover unexploded bombs to be present; an assessment has concluded this hazard level is low;
  - There is evidence of historical lead and calamine workings and limestone quarrying at the airport. Collapse features and voids associated with the natural geology have also been identified; and
  - The airport is in a "higher probability radon area" (see Figure H) and full protective measures may be necessary to safeguard human health when undertaking construction.
- 4.6.5 The Proposed Development is assessed as having the potential to significantly effect: humans (Bristol Airport users and those around the airport, construction workers and future site users); property (buildings, services and permanent infrastructure); soils and agricultural land; and groundwater and surface water.
- 4.6.6 Due to this, a number of measures have been included within the Proposed Development to reduce any risks and include measures to be implemented during construction that will be secured by a Construction Environmental Management Plan. These measures are considered likely to be effective and deliverable, and address the likely significant effects associated with the construction and operational phases of the Proposed Development. As such, all potential effects are assessed as not significant, subject to the appropriate measures being in place.

## 4.7 Biodiversity

- 4.7.1 Bristol Airport is located on an elevated area of flat ground and is largely made up of illuminated buildings, car parks, areas of hardstanding (e.g. runway), other airport infrastructure and grassland, as well as hedgerows and groups of trees, and small areas of scrub and woodland.
- 4.7.2 Ecological surveys have been carried out at Bristol Airport since 2005, establishing an excellent understanding of its biodiversity. Investigations during 2018 have included surveys for habitats and plants, amphibians, reptiles, breeding birds, bats, badger, and hazel dormouse. Further information on the biodiversity of the surrounding area was obtained from the Bristol and Regions Environmental Records Centre and from consultation with other organisations.

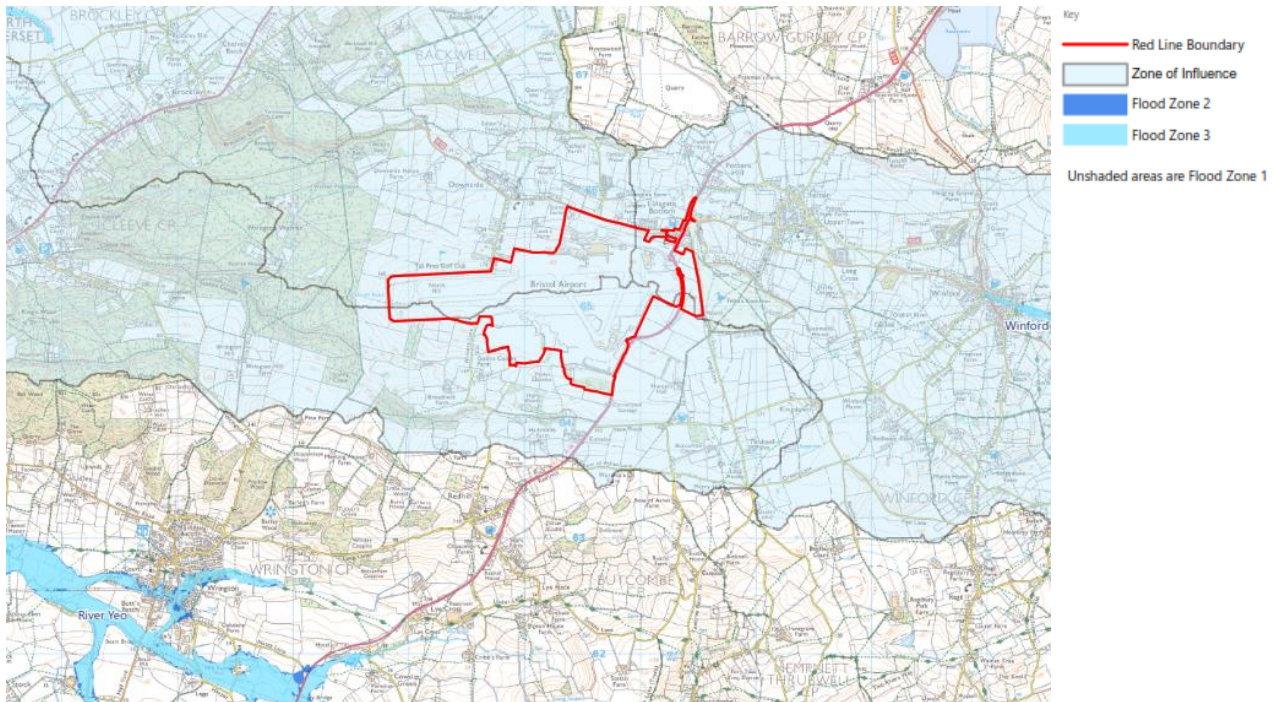
- 4.7.3 Important habitats within the area of the Proposed Development include small areas of grassland and woodland that are used by bats. Bats use the existing airport boundary features and associated grassland and woodland for foraging and moving across the landscape.
- 4.7.4 Other species which are present on the airport site include badgers, hares and common species of breeding bird. These species typically use the perimeter areas and surrounding farmland. No bat roosts or badger setts will be significantly affected by the Proposed Development.
- 4.7.5 The design of the Proposed Development has been continuously reviewed alongside available biodiversity information so as to:
- Avoid negative effects where possible;
  - Reduce any negative effects to acceptable levels; and
  - Introduce ecological measures as part of the design of the Proposed Development to ensure no significant effects will arise.
- 4.7.6 These measures protect the biodiversity of the airport, allowing it to thrive, and protect and support habitats and protected sites located away from the airport. These measures can be summarised as follows.
- Onsite features: retention and enhancement of vegetation along the airport boundary, with additional hedgerow, tree and native landscape planting; improvement of areas of grassland to increase the range of species present; creation and improvement of woodland areas, restoration of a pond, provision of deadwood habitat and parkland trees; improvement of existing and provision of new bat building roosts; and protection of existing dark corridors around the airport boundary.
  - Offsite features: improvement of offsite woodland habitat, to provide replacement habitat for bats. The management of this area will also provide benefits for other species such as for dormouse, birds, amphibians, reptiles, woodland flora and invertebrates.
  - General measures: implementation of appropriate monitoring, management and reporting. Monitoring will allow adjustments in management to ensure high quality habitats are present.
- 4.7.7 Considering these factors, it has been concluded that there are no significant negative effects for on-site ecology, or for that in the surrounding landscape, including designated sites, due to either the construction or operational phases of the Proposed Development.

## 4.8 Surface Water and Flood Risk

- 4.8.1 Surface water includes water found in streams, rivers, lakes, marshland, oceans, or any other water found on the Earth's surface. With the exception of one pond, no surface water bodies are present. The airport is at a very low to low risk of fluvial (river), tidal, artificial and groundwater flooding (see **Figure G**). Whilst several areas of surface water flood risk are indicated on the airport site, these occupy a small percentage of the overall area and are associated with its broad and flat nature which can lead to the ponding of water on grassed areas between buildings.



Figure G Flood Map for the area surrounding Bristol Airport



- 4.8.2 Bristol Airport's drainage system collects runoff on-site, passing this through interceptors which capture contaminants before discharging water into the ground. The existing drainage systems ensure that runoff from buildings, runway or taxiways and aprons, roads and associated impermeable or semi-impermeable areas, which do not allow water to pass through, is managed on-site to minimise the potential to increase flood risk in the surrounding area.
- 4.8.3 Whilst the airport straddles three European Union protected waterbody catchments (see **Figure G**), there are no watercourses within 1km of Bristol Airport. The assessment area has included these three waterbody catchments since these provide a logical basis for assessment: source (the Proposed Development), pathway (defined by the catchment) and potential receptors to affects (located within these catchments).
- 4.8.4 The potential effects that may arise as a result of the Proposed Development include:
- Increases in impermeable area leading to greater surface water runoff that could increase flood risk;
  - Reductions in water quality; and
  - Changes to water quantity.
- 4.8.5 Where receptors are sensitive to changes in these, significant effects could occur. However, numerous measures have been put in place for construction so as to manage and minimise the risk of any significant effects arising.
- 4.8.6 Alongside the main assessment, a Flood Risk Assessment and Drainage Strategies have been completed. Drainage systems have been designed to appropriate standards including climate change allowances which will ensure that they are able to fully manage runoff on-site. Sustainable Drainage principles have been included so as to allow run-off to enter the ground directly. Including this measure ensures that the potential to increase flood risk to areas off-site is avoided. It also means that the quantity of water entering ground and surface water resources is protected, since the water can recharge groundwater and support regular flow in rivers, rather than promoting

rapid runoff into rivers. Water quality is managed by the design of the surface and foul drainage systems.

- 4.8.7 Appropriate flood risk management design measures have been identified for the various elements of the Proposed Development. These include raising of ground floor levels above local ground levels, local profiling of ground levels and the inclusion of existing flow pathways in the design to manage surface water flooding or drainage exceedance within the airport site. Overall, this will ensure that the Proposed Development is safe from flooding.
- 4.8.8 The introduction of these measures will ensure that potential changes are fully managed within the airport site, in accordance with national guidance and legislation. It is concluded that there are no significant effects and all mitigation measures are judged to be fully effective.

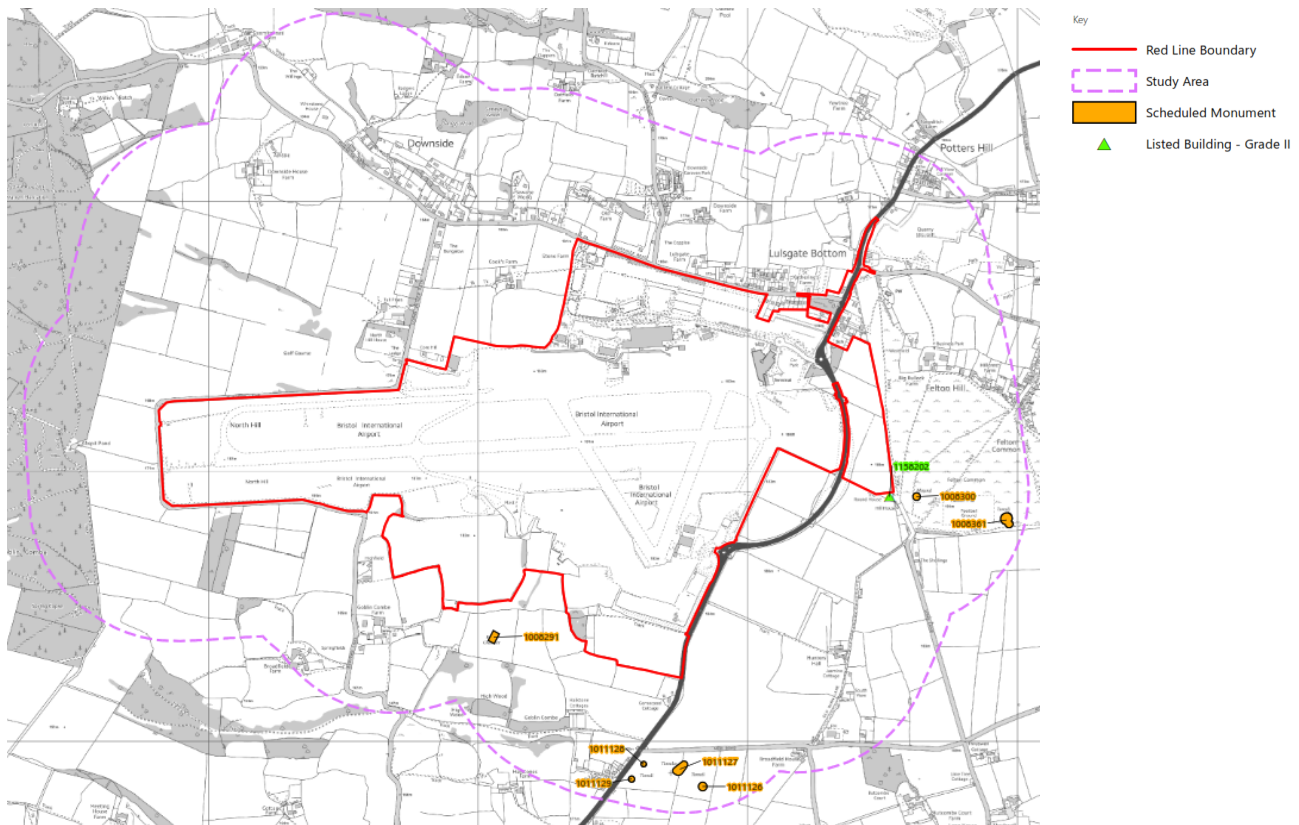
## 4.9 Groundwater

- 4.9.1 Groundwater is water that is present below the surface. Bristol Airport is located in an area of high groundwater vulnerability where pollutants could spread to groundwater; these areas are characterised by rapidly draining soils. The airport lies over a body of groundwater, known as the Bristol Airport Carboniferous Limestone, its overall status (in 2015) is poor, likely due to Bristol Water's removal of water (known as abstractions) for public water supply. Bristol Airport does not have any abstractions, and none are planned for the Proposed Development.
- 4.9.2 The airport is not within a surface water area that is at risk of nitrate pollution from farming. The nearest area at risk of nitrate pollution in water is located approximately 1.35km to the south-east, however, this is not hydrologically linked.
- 4.9.3 Water quality in the groundwater around the boundary of Bristol Airport is monitored at four times per year. In addition, monitoring of groundwater at a historical contaminant spill, in an area around the terminal building, has been undertaken, which has indicated the presence of hydrocarbons (components of fossil fuels) in the area. Contamination was absent in the boundary assessments.
- 4.9.4 Based on the assessment of existing conditions, the Proposed Development has the potential to affect:
- Groundwater beneath and downgradient of Bristol Airport;
  - Groundwater abstractions; and
  - Surface water fed by groundwater via springs.
- 4.9.5 The effects of the Proposed Development on these that have the potential to be significant are:
- Loss of water resources due to reduced infiltration to ground from additional areas of hardstanding, leading to reduced water available to support spring flows and public water supply; and
  - Contamination of groundwater beneath the airport leading to a requirement for treatment of public water supply (or loss of that supply) and reduction of water quality in springs.
- 4.9.6 Given the risks highlighted above, a range of measures have been included within the Proposed Development during construction and operation in order to mitigate any effects. These include measures specific to construction that will prevent entry of suspended solids and dissolved contaminants into groundwater. All rainwater runoff from operational buildings will be infiltrated to ground to preserve water resources, with prior treatment of this water to protect groundwater quality. The Proposed Development will also incorporate measures to prevent leaks and spills of potentially polluting material.

## 4.10 Historic Environment

- 4.10.1 The historic environment includes all material remains of past human activity, including designated heritage assets such as scheduled monuments and listed buildings, which are protected by law, and conservation areas, and non-designated heritage assets, such as structures of regional and local significance, historic landscapes or below-ground archaeological remains which, while not designated, are of sufficient importance to merit consideration in planning.
- 4.10.2 The earliest evidence of human activity around Bristol Airport is during the Middle Stone Age (c. 9,600 to 4,000 BC), with a flint scatter recorded on Felton Common. New Stone Age (c. 4,000 to 2,000 BC) and Bronze Age (c. 2,000 to 750 BC) occupation of the area is evidenced by several barrow monuments (burial places) in the vicinity of Bristol Airport, and possible ploughed-out barrows within the airport, at North Hill. Most of the settlements around the edge of Broadfield Down have their origins in the late Anglo-Saxon period (410 to 1066 AD), with the village names including Wrington appearing in the Domesday Book (1086 AD). The Post-Medieval period (1540 to 1910 AD) was characterised by dispersed settlement, with large open fields covering most of its highest areas.
- 4.10.3 Aviation use influenced the area during the 20<sup>th</sup> Century. An area of farmland was bought in 1929 and officially opened as an airport in May 1930. It was requisitioned by the government's Air Ministry at the outbreak of WWII in 1939, known as Lulsgate Airfield, it was then abandoned in 1946.
- 4.10.4 There are seven Scheduled Monuments (nationally important archaeological sites) and one listed building (of special architectural or historical interest) within 500m of Bristol Airport; no designated assets are present on the airport site (see **Figure H**). Most of the designated assets at a distance of over 500m are effectively screened from Bristol Airport by the surrounding topography. Therefore, they are not subject to any effects arising from changes to their setting.

Figure H Designated Heritage Assets



- 4.10.5 Due to existing modern infrastructure at the airport, there is limited potential for loss of remains which are of historic or archaeological interest. The extension of the Silver Zone Car Park will affect a small area of agricultural land, which has the potential for the presence of archaeological remains. However, surveys and trenching found no features of archaeological interest within this area.
- 4.10.6 The design of the Proposed Development retains the surviving World War Two structures to the south of the former Cornerpool Farm. Any such enhancements will be undertaken ensuring that the surviving buildings will not be affected. The ploughed-out barrows identified at Bristol Airport are not within an area which would be affected by any of the elements of the Proposed Development.
- 4.10.7 To reduce the duration of construction effects on a scheduled monument located 350m south-west of Cornerpool Farm an earth embankment will be created around the extension to the Silver Zone Car Park. This will provide screening from later construction activities and greatly reduce any effects, particularly with respect to its setting.
- 4.10.8 No additional measures have been identified as required.

## 4.11 Socio-Economics

- 4.11.1 Socio-Economics considers the effects of the Proposed Development on different groups of people as well as the wider economy. In doing so, it explores how it is expected to support economic growth, creating new employment and business opportunities both locally and across the region.
- 4.11.2 Bristol Airport is an important international link, for incoming visitors, outgoing holidaymakers and businesses buying or selling goods and services. Currently, flights at Bristol Airport provide links to destinations across the UK and the rest of Europe, with a smaller number to the rest of the world. Regular flights to very large "hub" airports in Europe provide lots more indirect connections.



- 4.11.3 Economic assessments have been prepared which examine how Bristol Airport creates employment opportunities and supports the economy. It does this in various ways and it indicates that effects are felt in different areas. Effects on the economy and employment are explored locally in North Somerset; in the West of England (North Somerset, Bristol City, Bath and North East Somerset and South Gloucestershire); and the South West of England and South Wales, a wider region from which Bristol Airport draws many of its passengers.
- 4.11.4 As of 2018, Bristol Airport contributes £355 million and 3,075 jobs to North Somerset alone. Across the West of England, this increases to £0.8 billion (about 3% of the total economy) and just under 10,000 jobs. Across the South West of England and South Wales the effect is larger still at £1.7 billion and over 23,000 jobs. For a single facility, these are significant effects.
- 4.11.5 The construction of the Proposed Development will create further jobs and support the economy. The exact effects will differ year to year over the construction period. Overall, it is likely to support up to 95 jobs per year in North Somerset, up to 260 across the West of England and up to 450 across the South West and South Wales. This is a positive effect, supporting businesses and creating jobs, however, is not considered to be a significant change compared with the current situation. The Economic Impact Assessment contains more information on the economic impact of the Proposed Development.
- 4.11.6 Assuming Bristol Airport accommodates the proposed passenger cap of 12 million passengers, the total economic effect of this larger airport, in North Somerset alone, could be over £0.5 billion per year, supporting over 4,000 jobs. Compared to the situation whereby the airport could not expand, this would mean an addition of about £90 million GVA per year and some 650 additional jobs to the North Somerset District. Across the West of England, the total effect is expected to be just under £1.2 billion (some 12,600 jobs). This would be an increase of £210 million per year to the economy alongside over 2,000 new jobs. For the South West and South Wales as a whole, the contribution would be nearly £2.4 billion and over 30,000 jobs; an increase of some £390 million per year and over 5,000 jobs.
- 4.11.7 It is likely that the expected increased size of the economy and in the number of jobs created would be a large change, supporting new people to gain employment in a range of occupations, and helping new and existing businesses to grow and access larger international markets. A change of this scale will be positive and significant.

## 4.12 Human Health

- 4.12.1 Human Health looks examines people surrounding Bristol Airport at different spatial scales could be affected; this includes conditions to be well, able to cope and to realise your potential. It also notes where some people may experience effects more strongly. Broadly, people living in the area around Bristol Airport are healthy, though some individuals may be more sensitive due to age, low income or existing poor health.
- 4.12.2 The assessment considers how current conditions near Bristol Airport, alongside aspects such as traffic conditions and flights will change, both with the Proposed Development and also in its absence. To do this, the assessment has accounted for local health priorities, local plans, scientific literature and health protection measures.
- 4.12.3 The Proposed Development leads to a range of positive and negative effects for health. During construction, those living and working near to Bristol Airport will experience the most disruption, such as from road delays. However, measures will be in place to reduce negative impacts. The positive and negative effects during construction are not considered to be significant.

- 4.12.4 During operation, the largest effects are positive and relate to job creation and local investment over a wide area. It is thought that health will generally improve for North Somerset due to this job creation and investment. However, there is the possibility of a limited number of smaller negative operational effects, due to slight increases to existing disruption, disturbance, noise and pollution near the Proposed Development. The effect on health due to noise from the Proposed Development is unlikely to be discernible as the change would be small.
- 4.12.5 Overall, older people and those who already have poor health may notice more disruption and benefit less. However, demand for health services is likely to be low and will be addressed via normal health service planning. As such, any change in population health is likely to be not significant.

## 4.13 Carbon and Other Greenhouse Gas Emissions

- 4.13.1 A greenhouse gas (GHG) assessment has been carried out to determine the effect of the Proposed Development on the global climate. The GHG emissions associated with Bristol Airport have been calculated for 12 million passengers per year and compared to 10 million passengers per year. Flights associated with the airport make up 82% of emissions at peak operation, with non-aviation operation (e.g. surface access and energy use) accounting for the other 18%. Construction emissions are reported separately.
- 4.13.2 For each source of GHG emissions (construction, non-aviation operations and aviation), the approach taken for assessment was:
- Calculate the emissions that are produced because of the Proposed Development;
  - Compare those emissions against relevant UK Carbon Budgets (which restrict the amount of GHGs the UK can emit) and national or regional sector emissions totals;
  - Consider the extent to which the mitigations taken to minimise emissions are in-line with recommendations from the Committee on Climate Change (CCC) (who give independent climate change advice to the government) and regional policy. For construction, the UK Green Construction Board (a consultation forum for government and the UK construction and property industry) provide guidance which is used instead of CCC or regional policy recommendations.
- 4.13.3 The GHG emissions from each source are deemed to not be substantial in comparison to UK Carbon Budgets, or national or regional sector totals. Mitigations have been secured to reduce emissions wherever practical that are in-line with indicators and principles within the CCC's recommendations, the Draft West of England Joint Spatial Plan (in which the four West of England Councils set out their goals for sustainable growth and development) and the UK Green Construction Board. Therefore, for each GHG emissions source, the effect of the Proposed Development on the global climate is considered not significant.

## 4.14 Climate Change

- 4.14.1 Climate change is a large-scale, long-term shift in the planet's weather patterns and average temperatures. In relation to the Proposed Development, the impacts of climate change have been considered in two ways:
- Climate change resilience: This relates to the impacts of climate change on the Proposed Development. The aim of this is to determine the likely impact of climate change on the Proposed Development's ability to maintain its function; and

- In-combination climate change impacts: This relates to the impact that the Proposed Development will have on climate change and the wider environment. The aim of this is to determine where climate change increases the exposure of receptor elements of the wider environment to an extent that a new effect is found, or an existing effect is heightened. This assessment is closely linked to the other environmental topics.

- 4.14.2 Climate change resilience is addressed in two main ways. Firstly, via the outline design of the Proposed Development. Secondly, measures can be included in the detailed design and operation through the Carbon and Climate Change Action Plan, which will be implemented following approval of the Proposed Development. Additionally, climate change uplifts have been included in the Flood Risk Assessment. These commitments will ensure that no significant effects will arise as a result of the Proposed Development.
- 4.14.3 In-combination climate change impacts of the Proposed Development have been considered in all relevant environmental topics. Because of the consideration of climate change impacts and mitigations within Land Quality, Biodiversity, Surface Water and Flood Risk and Groundwater there are no significant effects arising from the Proposed Development.

## 4.15 Cumulative Effects

- 4.15.1 Two types of 'cumulative' effects were assessed: inter-project and inter-related.
- 4.15.2 "Inter-project effects" are cumulative effects with other proposed developments in the surrounding area. Forty-seven other developments were identified and included in the assessment by searching for planning applications submitted on the surrounding local authorities planning portals from the last three years. Some elements of the 10 million passengers per year developments at Bristol Airport and developments proceeding under the airports permitted development rights were also considered, as some would not be fully constructed when construction of the Proposed Development would start. Collectively, these are termed as 'other developments'.
- 4.15.3 No significant negative inter-project effects are predicted from the Proposed Development together with 'other developments'. There is one positive inter-project effect of moderate significance on the combined health benefits from employment and investment from other developments combining with the effects arising from the Proposed Development.
- 4.15.4 "Inter-related effects" were identified where individual effects of the Proposed Development combined to create a greater effect for a given receptor. Three common receptors were identified in the topic chapters which could potentially experience an inter-related cumulative effect. These were surrounding properties, the adjacent road network and individuals who are present on the site.
- 4.15.5 As a worst-case, the combination of the changes in air quality, noise, vibration, visual, land quality, water quality and flood risk for most of the individuals on and surrounding the application site would result in minor effects that are not significant. At seven properties around the A38, these being a mix of commercial and residential, this is increased to moderate significance due to the effects of moderate significance from annual mean nitrogen dioxide. However, despite the increases in NO<sub>2</sub>, these are comfortably within annual mean limit values and it is very unlikely that these limit values would be breached. Likewise, at Melody Cottage, this is increased to moderate significance due to the effects of moderate significance from visual changes. However, over time when tree and scrub screening is fully established the effect will reduce to be not significant.

## 5. Further Information

### 5.1 What will Happen Next?

- 5.1.1 The Environmental Statement has been submitted to North Somerset Council who will make a decision on the planning application in consultation with various stakeholders. These will include government bodies, agencies and the general public.
- 5.1.2 Feedback from the consultees will be taken into consideration by North Somerset Council as they make their decision on the planning application.

### 5.2 What if I would like Further Information

- 5.2.1 The Environmental Statement and planning application documents are available to view and download for free via the North Somerset Council Planning Portal. Hard copies can be requested, for a fee, via [future@bristolairport.com](mailto:future@bristolairport.com). CD's will also be made available free of charge.
- 5.2.2 Hard copies to view are also available at the following locations:
- Hampton by Hilton Hotel at Bristol Airport; and
  - Town Hall (NSC offices) main reception in Weston-super-Mare.



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