2. Description of the Proposed Development

2.1 Introduction

2-1

- As part of an approach to meeting passenger demand, Bristol Airport Limited (BAL) 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, existing infrastructure will be improved, new infrastructure delivered, and current operations amended (the Proposed Development) (refer to **Figure 2.1** and **Figure 2.2**).
- This chapter describes the current Bristol Airport site, recent development history and ongoing development before describing the Proposed Development itself. The description of the Proposed Development duly considers the requirements of Schedule 4 of the *Town and Country Planning (Environmental Impact Assessment) Regulations 2017*¹ (hereafter referred to as the 'EIA Regulations') in which paragraph 1 states that the description should include:
 - i. "a description of the location of the development;
 - ii. a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
 - iii. a description of the main characteristics of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; and
 - iv. an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases."
- 21.3 These requirements are addressed in the sub-sections below.

2.2 Overview of recent development history

Bristol International Airport Master Plan 2006 to 2030

In 2006, BAL published its first Master Plan² setting out how the airport should develop. The Master Plan outlined specific plans to cater for up to 9 mppa by 2015 as well as setting out early ideas for a 12.5 mppa capacity airport by 2030.

2011 planning permission and subsequent consents

In 2011, BAL obtained planning permission³ from North Somerset Council (NSC) for the major expansion of Bristol Airport to accommodate 10 mppa. The 2011 planning permission consists of a number of project components; these components are listed in **Table 2.1** (with their status indicated). BAL is continuing to implement the existing 10 mppa permission through reserved



¹ The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017/571), [online]. Available at: <u>http://www.legislation.gov.uk/uksi/2017/571/contents/made</u> [Checked 16/03/18]

² Bristol International Airport, 2006. Bristol International Airport Master Plan 2006 to 2030.

³ 09/P/1020/OT2. All application documentation is available online: <u>https://planning.n-somerset.gov.uk/online-</u>

applications/applicationDetails.do?activeTab=summary&keyVal=ZZZXJLLPJV108 [Checked 02/03/18].

wood

matters applications. In addition, some non-material amendments (NMA) have been made to the extant 10 mppa consent and additional planning permissions have been issued for related development; these are listed in Appendix C to the Planning Statement and include amendments to the phasing of car parking. It should be noted that the phasing indicated in **Table 2.1** may be subject to change.

Table 2.1	Components	of the 10	mppa planning	permission	(09/P/1020/OT2)
-----------	------------	-----------	---------------	------------	-----------------

10 mppa project component– general description	Individual elements	Completed	Under construction (as at Nov 2018)	Not started (as at Nov 2018)	No longer being implemented
East and west extensions to terminal building	East extension phase 1 East extension phase 2 (south extension being taken forward as part of the Proposed Development) * West extension phase 1 West extension phase 2 (now being taken forward as part of the Proposed Development with a revised design)	✓		1	✓
Erection of two-storey walkway providing access and associated facilities to two-storey pier serving aircraft stands	Now being taken forward as part of the Proposed Development with a revised design.				
Expansion to aircraft parking areas providing 9 new stands giving 33 stands in total	Nine aircraft stands (partially complete). East apron to also include drainage on land to east.		✓		
Erection of two multi- storey car-parks (including transport interchange)	Multi-storey car park (now Phase 2) and interchange Multi-storey car park (now Phase 1a) Multi-storey car park (now Phase 1b)	✓	✓	✓	
A covered pedestrian link bridge				\checkmark	
Erection of three- storey administration building north-west of terminal with associated parking following demolition of existing administration building	Administration building (to be located to the south of the airport) Demolition of existing administration building		✓		
Construction of replacement underground aviation-fuel storage depot and chiller	Fuel storage depot Chiller compound	V		✓	



10 mppa project component– general description	Individual elements	Completed	Under construction (as at Nov 2018)	Not started (as at Nov 2018)	No longer being implemented
compound comprising 3no 1,200m ³ tanks					
Security control-post				\checkmark	
Alterations to runways and taxiways	Phase 1 to be completed in Q4 2018. Phase 2 to be completed post 2021.			\checkmark	
Re-configure internal access roads and widen access at A38 junction	Internal access roads (partially complete) Access at A38 Junction	1		~	
Upgrade north side surface car-park				✓	
Extend Silver Zone car-park to 12,000 car capacity to include staff-parking within an extension outside the airport boundary to south including replacement reception building	Silver Zone Car Park extension (final phase to be completed comprising a small area of parking west of the southern apron) Replacement reception building	✓		•	
Additional car-parking area to south to include relocation of car-hire, valet service and associated reception building (car rental consolidation centre (CRCC) – revised design being progressed)	Additional car-parking for rental Relocated car-hire Relocated valet service Relocated reception building		√ √ √		
Replace buildings to south of airfield for flying-club and snow- clearing	Replacement flying club building Replacement snow clearing building	√ √			
Erection of 5m high noise-reduction wall (a revised design is being taken forward)			~		
3m high acoustic fence around extended Western Apron		~			
12no. 5m high wind- turbines				\checkmark	

. . .



10 mppa project component– general description	Individual elements	Completed	Under construction (as at Nov 2018)	Not started (as at Nov 2018)	No longer being implemented
Landscaping		\checkmark			

*Phase 2 of the east terminal extension will no longer be implemented (as the proposed south terminal extension will now be taken forward as part of the Proposed Development as an alternative). This will be secured by Section 106 Agreement.

Ongoing operational development

- In addition to the above consented development (and unrelated to the Proposed Development), other on-site infrastructure and facilities will be required to respond to Bristol Airport's ongoing operational needs. Some elements have been identified as being needed in the short term to ensure the continued, efficient operation of the airport, and are to be delivered under BAL's permitted development rights, pursuant to Part 8 (Class F) of the *Town and Country Planning (General Permitted Development) (England) Order 2015* ⁴(as amended) (GPDO).
- In accordance with requirements of the GPDO, BAL will consult NSC on its intention to carry out permitted development. In order to proceed in this manner, the permitted development must not constitute 'EIA Development' under the *Town and Country Planning (Environmental Impact Assessment) Regulations 2017*⁵ (the 'EIA Regulations').
- **Table 2.2** lists expected, short-term proposals that are to be progressed under BAL's permitted development rights within Bristol Airport's existing boundary and indicates those that are expected to be either completed or under construction at November 2018. This may be subject to change depending on operational requirements.

Proposal	Status (at Nov 2018)
New airline office building and main gate extension	Not started
Reconfiguration of access road (southern area)	Under construction
New administration building with visitor and staff car parking (relocation)	Under construction
First phase of eastern walkway with integrated coaching gates	Not started
Stone Farm car parking and new bus access	Not started
New perimeter road (central area)	Not started
Radar site car parking	Not started
Strategic sequential radar (SSR) monopole tower	Not started
West walkway coaching gates and associated new bussing pick up road (existing substation to be repositioned).	Not started

Table 2.2 Proposals to be progressed under BAL's permitted development rights

http://www.legislation.gov.uk/uksi/2015/596/pdfs/uksi 20150596 en.pdf [Checked 22/08/2018].



⁴ Town and Country Planning (General Permitted Development) (England) Order 2015 [online] Available at:

⁵ Ministry of Housing, Communities & Local Government (2017). The Town and Country Planning (Environmental Impact Assessment) Regulations 2017.SI 571, [online]. Available at: <u>http://www.legislation.gov.uk/uksi/2017/571/contents/made</u> [Checked 23/03/2018].

In addition to the operational development listed in **Table 2.2**, BAL was granted planning permission in October 2018 for an extension to an existing food and beverage area on the mezzanine level of the terminal building⁶ and for the temporary year-round use of the existing Silver Zone Car Park Extension (Phase 1) for a period of one year enabling its operation in the winter 2018/19 period⁷.

Future operational facilities

- The future operational facilities at the outset of the Proposed Development's construction are detailed within **Figure 2.3**. The future operational facilities considers and incorporates the continued implementation of the 2011 planning permission (refer to **Table 2.1**) and other ongoing operational development (refer to **Table 2.2**) that is either completed or under construction at November 2018 and does not form part of BAL's expansion proposals to 12 mppa.
- 2.2.6 Much of Bristol Airport's future facilities and airport layout will remain the same as that described in **Section 2.3**.

2.3 The application site

Site location and surrounding area

- 2.3.1 Bristol Airport is located approximately 11km south-west of Bristol city centre (national grid reference 350440, 165195), within the local authority administrative area of NSC. It is situated on a ridge of high ground called Broadfield Down, with the A370 Bristol to Weston-super-Mare 4km to the north and the M5 motorway 11km to the west of the application site. The A38 carriageway is directly adjacent to Bristol Airport, on its eastern extent.
- The area surrounding Bristol Airport is predominately open, undulating countryside. Located within National Character Area (NCA) 118: The Bristol, Avon Valleys and Ridges, the area is characterised by alternating ridges and broad valleys, with steep wooded slopes and open farmland. Extensive wooded areas are located to the west of the application site and form a key feature of the wider landscape. These wooded areas are partially designated as ancient and semi natural woodland or ancient re-planted woodland. Goblin Combe, north of Cleeve Hill road, is designated as a Site of Special Scientific Interest (SSSI) and nature reserve. King's Wood, directly south of Cleeve Hill road, is also designated as a SSSI. Beyond the woodland lie the villages of Claverham, Yatton and Congresbury, approximately 5km west of Bristol Airport.
- 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.
- Arable farmland also contains pockets of priority habitat, namely deciduous woodland located to the north, south and east and an expansive area of lowland dry acid grassland to the east. There are two buildings that carry listed buildings status (Grade II) and seven scheduled monuments within 1km of Bristol Airport. Those in closest proximity include:
 - Windmill house (Grade II listed), approximately 260m east;
 - Scheduled monument, 'Oval barrow on Felton Hill 100m east of the round House', approximately 380m east; and

⁶ Reference 18/P/4206/FUL.

⁷ Reference 18/P/4007/FUL.

- Scheduled monument, 'Long barrow 350m south-west of Cornerpool Farm', approximately 460m south.
- 2.3.5 Within 3km north of Bristol Airport there are a series of active and disused quarries, including: Stancombe quarry (active); Freemans quarry (active); Coles quarry (disused); and an unnamed quarry off Long Lane (disused).

The existing Bristol Airport site

- ^{2.3.1} Bristol Airport is situated immediately adjacent to the A38, Bristol to Bridgwater Road, with two roundabout junctions providing access to the airport. The location of Bristol Airport including existing facilities and infrastructure are shown in **Figure 1.1** and **Figure 2.1**.
- The northern roundabout provides access to the northern parts of the airport including the main terminal building, passenger pick up and drop off areas, current airport administration buildings, hotel and operational facilities, and both short and long-stay parking areas. This is also the main access for public transport links to Bristol Airport. The southern roundabout, meanwhile, provides access to (inter alia) Silver Zone long-stay car parking, staff car parking, aircraft maintenance areas, fire station, Profred hangar, the Bristol and Wessex Aeroplane Club, Bristol Flying Centre and Western Power Distribution Helicopter Unit.

Bristol Airport operation

- 2.3.3 Bristol Airport is open 24 hours a day, 365 days a year. Flight operations are split according to day time (06:00 to 23:30) and night time (23:30 to 06:00) operational periods, with the majority of flights occurring in the day time (06:00 to 23:30). BAL operates commercial scheduled passenger flights with a number of general aviation operations.
- The 2011 planning permission for expansion of Bristol Airport to accommodate 10 mppa⁸ includes a condition limiting the total number of night time aircraft movements (defined as between 23:30-06:00) to no more than 3,000 in the summer season⁹ and no more than 1,000 in the winter¹⁰. The number of aircraft movements in the 'shoulder periods' of 06:00 to 07:00 and 23:00 to 23:30 is limited to no more than 10,500 a year.

Existing operational facilities

- **Figure 2.1** shows the layout of Bristol Airport's main facilities within the Bristol Airport boundary, both landside and airside¹¹ as of December 2018 (the date this ES was prepared).
- 2.3.6 Bristol Airport is split by the runway and taxiways creating three main areas: the northern; central; and southern areas. The following sections outline the components of the three areas, reflecting the existing site layout.

Northern area – existing operational facilities

^{2.3.7} The northern area is the most heavily developed part of the Bristol Airport site and accommodates the main passenger facilities. The terminal building is circa 13m high and consists of a large modern

⁸ 09/P/1020/OT2. All application documentation is available online: <u>https://planning.n-somerset.gov.uk/online-applications/applicationDetails.do?activeTab=summary&keyVal=ZZZXJLLPJV108</u> [Checked 02/03/18].

⁹ The summer season is the same time period as British Summer Time (BST) (also referred to as Daylight Saving Period).

¹⁰ The winter season is the time period when the UK is not in BST.

¹¹ Airside – areas of the airport, terminal and other buildings where access is restricted to processed passengers and authorised personnel.

Landside – those areas of the airport open to the public. In more general terms, the access roads, car parks and terminal building areas open to both passengers and non-passengers.

flat roof and glass structure. Connecting to the central walkway south of the terminal building, the western walkway extends west of the terminal building, on its southern face.

- To the west of the terminal are several large buildings that are used for flight catering and motor transport engineering. Also, in this location is the air traffic control tower and a security check point (airside access point). A new airline services facility and security check point is being developed to the west of the terminal (refer to **Section 2.2**).
- ^{2.3.9} The old terminal building, which now acts as the administrative centre for Bristol Airport (but is to be demolished with the office function relocated to the southern area refer to **Section 2.2**), is located to the east of the terminal. This includes airline offices as part of its function. Also in this location is Northside House, a building used to accommodate engineering offices and associated functions.
- 2.3.10 The main approach road to Bristol Airport extends westward from the northern entrance roundabout. A number of internal roundabouts and junctions along the approach road provide access to passenger car parking areas. The majority of car parking areas are surface parking comprising impermeable access roads and predominantly permeable crushed stone parking bays. At the western end of the access road, there is a hotel and chiller compound; immediately north east of the hotel, a three storey (including ground level) multi-storey car park (Phase 1a) provides a total of 1,162 spaces (a second phase, Phase 1b, of development will provide a further 716 spaces). To the north of the hotel are car rental facilities (although these are to be consolidated and relocated to the southern area).
- ^{2.3.11} The Bristol Airport access road extends to the northern boundary of the airport where it forms a junction with Downside Road, adjacent to Cooks Farm.
- To accommodate highways improvements associated with the Proposed Development (refer to **Section 2.4**), the application site includes a section of the A38 extending from the roundabout at the Bristol Airport's northern entrance northwards for a distance of circa 500m, as well as third party land (including part of the residential curtilages of Highlands and Greenacre, the adjacent disused quarry, the Airport Tavern and land to the north of the Tavern within the curtilage of Oakwood House). The application site also includes a section of Downside Road (extending approximately 160m) and West Lane (for a distance of circa 50m).

Central area - existing operational facilities

- ^{2.3.13} The central area of the Bristol Airport site is characterised by the runway, apron (east and west), taxiways and hold points, together with a significant expanse of grassland. The 2,011m runway is aligned east/west and located at the eastern and western ends are the instrument landing systems.
- Immediately north of the runway and taxiways are apron areas which include aircraft stands, located on concrete hardstanding. The majority of aircraft stands can accommodate aircraft up to a Code C and there is a single stand that can accommodate aircraft up to Code E. The fuel farm is also located in this area.

Southern area - existing operational facilities

- ^{2.3.15} To the south of the runway lie ancillary areas including the Bristol Flying Centre, Bristol and Wessex Flying Club, Western Power Distribution Helicopter Unit, Profred hangar and car parking as well as light aircraft and helicopter parking with associated taxiways.
- ^{2.3.16} The staff car park and Silver Zone long stay car park, accessed off the western arm of the southern A38 roundabout, occupy a significant proportion of the southern area. Within this area is the two storey Silver Zone car park reception building, Staff Transport Hub and bus transfer facilities.





To the west of the Silver Zone long stay car park is a fire station and training area, which includes a specialist fire simulator in the shape of an aircraft for training, hard standing and drains to collect runoff, and the Snow Base¹². To the south of the fire training ground is the Silver Zone seasonal car park extension (Phase 1), consisting of surface parking on Netpave cellular paving.

Land ownership

- ^{2.3.18} Bristol Airport covers 196 hectares (ha) (refer to **Figure 2.1**). In addition to its existing site, BAL owns some 16ha of land immediately to the south of the southern area. This land is currently used for agriculture, dominated by improved grassland used for grazing and a small area of woodland.
- As noted above, the application site includes a section of the A38 extending from the roundabout at the airport's northern entrance northwards for a distance of circa 500m, as well as third party land. The application site also includes a section of Downside Road (extending approximately 160m) and West Lane (for a distance of circa 50m).

2.4 The Proposed Development

- To support the proposed increase in passenger numbers to 12 mppa 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 operational changes. The components of the Proposed Development are described in the following sections and shown on **Figure 2.2**. **Figure 2.3** shows a phasing plan which distinguishes between all 10 mppa elements, 12 mppa elements and those which are coming forward under the airport permitted development rights.
- The components of the Proposed Development are described in the following sections; a comprehensive description of the individual elements of the scheme can be found in the Design and Access Statement that accompanies the planning application.

Flight operations

The proposed increase of 2 mppa will result in approximately 10,420 additional flights per annum. These flights will be managed using the existing runway and stands.

Night flights

As noted above, night flights are currently restricted to a maximum of 3,000 flights in the summer period and 1,000 flights in winter by condition. Through the planning application for the Proposed Development, BAL wish to operate without any the seasonal constraint on night flights or movements without increasing the maximum number of flights. As part of this application, permission is therefore sought for a rolling annual cap of 4,000-night flights (i.e. measured across two consecutive seasons rather than over a calendar year and between the hours of 23:30 to 06.00) to commence from grant of permission. BAL does not seek any alteration to the existing shoulder period limits.

. . .

¹² Snow Base is the storage area for snow clearing equipment.

Northern area components

Terminal building

- The existing terminal building does not have sufficient capacity to accommodate a throughput of 12 mppa and alterations are required to provide additional floorspace. Terminal extensions are proposed to both the west and south of the existing terminal, alongside the addition of canopies over the forecourt of the main terminal building. Proposed alterations to the existing terminal building are shown on **Figure 2.2**.
- 2.4.2 On the western side of the existing terminal, proposed alterations include a four storey, 13.5m high extension, with a footprint of 0.48ha and a total floorspace of circa 11,000m² (individual floor areas are set out in **Table 2.3**). The extension incorporates the following elements:
 - Basement level: linking to the existing basement, the area will have a new vertical access core inclusive of service lifts and a stairwell with staff and goods search / storage facilities;
 - Ground floor level: comprises of the re-configuration of existing baggage re-claim areas. This
 will extend the international re-claim area to accommodate additional conveyors alongside resiting domestic baggage reclaim. There will be the addition of a landside arrivals concourse
 housing retail and catering units such as food, beverage, confectionary and arrivals gift shops;
 - First floor / apron level: the central search area will be extended to include staff accommodation, alongside an expansion of the departure lounge to house additional retail facilities (including duty free, specialist retail, news/gifts and currency exchange). A new immigration complex will be created and be accessible via a vertical circulation core comprising of stairs, lifts and escalators, this directly linked to the arrivals walkways and airside coaching drop-off; and
 - Second floor: comprises of a service corridor with both storage and staff accommodation.
- 2.4.3 On the southern side of the existing terminal building, proposed modifications comprise of a two storey (8.5m high) extension with a footprint of 0.20ha and a total floorspace of circa 3,600m². The extension incorporates the following elements:
 - First floor / apron level: the extension will replace the existing coach deck to provide space for new toilet and Passengers with Reduced Mobility (PRM) facilities, layout improvements to the departures concourse and retail areas, covered arrival corridors for passengers and a re-located domestic baggage reclaim access from the apron; and
 - Second floor: comprises of an extension to the existing food and beverage area that will increase food and beverage capacity and reduce queues and improve passenger circulation within the current concourses.
- 24.4 The floor areas of the existing terminal and proposed extensions are outlined in **Table 2.3**.

Level	Existing terminal (m ²)	West extension (m ²)	South extension (m ²)
Basement level	4,455	995	n/a
Ground floor level	12,160	3,500	n/a

Table 2.3Terminal floor areas (m²)

. . .



Level	Existing terminal (m ²)	West extension (m ²)	South extension (m ²)
First floor / apron level	12,720	4,475	1,820
Second floor	8,100	2,065	1,710

- ^{2.4.5} The terminal extensions will be designed to ensure that both the passenger facilities (such as departure lounges and retail areas) and handling areas (such as check-in, boarding gates and baggage reclaim) are optimised for enhanced passenger experience and operational efficiency.
- The extensions to the existing terminal building will be constructed so as to reflect its current aesthetic appearance. The existing building is formed in tabular steel modules with a fully glazed curtain wall system; where function dictates, these glass modules are replaced with metal faced cladding. Architecturally, it is envisaged that the public landside facades of the west terminal extension will be predominantly formed of a two-storey glass structure. The southern extension differs slightly since this is an infill development, consisting of east and west gable walls with a new pitching roof and rooflights. The gable walls will incorporate glazing but will be predominantly formed of metal cladding.
- 2.4.7 The canopies will improve the appearance of the passenger approach to the front of the main terminal and provide shelter, enhancing passenger experience. The canopies will be supported on structural steel columns and form a 'tree' like framework, similar to that within the existing terminal. The canopies will have a transparent roof to ensure that the maximum amount of light is utilised in this northerly orientated external space.

East pier and walkway

- A new walkway to the east pier with circulation cores and one pre-board zone is required. This will represent a revised alignment to that approved under the 2011 consent for expansion of Bristol Airport to 10 mppa. This walkway will be 275m long and, on average, circa 10m high across two storeys and be fully enclosed. The upper floor will be utilised as a passenger walkway, sub-divided by a partition wall resulting in two corridors to segregate arriving and departing passengers. The north corridor, approximately 4m wide, will accommodate departing passengers while the southern corridor, approximately 3.4m wide, will accommodate arriving passengers. Both corridors will incorporate two travellators (50m and 100m in length) to assist with passenger movement along the walkway. The ground floor will accommodate a 285m² pre-board zone and an open area to allow for apron circulation and operations. It is anticipated that it will be glazed, providing passengers with continuous views towards the apron and runway to the south and open countryside to the north. The walkway will have a total floorspace of circa 3,000m².
- The east pier will connect to the eastern walkway to enable passengers to access the eastern stands and be fully enclosed. It will have a total floor area of 3,815m² across two floors, housing six boarding gates (five on the ground floor and one on the first floor) with associated departing and arriving vertical circulations cores. The areas of these pre-board zones will range from 250m² to 280m². The pier itself will be approximately 195m long and will vary between 8-16m in width, this increasing to 12-16m at the stair core areas.

Service yard

A new and larger service yard, approximately 0.4ha (including undercroft areas) in area, is proposed directly to the north of the western walkway and east of the current airside access security building.



The facility will be largely screened from public view; however, passengers will be able to see down into this area from level 10 of the west terminal extension.

- Primarily, the service yard will be used for all terminal retail, catering and operational partner deliveries and to manage waste produced across Bristol Airport. The service yard will also be used as a point of entry for all contractors for bringing tools and materials into the main terminal building, although permanent parking will not be available. Baggage companies will utilise this space to pick up and drop off misdirected baggage.
- It is anticipated that the surface material to the yard will be concrete with paint markings to demarcate different zones, including safe staff access ways and waiting areas. At its northside, the service yard will be separated from the passenger plaza by a screen. This will conceal its function from this area.

Multi-storey car park

2-11

- A MSCP (Phase 3) to provide approximately 2,150 spaces over five levels will be constructed in the northern area of Bristol Airport adjacent to the current MSCP (Phase 1) (**Figure 2.1**). The MSCP will occupy a footprint of around 1.12ha and be a maximum of 16m AOD in height.
- 2.4.14 Vehicular access to the MSCP will be directly from the internal Bristol Airport spine road via a roofed entrance/exit plaza at ground level, with access to the other upper car park decks via separate 'up' and 'down' ramps. The car park will have a simple circulatory layout for vehicles and a protected pedestrian walkway leading to a central vertical circulation core.
- The building structure will be based upon a modular steel frame system, with 16.1m spans to match through with MSCP Phase 1. The top deck of the MSCP will align with the top deck of MSCP Phase 1. Wind turbines will be installed on the top deck, the mast height reaching approximately 12m, extending to 15m when accounting for the rotors.
- The appearance of the MSCP is a reserved matter; however, it is anticipated that the development will incorporate perforated polyester powder coated (PPC) panels finished with muted and tonal colours. Lapped timber effect planks will encase the stair cores and will also be placed intermittently along the ramps.

Gyratory road with internal surface car parking

- To accommodate vehicle movements and improve flows within Bristol Airport and onto the A38, a two lane, one-way system, gyratory is proposed (refer to **Figure 2.1**). This will provide additional capacity onto Northside Road and a connection between the A38 and the northern components of the airport, including the main terminal building, MSCP and surface car parking areas. To the west, the gyratory road serves the airport servicing area and hotel.
- The new road is approximately 0.7km long, with a 35m inscribed circle diameter at either end. The circulating carriageway is approximately 7.5m wide on straight sections, widening to 8m on the circulating sections. In total, it comprises of six arms on the outer edge, with a separate entrance and exit arm within the gyratory itself to serve the central parking area.
- The gyratory includes a pedestrian footway along its southern edge, linking the main terminal building with the A38. A new zebra crossing will be located across the dual carriageway to the east. Within the gyratory, replacement car parking is proposed for approximately 360 vehicles, with a layby for buses to collect users and transport them to the terminal building. This will comprise of impermeable tarmac/asphalt access roads and predominantly permeable crushed stone parking bays, similar to existing. There will additionally be changes to the layout of existing car parking areas to the north of the gyratory. The lighting in this area will be retained.





- The new circular route will be constructed in a series of phases to ensure vehicle circulation throughout the works are managed to minimise disturbance. All improvements are in keeping with the current character of the area. The road will be constructed with an asphalt wearing course and antiskid surfacing will be applied on the approaches to the zebra crossing. All traffic signs and markings will be provided in accordance with highway design standards applicable to the location and type of road.
- At present, Northside Road has a hedgerow/verge that runs along the majority of the northern side of the carriageway and along part of the southern side. The proposed improvement seeks to maintain a verge to the south as much as possible. Due to the nature of the proposed improvement, the northern hedges and trees will need to be removed and replaced within the new gyratory road. Within the design of the new gyratory road, there are areas where it is possible to reprovide tree and hedges to improve the aesthetics of the proposals.

Central area components

2.4.22 Changes to airside infrastructure and facilities are required to support aircraft movements, passenger transportation and aircraft servicing for an additional 2 mppa. The associated airside components are shown on **Figure 2.1**.

Eastern taxiway link

2-12

- A new eastern taxiway link at the far eastern end of the runway will be constructed, providing an improved link between the runway from the east apron. This link will be approximately parallel to the existing two taxiways, Taxiway Bravo and Taxiway Alpha and extend for 174m. The width of the taxiway link varies along its length, responding to the swept path (i.e. the envelope swept out by the sides of the aircraft); the minimum width is 23m. New airfield ground lighting (AGL) will be provided in accordance with current regulations.
- 2.4.24 Operation of this new link will allow for improved and efficient access to the runway for aircraft. The taxiway will enable a more efficient system for sequencing aircraft and will therefore minimise ground delays for aircraft awaiting departure.
- It is proposed that the new taxiway will be constructed of either asphalt, concrete or a combination of these materials. This will be a continuation of the current surfacing and will have a footprint of approximately 0.51ha.

Taxiway widening (and fillets)

- 24.26 Taxiway widening (and fillets) to the southern and northern edges of the northern most taxiway (Taxiway GOLF) is required to provide a parallel taxiway system for improved access and movement of aircraft. This will largely facilitate aircraft turning to the existing Taxiway Foxtrot.
- 2.4.27 The taxiway will be widened from 15m to 25m and will be a continuation of the current surfacing, with extensions proposed from its western extent (adjacent to aircraft stands 33-37) along the entirety of the west and east apron to Taxiway Bravo. Fillets are provided to Taxiways Foxtrot and Delta to an appropriate size of the aircraft making the turn. New AGL lighting will be provided in accordance with current regulations.
- It is proposed that the new areas will be constructed of either asphalt, concrete or a composite combination of these materials. The area covered by this improvement is approximately 1.81ha.



Aircraft stands 38 and 39

BAL is seeking to align the operational restrictions on stands 38 and 39, which currently prevent the use of APUs and allow for only tow on and push back, with those on stands 33-37. This will enable the use of APUs and allow for the use of aircraft engines for taxiing (as opposed to towing) between the hours of 06:00 and 23:00, enabling the full and efficient use of these stands and supporting a passenger throughput of 12 mppa.

Southern area components

Operational extension to the Silver Zone Car Park (Phase 1)

- The Silver Zone Car Park Extension (Phase 1), located to the south of the fire training ground, is an area of approximately 7.8ha and comprises of 3,650 long-stay car parking spaces surfaced by a grid structure with grassed parking bays divided by asphalt isles and access roads. The site includes associated features such as temporary (seasonal) lighting, CCTV and services. Vehicles access the site via the A38 roundabout and report to the Silver Zone reception where cars are then valet parked.
- ^{2.4.31} Currently, use of the Silver Zone Car Park Extension (Phase 1) is prohibited outside of the period 1 May to 31 October (although temporary planning permission has been granted for the use of the car park outside of this period in winter 2018/19). To ensure that there is sufficient provision in meeting increased demand for long term on-site car parking, BAL is seeking to remove this restriction. This would allow for year-round use of the car park and provide additional car parking capacity.
- It should be noted that, with the exception of the provision of permanent (fixed) lighting and CCTV, no additional or new development is required to facilitate the year-round use of the car park.

Silver Zone Car Park Extension (Phase 2)

- An extension to the Silver Zone car park is proposed on agricultural land to the south of the existing Silver Zone Car Park Extension (Phase 1). Occupying a footprint of circa 5.1ha, this extension will provide an additional circa 2,700 spaces for year-round use.
- The public will not have access to the car park and instead, cars will be valet parked by BAL staff from a central reception facility. This feature fundamentally informs the parking layout, which is anticipated to be block parking only.
- ^{24.35} The layout of the car park will be similar to that of the existing Silver Zone Car Park Extension (Phase 1). No additional road structure is required since access will be via the existing Silver Zone car park entrance / exit facility and through the Silver Zone Car Park Extension (Phase 1).
- ^{2.4.36} Surfacing of the car park will comprise of two finishes, an asphalt access road and aisles and grass parking bays forming from a grid paving system infilled with topsoil and grass seed. Lighting (LED) will be designed to minimise light spill, glare and sky glow.

Highway improvements

24.37 BAL is proposing to undertake a significant improvement of the A38 between the main Bristol Airport access roundabout and West Lane to accommodate any additional traffic generated by an extra 2 mppa and support better performance of the junction. The main carriageway over this length will be increased in width to allow two through lanes to be provided on each carriageway. The widening will be mainly undertaken on the western side of the road providing an overall width



of 16m. The improvements taper back to join the existing carriageway width some 130m beyond West Lane. A further dedicated lane will be provided for northbound traffic turning left into Downside Road, along with a right turn lane into West Lane. The centre of the carriageway will be hatched or have traffic islands in order to separate traffic flows. Downside Road will be widened to two lanes for 80m prior to the junction with the A38 and new access provided into the Airport Tavern car park.

- The junction with Downside Road will remain controlled by traffic signals but will be linked to new signals controlling the West Lane junction. The junctions will monitor traffic approaching the junctions and using MOVA will adjust the timings to enhance traffic flow and reduce queuing. Traffic will only be able to turn left out of West Lane, while traffic travelling southbound will remain unable to turn right into Downside Road and will continue to double back at the main Bristol Airport junction with the A38.
- The existing footway and cycle track will remain on the eastern side of the A38, with a new footway provided north of the West Lane junction. An enhanced footway and cycle track will be provided on the western side of the road between Bristol Airport and Downside Road, with a footway provided for the section north of the Downside road tying in with the existing facility north of West Lane. Pedestrian and cycle facilities will be provided within the Downside Road junction. A pedestrian crossing is included within the West Lane signals and both junction designs will incorporate drop kerbs. Bus stops will be maintained albeit adjusted for the new carriageway alignment. Access will also be maintained to the footpath which runs along the western boundary of the Airport Tavern land towards Lulsgate Bottom.
- The proposed highways improvements are in keeping with the current character of the area. The road will be constructed with an asphalt wearing course and antiskid surfacing will be applied on the approaches to the signal stop lines. All traffic signs, signals and markings will be provided in accordance with highway design standards applicable to the location and type of road. The area will continue to have street lighting in line with NSC standards and local operations including diming at night. Surface water drainage will be enhanced to accommodate the effects of the widened carriageway.

Airport Operational Boundary

- In order to accurately reflect the operation of Bristol Airport at a passenger throughput of 12 mppa, it is proposed that the existing operational boundary of Bristol Airport t is revised (refer to planning application drawing reference 17090-00-100-411). This will allow BAL permitted development rights within the operational airport boundary thereby ensuring that it is able to fully and effectively respond to the future operational needs of Bristol Airport in a timely manner, facilitating the continued, efficient operation of the airport.
- The proposed change to the operational boundary does not include any land outside of the Proposed Development application boundary being considered in this ES. Notwithstanding this, any future proposals relating to development within the extended operational boundary of the airport would be subject to the EIA Regulations (as appropriate) and likely significant environmental effects assessed at that time.

Waste management

It is important that best practice measures for the construction and operation of the Proposed Development are used to inform the implementation of a robust Construction Environmental Management Plan including a Site Waste Management Plan (SWMP), on a site by site basis. An Outline Construction Environmental Management Plan (hereafter referred to as a CEMP) has been prepared and can be located in **Appendix 2B**.

. . .



Construction waste

- 2.4.44 Waste material will be generated at all stages of the construction process. Construction waste will arise from the following key aspects of the Proposed Development:
 - Demolition of existing infrastructure;
 - Excavation and earthworks for preparation of foundations; and
 - Construction of new buildings (terminal extension, MSCP Phase 3, walkways and piers); asphalt pavement (access, storage and parking); and concrete pavement (taxiways).
- 2.4.45 Indicative targets for the construction of the Proposed Development are to divert 90% of demolition waste and 80% of non-demolition waste from landfill. This is broadly similar to current operational waste performance at Bristol Airport, which is in the region of 99% diversion of waste from landfill¹³.
- Further assessment of the detailed design of assets and their associated waste streams would also be required to input into the SWMP. The appointed Principal contractor(s) will submit a detailed SWMP (as part of the CEMP) to BAL for the associated construction activities, in accordance with best practice waste management for the site. This will be completed on a site by site basis; as each component of the Proposed Development comes forward a separate SWMP will be produced.
- 2.4.47 On a site by site basis, earthwork arisings, where possible, will be recycled for use on the application site. This includes the material from the existing taxiways which are to be widened. For further information please refer to the CEMP (**Appendix 2B**)
- It is intended that good practice segregation of waste is followed during the construction phase of the Proposed Development. Sufficient space should be allowed to facilitate segregation of demolition, construction and excavation wastes. However, the location will be dependent on constraints in the working area of the site. It is expected that the following principles would apply:
 - Recyclables Waste storage receptacles/areas will be clearly marked to promote source segregation and inhibit contamination. A waste stream colour coding system will be employed to aid the successful segregation of waste at source. This can take the form of different coloured signs or bins or skips indicating which waste stream can be accepted in each receptacle/area. The Institution of Civil Engineers (ICE) developed a generic colour coding scheme for the construction industry; it is suggested that this system could be used during construction of the development. Containers will be fit for purpose and of a suitable durable construction for use. Prior to leaving the site, containers/vehicles shall be sheeted and secured to prevent emission of particulates and dust.
 - Food waste If a site construction compound will include a canteen where food is produced, prepared or sold then food waste may also be segregated. Bins would need to be provided for the recyclables mentioned above, plus food if sufficient quantities are produced.
 - Residual waste In the event that residual waste is to be landfilled, testing will be carried out to
 ensure that demolition or excavation materials are given the correct Waste Acceptance Criteria
 (WAC) classification and are disposed of correctly as inert non-hazardous waste. A full record
 will be maintained of all materials that are removed from the site.
 - Hazardous waste Any hazardous waste generated as part of demolition, excavation or construction activities needs to be segregated from other waste streams to prevent crosscontamination, and suitable containment is required to provide storage and onward transport,



¹³ Bristol Airport Limited (2017). Bristol Airport Annual Operations Monitoring Report, [online]. Available at: <u>https://www.bristolairport.co.uk/about-us/environment/sustainability</u> [Checked 23/11/2018].

according to the type of hazard (e.g. bunded storage for liquids). Hazardous waste will be disposed of correctly using suitable registered waste carriers and facilities for hazardous waste. A full record will be maintained of all hazardous waste materials that are removed from the site.

Operational waste

2-16

- ^{2.4.49} The operational aspects of the Proposed Development and associated generation of waste will align with current practice already implemented at Bristol Airport. Currently, BAL manages all waste streams from property under its control (including terminal and administrative waste).
- All current and future management will be in line with the waste hierarchy, as outlined below:
 - Minimise raw materials consumed, and the volume of waste produced i.e. prevent creating waste;
 - Re-use any waste produced, where practicable;
 - Recycle waste, where reuse is not practicable;
 - Recover waste, where feasible; and
 - Dispose of any remaining waste streams in accordance with legislative requirements.
- ^{24.51} The provision of effective storage and segregation of waste materials at the site will be a key element to ensure waste is managed safely and efficiently to maximise the potential for reuse and recycling.

Vulnerability to major accidents and disasters

Construction related major accidents

All construction works will be managed in accordance with a CEMP (**Appendix 2B**) and relevant regulations such that the risk of major accidents occurring during the construction phase of the Proposed Development is considered to be extremely low and similar to other ongoing development at the airport.

Building/infrastructure related major accidents

The potential for major accidents related to the operation of the proposed new buildings and surface areas is considered to be very low. Bristol Airport, like all modern airports, operates to very stringent standards of design, safety and security in accordance with UK and international aviation law and the relevant Civil Aviation Authority (CAA) mandated standards for design and operation. The Proposed Development has no bearing on these existing controls and in consequence, the risk of a major accident or disaster will not significantly increase as a result of the introduction of the Proposed Development.

Hazardous substance related major accidents

2.4.54 No hazardous chemicals beyond those fuels and substances already present at Bristol Airport will be introduced as part of the Proposed Development. Furthermore, as noted above, the airport operates to very stringent safety standards such that the risk of accidents involving hazardous substances occurring and their magnitude is considered to be very low (refer to **Appendix 2C**).







Natural disasters

24.55 Bristol Airport suffers no exceptional climatic conditions or significant flood risk that regularly affect its operations. In addition, the surrounding area is free of natural or physical obstructions that might impact on aircraft. Further, it is not expected that the Proposed Development itself would significantly change the likelihood that natural disasters would occur, nor given the location of the airport would it result in new receptors being exposed to such events.

Air traffic movements

- Any increase in the number of flights associated with the Proposed Development has the theoretical potential to impact on the likelihood of a major accident involving aircraft occurring and impacting people or the environment. However, in this case the additional movements is, relative to the overall number operating from the site relatively small and when compared with the total number of aircraft operating in the skies above the UK is very small indeed. As such the increase in risk to human or environmental receptors is considered to be very low indeed.
- It should be remembered that risk is considered here in the context of the number of aircraft accidents worldwide being extremely low in comparison to other modes of transport and industrial activities. The proposed increase in the number of movements will operate under the same licensing and controls as the existing airport (extended for the Proposed Development with an equivalent level of provision) which in itself is not considered to present an unacceptable risk.
- Further, aerodrome safeguarding areas and Public Safety Zones (PSZs) have been established to ensure that development does not prejudice air safety. PSZs in proximity to the ends of airport runways have been established in order to reduce the number of people on the ground exposed to such risk. These zones represent a contour with a risk value of 1 in 100,000 in which development is restricted. An inner area of risk is also defined within each PSZ immediately at the runway end, bounded by the 1 in 10,000 contour, within which no resident or working population is permitted. It should be noted that changes to PSZs are not proposed as part of the Proposed Development.

Passengers

- A growth in passenger throughput at Bristol Airport could increase the exposure of individuals in the event of a major accident. Notwithstanding this, for the reasons described above the likelihood of such an event occurring does not significantly increase as a result of the Proposed Development.
- The key drivers of potential accidents and disasters such as security, biosecurity, food safety and health impacts will all be managed by an extension of the existing management systems and CAA regulation with the same level of protection. Bristol Airport will also retain its designation as a border post and security will be provided in the same manner by the Police and Border Force. Port Health duties will continue to be undertaken by NSC as the Port Health Authority.

Road safety

Appropriate highway and structural design principles will be employed to ensure that the risk of a major accident is not significantly increased by the Proposed Development. The nature of vehicles and tankers is similar to those already experienced in the local network with no additional hazardous or abnormal loads predicted to be necessary specifically as a result of the Proposed Development. Tanker drivers would be Accord Dangereux Routier327 (ADR) drivers and familiar with the transport of hazardous material.

Occupational hazards

2-18

Occupational risks resulting from day to day activities which may affect a small number of people (e.g. slips, trips and falls) and which are managed under the general obligations of the Health and Safety at Work Act are not generally recognised as a major accident. They will be managed by BAL under the *Management of Health and Safety at Work (MHSW) Regulations*¹⁴ in the same manner that they are currently managed and extending the same level of protection to the workforce.

Site security and lighting

- 2.4.63 Construction sites will be controlled in accordance with the statutory duty to prevent unauthorised access to the site. Site-specific assessments of the security and trespass risk will be undertaken and appropriate control measures implemented.
- Lighting during operation of the Proposed Development will be as per the airport's current operation. Lighting proposals for individual components will be submitted and be in accordance with a site-wide Lighting Impact Assessment. This strategy highlights a number of principles that will be adopted when designing external lighting proposals, including, but not limited to: use of cowls or shields; use of LED lamps; use of landscape screening; and the fitting of passive infrared sensors.

Proposed working hours

- ^{24.65} The construction programme for the Proposed Development assumes a six-day working week, with construction confined to the hours of 07:30 to 18:00 Monday to Friday and Saturday 08:00 to 13.00. There is no planned working on Sundays or Bank Holidays.
- All airside works will be completed wherever possible during normal site hours. However, safety critical works will be undertaken at night when the airfield can be closed. Such hours of work will be 23:30-06:00.

Development timescales and programme

The sub-sections below describe the phases of the Proposed Development. It should be noted that Bristol Airport is assumed to operate in perpetuity and it is anticipated that arisings associated with any future decommissioning/demolition of elements of the Proposed Development would be reused where possible. In consequence, decommissioning including demolition, is excluded from the scope of the assessment.

Phase 1: Construction period

The construction phase of the Proposed Development comprises a series of phased, but interrelated, activities over a period of eight years (anticipated to be between 2019 and 2026 inclusive). Development will be phased in line with demand and operational requirements and to ensure minimal disruption to the safe operation of Bristol Airport; an indicative phasing programme is set out in **Table 2.4**.



¹⁴ Management of Health and Safety at Work Regulations 1999, [online]. Available at: <u>http://www.legislation.gov.uk/uksi/1999/3242/contents/made</u> [Checked 01/12/2018].



Table 2.4 Indicative construction programme

Component	Construction Start (month/year)	Completion (month/year)
Extension to the Silver Zone Car Park (Phase 2)	Dec-19	Mar-20
Operational Extension to the Silver Zone Car Park (Phase 1)	Apr-19	Jun-19
Highway Improvements (A38)	Oct-19	Apr-20
South Terminal Extension	Nov-19	Apr-21
New Arrivals Area with Vertical Circulation Cores	Nov-19	Apr-20
West Terminal Extension Phase 2a	Sep-20	Jun-21
Gyratory with Internal Surface Car Parking	Oct-20	May-21
Canopies	Sep-22	May-23
Eastern Taxiway Link	Jan-24	Jun-24
Taxiway Widening (and Fillets)	Jan-24	Jun-24
MSCP Phase 3	Sep-24	Jul-25
West Terminal Extension Phase 2b	Nov-24	Mar-26
Walkway to East Pier with Circulation Cores and One Pre- Board Zone	Sep-25	Jun-26
East Pier with Vertical Circulation Cores and Five Pre- Board Zones	Sep-25	Jun-26
New Service Yard	Nov-25	Mar-26
Operational Change to Use of Stands 38 and 39	N/A	Apr-19

- 24.2 Work to deliver the Proposed Development will commence in 2019, with changes to operational restrictions (stands/parking) expected to be in place with immediate effect once consent is granted (anticipated to be April 2019).
- 2.4.3 Separate construction compounds for each element and phase of the Proposed Development will be established within the current Bristol Airport boundary. These will be located adjacent to and/or within the construction site as appropriate.



Phase 2: Operational Phase

- 2.4.4 Bristol Airport is an existing operational commercial airport. Further growth as a result of the components of the Proposed Development outlined in the previous sections and considered in this ES will provide capacity for 12 mppa (estimated to be by 2026 further information in relation to passenger growth forecasts is provided in **Chapter 3: Scheme Need and Alternatives**).
- ^{2.4.5} The operation of Bristol Airport will be continuous throughout the expansion programme, with passenger, staff and contractor movements increasing in proportion to passenger demand, creation of new jobs, and the availability of new services and infrastructure.
- At 12mppa (2026) there will be a total of 97,373 annual aircraft movements, an increase of 10,420 movements compared to forecast movements at 10mppa (in both 2021 and 2026). The majority of flights will continue to occur in the day time (06:00 to 23:30).
- The number of summer aircraft movements between the hours of 23:00 and 07:00 at 12 mppa (2026) will be 4,639, an increase of 1,904 movements compared to forecasts at 10 mppa (in both 2021 and 2026). It should be noted that these movements include both night time movements and shoulder periods, as defined under the extant 10 mppa consent.

Site quantities

2.4.8 The bulk of the imported material will be hardstone for asphalt and Pavement Quality Concrete, in addition to sands and gravels for use in the lower layers in the aircraft pavements and drainage. The breakdown of materials and associated quantities expected to be required for the construction of the Proposed Development are shown in **Appendix 2A.** The Transport Assessment (**Appendix 6A**) indicates how these materials will be delivered to site for each component of the Proposed Development.

Employment proposals

- At peak (2025), it is estimated that there will be 258 construction workers associated with the construction of the Proposed Development onsite. Total operational employment on-site in 2026 at 12 mppa will be 5,215 jobs, or 4,575 full-time equivalent (FTE) posts, an increase of 1,265 jobs and 1,075 FTEs respectively.
- ^{2.4.10} Further information relating to the economic impacts of the Proposed Development are contained in **Chapter 15: Socio-economics**.

Transport movements

- Total vehicle annual average weekday traffic (AAWT) flows during construction are estimated to be 36 vehicles a day and HGV AAWT flows are estimated to be eight vehicles a day. Peak vehicle movements are anticipated to occur between November 2019 and March 2021, during this period there may be movements of 80 vehicles a day.
- Access to the application site for all construction vehicles will be split between two entrances, one located to the north and one to the south. To the north, construction traffic will access Bristol Airport via the main entrance roundabout from the A38. To the south, construction traffic will access the application site via the internal access road to the Silver Zone car park, also leading off the A38 carriageway.
- ^{2.4.13} Traffic signs will be installed in order to inform local road users of the construction access points and presence of HGVs. The timing of deliveries will be managed to avoid arrivals and departures during peak morning and evening traffic periods.



- An outline CEMP (**Appendix 2B**) has been submitted with the application and this sets out mitigation measures to be implemented during the construction phase to reduce potential impacts on the local road network. The final CEMP for each phase of construction will include a Construction Traffic Management Plan which will outline site access routes and proposed routing of vehicles. Construction vehicles, particularly HGVs, will avoid the use of minor roads where possible.
- During operation, the Proposed Development will generate the following daily increase in vehicle movements in the peak passenger throughput month of August (at 12 mppa in 2026):
 - 6,716 additional daily passenger movements;
 - 4,849 additional daily car trips associated with passenger movements;
 - 975 additional daily public transport trips associated with passenger movements;
 - 817 additional daily staff movements;
 - 702 additional daily car trips associated with employee movements;
 - 585 additional daily public transport trips associated with staff movements; and
 - 24 additional daily logistic movements.
- It is worth noting that 68% (3,813) of the predicted total vehicle movements (5,575) occur outside of typical highway network peak hours (07:00-10:00 and 16:00-19:00 hours).
- 2.4.17 Further information relating to the traffic and transport impacts of the Proposed Development are contained in **Chapter 6: Traffic and Transport and Appendix 6A**.

Climate change resilience

- The impacts of climate change will be considered throughout the design and operation of the Proposed Development. The projected impacts of climate change on the Bristol Airport site are detailed in **Section 7.12** of the Design and Access Statement (DAS) and these have been considered in the design to date where appropriate.
- During the operational phase of the Proposed Development, resilience has been addressed through the following measures:
 - The proposed drainage strategy includes climate change allowances;
 - The design of ecological mitigation measures takes into account climate change through the planting of climate resilient species and increased connectivity of habitats;
 - The demand for water is reduced through water efficiency measures such as efficient appliances/processes and the potential use of rainwater recycling;
 - There is a commitment that decentralised renewable electricity generation will constitute a combined 15% of electricity use across Bristol Airport (decentralised power production reduces the exposure of Bristol Airport to wider power failure, which can be exacerbated by climate change). Heating sourced from waste gas from a CHP plant also decreases reliance on the wider network, thus increasing resilience; and
 - The projected central estimate temperature projections for the end of the design life of each asset will be considered in its detailed design stages (e.g. a building with an indicative 50-year design life will consider climate change projections for the 2080s).





- **Section 7.12** of the DAS also outlines the approaches to include decentralised power production on-site, which increases resilience of the Proposed Development to climate change impacts on the wider power networks.
- The impacts of climate change have been considered within the assessments of flood risk in **Chapter 12: Surface Water** and **Chapter 13: Groundwater**. Climate change has also been considered in the development of mitigations for biodiversity receptors affected by the Proposed Development in **Chapter 11: Biodiversity**, and mitigations for soils in **Chapter 10: Land Quality**.
- 2.4.22 Further climate change impacts will be considered throughout the detailed design stages of the Proposed Development, following approval for expansion to 12mppa. This is secured through a commitment to develop a Carbon and Climate Change Action Plan (CCAP). The CCAP will use the new UKCP18 projections (released 26 November 2018) to assess the vulnerability of specific assets to climate change and the impact it could have on operational procedures. The resulting CCAP will be relevant to Bristol Airport as a whole, including the new infrastructure and assets required for the Proposed Development.
- The CCAP will consider the initial design of assets (e.g. placing climate change uplifts on standards) and designing to enable adaptation in the future as and when required (e.g. oversizing of ventilation shafts). This approach is deemed appropriate as asset-specific climate change adaptation should be integrated into the design as it develops and becomes more detailed. The principles of the upcoming ISO14090: A Framework for Adaptation, due for release in 2019, will be used when developing the CCAP.
- 2.4.24 Mitigations to reduce the impact of the Proposed Development on climate change through the emission of greenhouse gases are detailed in **Chapter 17: Carbon and other Greenhouse Gases**.

2.5 Embedded environmental measures

Introduction

2-22

- The EIA Regulations require an assessment to be undertaken of 'the development' not of the Proposed Development with and without mitigation. This division typically results in ESs that are lengthy, as opposed to being proportionate as advocated by the Institute of Environmental Management and Assessment (IEMA). To meet this stipulated requirement, the Proposed Development is presented as a single entity. Consequently, it is inclusive of the 'environmental measures' that have been identified for adoption during the design process "...to avoid, prevent, reduce or offset any identified significant adverse effects on the environment". The Proposed Development, where appropriate, should also incorporate good practice and enhancement measures.
- The term 'environmental measures' describes those measures which are incorporated into the development proposals. In this ES, these differ from mitigation measures, which are treated as being over and above what constitutes the Proposed Development. Consequently, the approach taken is to undertake a single assessment embedding into the Proposed Development all measures to which the developer has committed to.

Implementation of environmental measures

Each environmental topic (**Chapters 6-17**) identifies a number of embedded environmental measures that have been incorporated into the design of the Proposed Development in order to mitigate any likely significant effects. **Table 2.5** outlines the environmental measures that have





been embedded within the Proposed Development and the means by which they will be implemented.

Table 2.5Summary of environmental measures to be implemented

Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference
Chapter 6: Traffic and Transport			
A construction traffic management plan will be provided as part of the CEMP	BAL and Principal Contractor	Planning condition	Section 6.6
Upgrades to Junctions 1 (A38 / Bristol Airport Northern Roundabout), 4a (A38 / Downside Road) and 4b (A38 / West Lane) and widening of the A38 between Junction 4a and 4b	BAL	Planning condition	Section 6.13
Chapter 7: Noise and Vibration			
As part of the Proposed Development, a new walkway will be constructed to the north of the existing eastern apron. This will offer screening from ground noise for receptors to the north of this location, in particular those on Downside Road	BAL	Planning condition	Table 7.6
As part of the Proposed Development, a new 5m high acoustic timber fence associated with the erection of new east walkway and pier with vertical circulation cores and pre-board zones	BAL	Planning condition	Section 7.8
Chapter 8: Air Quality			
Implementation, as part of the CEMP (Appendix 2B) the contractor will produce and implement a Dust Management Plan (DMP); this will include details of measures to identify and reduce the risk, monitoring any dust and identify appropriate clean-up measures. Measures will include locating stockpiles away from the application site boundary or receptors, covering or damping down stockpiles, stockpile maintenance or management, and removal of materials from the application site	Principal Contractor	CEMP (Appendix 2B)	Appendix 2B
As part of the CEMP (Appendix 2B), agree and enforce a strict routeing agreement for incoming and outgoing heavy goods vehicles (HGV), avoiding peak traffic flow hours in order	BAL or Principal Contractor	CEMP (Appendix 2B)	Appendix 2B



	Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference
to r also sch con exc enfe veh	educe congestion and queuing. They will agree and enforce delivery and dispatch edules for HGVs, that avoid causing gestion on the local road network and essive emissions to atmosphere. Also, prce a "no unnecessary idling" policy for all icles on the application site.			
Cha	pter 9: Landscape and Visual			
Imp set min rece	lementation of external lighting strategy as out in the Lighting Impact Assessment to imise effects of lighting on AONB and visual eptors	BAL and Principal Contractor	CoCP/CEMP (Appendix 2B)	Lighting Impact Assessment
Imp mit out Plan Ianc	lementation of landscape and visual gation and enhancement measures as set the Landscape and Ecology Management n. Measures that have been designed for dscape and visual purposes include: Extend scrub planting at northern (Downside Road) end of North Side Road with provision for rides in scrub. In the island bed surrounded by North Side Road and Downside Road this planting is to include a high proportion of tree planting, some of which will be extra heavy standard trees, to provide increased screening for residents in Melody Cottage	BAL	Planning condition	Section 9.8
•	Reinforce woodland planting on the top and northern side of western end of the northern bund close to junction of North Side Road and Downside Road. Plant native climbers (honeysuckle, ivy and clematis) on trellis along northern side of acoustic wall to soften appearance in views			
•	Woodland at junction of Downside Road and A38 to be managed to improve structure and composition, undertake 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 help reduce light ingress into the woodland			
•	Extend woodland copse on the eastern side of the A38 northern traffic island to east. Scallop eastern edge of woodland extension			
•	Reinforce and thicken existing hedgerow in the field between A38 and Felton Common			



	Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference
	and allow to grow to maximum 1.5m height			
•	Reinforce and thicken existing hedgerow alongside section of boundary north of the southern A38 traffic island and allow to grow to maximum 1.5m height			
•	Introduce extra heavy standard trees into section of A38 boundary hedgerow south of the southern A38 traffic island and allow hedgerow section to grow out to maximum height of 1.5m to improve screening effectiveness			
•	Gruffy's Field (south of Silver Zone car park's southern boundary); Introduce small copses in south-eastern and south-western corners; introduce parkland trees; and reinforce and thicken boundary hedgerow to maximum height of 1.5m			
•	Silver Zone Car Park Extension (Phase 2) to have 2m high perimeter bund with design, planting mix and management strategy to replicate existing perimeter bund Silver Zone Car Park Extension (Phase 1)			
Cha	apter 10: Land Quality			
Intr	usive investigation	BAL and Principal Contractor	Planning condition and/or CEMP (Appendix 2B)	Section 10.8
Poll	lution control measures	Principal Contractor	Planning conditions, CEMP (Appendix 2B) and Environmental Permit	Section 10.8
Soil	retention, reuse and imported materials	Principal Contractor	Planning condition, CEMP (Appendix 2B) and CL:AIRE Definition of Waste: Development Industry Code of Practice (version 2)	Section 10.8
Soil	gas, vapour and radon gas protection	Principal Contractor	Planning condition, building control and CEMP (Appendix 2B)	Section 10.8





Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference
UXO briefing and discovery protocol	Principal Contractor	CEMP (Appendix 2B) and CDM 2015	Section 10.8
Chapter 11: Biodiversity			
Production and implementation of a CEMP	Principal Contractor	Planning condition	Appendix 2B
Production and implementation of a Landscape and Ecology Management Plan	BAL and Principal Contractor	Planning condition	Section 11.8
Suitably Qualified Ecologist / Ecological Clerk of Works / Ecological Contractors to manage, monitor and implement all ecological aspects of the Proposed Development	BAL and Principal Contractor	Planning condition and CEMP (Appendix 2B)	Section 11.8 and Appendix 11K
Construction of landscape perimeter soil mounds	BAL and Principal Contractor	Planning condition and CEMP/Landscape and Ecological Management Plan (LEMP)	Section 11.8 and Appendix 11K
Retention and protection of all boundary habitats and trees (apart from those specifically identified as being removed through the development) with suitable offsets and barriers	BAL and Principal Contractor	Planning condition and CEMP (Appendix 2B)	Section 11.8 and Appendix 11K
Use of dust suppression techniques	BAL and Principal Contractor	Planning condition and CEMP (Appendix 2B)	Section 11.8 and Appendix 11K
Use of pollution control and response methods during construction and operation	BAL and Principal Contractor	CEMP (Appendix 2B) and Bristol Airport Operational Procedures	Section 11.8 and Appendix 11K
Lighting to not exceed 0.5 lux at the boundary of the Silver Zone Car Park Extension (Phase 2) area and within or above the woodland adjacent to the A38/Downside Road Junction associated with the A38 Highway Improvement Works. Lighting to not exceed 1 lux at the boundary of the Silver Zone Car Park (Phase 1)	BAL and Principal Contractor	Planning condition and CEMP (Appendix 2B)/LEMP	Section 11.8 and Appendix 11K
Chapter 12: Surface Water and Flood Risk			
Water management during construction.	Principal Contractor	Planning condition or CEMP (Appendix 2B)	Section 12.10
Pollution control measures during construction.	Principal Contractor	CEMP (Appendix 2B)	Section 12.10



Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference	
Management of surface water runoff - attenuation and appropriate treatment before infiltration.	BAL	Planning condition	Section 12.10 FRA (Appendix 12A) and Drainage Strategies (Appendices D and E in the FRA).	
Chapter 13: Groundwater				
Water management during construction	BAL or Principal Contractor	Planning condition or CEMP (Appendix 2B)	Section 13.10	
Pollution control measures	Principal Contractor	Environmental Permit	Section 13.10	
Groundwater infiltration	BAL	Planning condition	Section 13.10	
Groundwater monitoring	BAL	Planning condition	Section 13.10	
Chapter 14: Historic Environment				
Avoidance of disturbance to of former lead extraction (HER 2186)	BAL or Principal Contractor	CEMP (Appendix 2B)	Section 14.11	
Early construction of bund to screen Long barrow 350m southwest of Cornerpool Farm (SM1008291)	BAL or Principal Contractor	CEMP (Appendix 2B) /Planning condition	Section 14.13	
Chapter 17: Carbon and Other Greenhouse Gas Emissions				
A range of measures to minimise energy use and GHG emissions during the construction of the Proposed Development	BAL or Principal Contractor	CEMP [Appendix 2B] and Carbon and Climate Change Action Plan (Planning Condition)	Section 17.8	
Consideration of whole-life carbon in materials selection to reduce embodied carbon wherever possible	BAL	CEMP [Appendix 2B] and Carbon and Climate Change Action Plan (Planning Condition)	Section 17.8	
A combination CHP, wind and PV will be utilised to provide 15% renewables on the estate. The BER (Building Emission Rate) will be reduced where ever commercially viable to the	BAL	DAS	Section 17.8	



Environmental measure	Responsibility for implementation	Compliance mechanism	ES section reference
lowest values, making the renewables significantly more practical to deliver on the estate			
A range of passive measures to minimise energy use and GHG emissions during the operation of the Proposed Development, as listed in Table 17.7	BAL or Principal Contractor	DAS	Section 7.8
A range of active measures to minimise energy use and GHG emissions during the operation of the Proposed Development, as listed in Table 17.7	BAL or Principal Contractor	DAS	Section 17.8

Monitoring

- If planning permission is to be granted, there is a need to consider whether it is appropriate to impose monitoring requirements via a condition imposed on the grant of planning permission; or a planning obligation.
- 2.5.5 Monitoring, where it is required is explained further in the relevant technical chapters (**Chapters 6-17**).
- ^{2.5.6} In addition, a range of a monitoring measures are proposed as part of the Section 106 Heads of Terms or planning conditions.

Management plans

A number of management plans and strategies will be produced and/or updated as part of the Proposed Development. These will describe how the embedded environmental measures will be delivered and will be produced and then finalised prior to the commencement of all site works (as appropriate).

Construction Environmental Management Plan (CEMP)

- The CEMP (**Appendix 2B**) provides an overview of the standard construction management measures that would be implemented as part of the Proposed Development. As such, it aims to ensure that construction activities for the Proposed Development are carried out in accordance with legislation and best practice for minimising the effects of construction on the environment and local communities.
- 2.5.9 The key objectives of a CEMP are to:
 - Provide a mechanism for delivering many of the embedded environmental measures described in the ES;
 - Ensure compliance with legislation via outlining the need for consultation with consultation bodies (as defined in Regulation 2 in the EIA Regulations) and by obtaining necessary consents and licences from relevant bodies;





- Provide a framework for monitoring and compliance auditing and inspection to ensure the environmental measures included in the Proposed Development are being implemented;
- Ensure environmental best practices are adopted throughout the construction stage;
- Provide a framework for dealing with adverse effects as they occur; and
- Ensure a prompt response should unacceptable adverse levels be identified during the works.

Site Waste Management Plan

- 2.5.10 SWMPs will be prepared on a site by site basis in advance of the construction phase by the appointed Principal Contractor, in accordance with best practice waste management for the application site. This plan will form part of the CEMP and will detail procedures for managing general construction waste and procedures for managing excavated ground materials. These will include, amongst others:
 - Measures to minimise the production of waste and maximise segregation, recycling and recovery;
 - Appropriate handling and storage techniques and locations;
 - Procedures for sampling excavated soils to confirm the levels of contamination and procedures for any subsequent on-site treatment or off-site disposal;
 - Waste streams, amount, frequency, disposal companies and treatment and disposal routes; and
 - Detail regarding dedicated arrangements and facilities for specialist waste.

Dust Management Plan

- A Dust Management Plan (DMP), forming part of the CEMP, will be prepared in advance of the construction phase by the Principal Contractor. The DMP will identify potential sources of dust emissions and the associated potential impacts and will detail the measures to be implemented at the application site to reduce dust and particulate emissions.
- 2.5.12 The aim of the DMP will be to:
 - Minimise dust generation and migration from the application site; and
 - Ensure nuisance caused to nearby receptors from dust is kept to a minimum.

Construction Traffic Management Plan

^{2.5.13} Forming part of the CEMP, the Construction Traffic Management Plan will establish vehicle routing, providing information on best practice procedures to follow when considering movements to and from the application site by all construction vehicles. This will be prepared in advance of the construction phase by the Principal Contractor.

Ground Investigation Management Plan

An intrusive ground investigation will be carried out prior to the commencement of the construction phase of the Proposed Development. This strategy will be developed to characterise the ground conditions within each of the components of the Proposed Development within the application site. The findings of the ground investigation will inform the package of measures to be included within the detailed design prior to the commencement of construction.





Ground Remediation Strategy

^{2.5.15} The remediation strategy will specify what soils or materials may be re-used. Any re-use of soils/materials will be controlled under the CL:AIRE Definition of Waste: Development Industry Code of Practice¹⁵ to confirm they are suitable both chemically and geotechnically.

Soil Management Plan

A Soil Management Plan will be developed prior to the commencement of the construction phase of each component. This will define how soils associated with the Proposed Development will be handled, stored and re-used to avoid, minimise or mitigate effects on the environment and surrounding area.

Pollution Incident Control Management Plan

- ^{2.5.17} The appointed contractor(s) will develop and implement a Pollution Incident Control Management Plan (PICMP) which will detail their response in the event of any pollution incident on the application site.
- ^{2.5.18} The following measures and information will be included and detailed further in the PICMP to manage any incidents and limit adverse effects on the receiving environment:
 - Description of the procedure to be followed in the event of a pollution incident (in accordance with the 'Incidence Response' procedure);
 - Description of the procedure for the notification of appropriate emergency services, authorities and personnel on the construction site;
 - Description of the procedure for the notification of relevant statutory bodies, environmental regulatory bodies, local authorities and local water and sewer providers;
 - Maps showing the locations of local emergency services facilities such as police stations, fire authorities, medical facilities, other relevant authorities, such as the Environment Agency (EA) and also the address and contact details for each service and authority;
 - Contact details for the persons responsible on the construction site for pollution incident response; and
 - Contact details of a competent spill response company which can be contacted at short notice for an immediate response.

Landscape and Ecological Management Plan

- An integrated/embedded landscape, visual and ecology mitigation masterplan forms part of the planning application alongside measures to mitigate ecological impacts. Measures that have been designed for landscape and visual purposes include (inter alia):
 - New tree planting to be undertaken to replace that lost and to reinforce existing high levels of tree cover along the relevant lengths of the boundary of Bristol Airport. The design of new planting has been located to deliver screening and softening of large-scale built form, with particular regard to MSCP Phase 3, and is proposed close to the Downside Road entrance to the airport and alongside the boundary with Cook's Farm where it will reinforce the existing tall



¹⁵ CL:AIRE (2011) The Definition of Waste: Development Industry Code of Practice, [online]. Available at: <u>https://www.claire.co.uk/projects-and-initiatives/dow-cop/28-framework-and-guidance/111-dow-cop-main-document</u> [Checked 04/12/2018].

hedgerow providing increased longer-term screening for some visual receptors in Downside and Cook's Bridle Path;

- Parkland planting alongside the northern boundary close to the residential properties on the southern side of Downside Road. Although the primary purpose of this planting is habitat enhancement for horseshoe bats, it will establish to provide longer-term enhancement of the existing screening of the closest parts of the northern area surface car park and the proposed gyratory road;
- New planting on the northern side of the proposed extended terminal building and canopies in the style of the present ornamental and street tree planting. This planting will break up the mass of the extended terminal building in occasional close distance views that are available to visual receptors from elevated locations to the north on the Oatfield Ridge;
- Replacement hedgerow and tree planting alongside sections of the proposed gyratory road; and
- A perimeter bund around the western, southern and eastern boundary of the Silver Zone car park extension (Phase 2) to be designed and planted to replicate the design of the bund sited around the existing Silver Zone car park extension (Phase 1).
- 2.5.20 Where applicable, for each development component, detailed landscaping plans will be submitted as a reserved matter.