Brabazon at the former Filton Airfield

Environmental Impact Assessment Scoping Report

On behalf of YTL

YTL Developments
YTL GROUP

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Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN
T: +44 (0)118 950 0761 E: PBA.Reading@stantec.com

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	Name	Position	Signature	Date
Prepared by:	Natasha Worrall	Environmental Planner	NW	29.11.2021
Reviewed by:	Sophie Nioche	Associate Environmental Planner	SN	29.11.2021
Approved by:	Stefan Boss	Director – Environmental Planning	SB	30.11.2021
For and on behalf of Stantec UK Limited				

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1 Introduction

1.1 Project Background

1.1.1 This Environmental Impact Assessment (EIA) Scoping Report has been prepared by Stantec UK Ltd (Stantec) on behalf of YTL Developments (UK) Ltd (the Applicant) in relation to an outline planning application for a mixed-use development (hereafter referred to as the Proposed Development) at Brabazon at the former Filton Airfield (hereafter referred to as the Site, which is defined on the Site Location Plan included in **Appendix A**).

1.1.2 The description of the Proposed Development is as follows:

Mixed use development on 141.7 hectares of land comprising: residential development for up to 6,500 dwellings; Student Accommodation up to 50,000 sqm (Sui Generis); Business Office and Research development up to 270,000 sqm (Use Class E); General Industry up to 55,000m2 (B2); 3 no. Hotels (Use Class C1); Extra Care accommodation up to 600 units (Use Class C2); Education provision to include a Secondary School (8.31ha), 2 no. Primary Schools (total 5ha), 2 no. Children's Nurseries (total 0.8ha) and up to 55,000 sqm of further education buildings (Use Class E and F1); Community facilities (Use Class E, F1 and F2); Other E use class and Sui Generis development inclusive of nightclubs, public house and other drinking establishments, and hot food takeaway together with; supporting infrastructure and facilities including demolition, ground works and remediation, highways and parking, utilities, landscaping, sustainable urban drainage system, water basins and public open space. Outline application including access, with all other matters reserved.

1.1.3 Further information about the Proposed Development can be found in **Chapter 3**. The Site is located within the administrative boundary of South Gloucestershire Council (SGC).

1.1.4 Due to the sensitivity of the environment and the characteristics of the Proposed Development, the Applicant intends to voluntarily undertake an EIA of the Proposed Development which will be documented in an Environmental Statement (ES). The ES, which will be prepared in compliance with the requirements of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ("the EIA Regulations"), will be submitted with the planning application.

1.2 Project History

1.2.1 There is already a planning consent that covers the Site (see **Appendix A**). An ES was prepared in 2014 and submitted by BAE Systems ('2014 ES') (Planning Application Reference PT14/3867/O) to support a planning application, for which the development description is as follows:

"outline planning permission for provision of up to a maximum of 2,675 residential units, including affordable and live-work units, extra care housing, provision of two primary schools and one secondary school, library, children's nurseries and health centre. The application also includes provision of public open space, sports facilities, recreation and play provision, and allotments. With respect to employment uses the planning application is seeking consent for up to 24 hectares of flexible space for B1 (business), B2 (general industry) and B8 (storage and distribution) uses. Within a neighbourhood centre there will be 1.1 hectares of A1 floor space for a retail food store and 0.36 hectares for a pub. In addition, the neighbourhood centre includes 1.1 hectares as a mixed-use parcel that will include small retail units, health centre and chemist, with apartments above."

1.2.2 An ES Addendum to the 2014 ES was prepared in 2015 ('2015 ES Addendum') by BAE Systems. The 2015 ES Addendum comprised of a Regulation 22 submission of further information and changes to the masterplan required as a result of consultation and consultee

feedback on the 2014 ES (related to assessments of air quality, cultural heritage, ecology and public rights of way).

1.2.3 YTL Developments acquired the Site from BAE Systems in 2015.

1.2.4 An ES Addendum to the 2014 ES was prepared in 2017 ('2017 ES Addendum'). YTL sought to amend the planning application (Planning Application Reference: PT14/3867/O) to include various amendments to the submitted parameter plans.

1.2.5 Planning permission was granted on 1st March 2018 based on the following description of development:

"Mixed use development on 141.733 hectares of land comprising: residential development for up to 2,675 dwellings and apartments (comprising 2,635 x Use Class C3 and 40 x Live Work Units – Sui Generis); 24ha of stand-alone employment land (comprising up to 12ha Use Class B1a and a minimum of 12ha Use Class B1b/c, B2); 120 Bed Hotel up to 3,800 sqm (Use Class C1); Rail Station (0.45ha Use Class Sui Generis); Education provision to include a Secondary School (8.31ha), 2 no. Primary Schools (total 5ha) and 2 no. Children's Nurseries (total 0.8ha) (all Use Class D1); Community Centre incorporating Library, Built Sports facilities and Doctors surgery up to 3,400sqm (Use Classes D1 & D2); Dental Surgery up to 800sqm; (Use Class D1); 70 Bed Extra Care Facility up to 12,500sqm (Use Class C2); Shops/Financial Services/Food and Drink facilities up to 4,787sqm (Use Classes A1, A2, A3, A4 and A5) – comprising Retail Supermarket up to 2,787sqm gross maximum (Use Class A1); drinking establishment(s) up to 800sqm (Use Class A4); Business Offices up to 500sqm (Use Class B1) together with; supporting infrastructure and facilities including demolition, ground works and remediation, highways, utilities, landscaping, sustainable urban drainage system, wildlife water basins and public open space. Outline application including access, with all other matters reserved".

1.2.6 Construction of the first phase of the extant planning permission commenced in 2020 ('Brabazon Phase 1') and is under construction at the time of writing (Planning Application Reference PT14/3867/O).

1.2.7 A Section 73 (S73) application was submitted and approved in 2021 (the '2021 S73') (Planning Application Reference P21/02390/RVC) because the approved 2018 parameter plans did not make any allowance for the Arena and associated planning applications (four planning applications required to deliver the Arena were submitted in 2019). Ensuring the Site could respond to the introduction of the Arena and facilitating multi-modal access to it was the principal rationale behind the S73 planning application. The S73 did not change the description of development as set out above.

1.2.8 This EIA Scoping Report is being submitted for an EIA to support a new outline planning application for *inter alia* an uplift in the number of residential units that the Proposed Development is providing from 2,675 to 6,500 as set out in **Paragraph 1.1.2**.

1.3 Purpose of this Report

1.3.1 This EIA Scoping Report has been prepared to document the proposed scope and approach of the EIA. The EIA will consider the likely significant effects resulting from the Proposed Development, as well as the cumulative effects with other existing and/or approved developments in the local area. This approach is intended to provide comprehensive and robust environmental information on the likely significant effects of the Proposed Development on the environment.

1.3.2 Understanding the likely significant effects that the Proposed Development may have on the environment is an integral part of the design process that is currently underway. The purpose of this report is to document the scoping exercise that has been undertaken in order to identify

the type and characteristics of any likely significant environmental effects associated with the Proposed Development.

1.3.3 The environmental topics that are proposed to be included in the EIA scope and those that are not (referred to as 'scoped out') are presented respectively in **Chapters 7-14** and **Chapter 15,** respectively. Accordingly, this report details how the environmental issues which have been included in the EIA scope are proposed to be examined and progressed as part of the EIA. The aim of the EIA is to protect the environment through minimising adverse environmental effects and to take advantage of opportunities for environmental enhancement. For those topics that are proposed to be 'scoped out' as significant effects are not likely, this Scoping Report identifies an evidence led-approach for so-doing.

1.3.4 This report provides information to key consultees regarding the proposal pursuant to the 'EIA Regulations' and sets out the intended scope of the EIA and content of the ES. On the basis of this report, and in accordance with Regulation 15 of the EIA Regulations, the Applicant therefore requests a Scoping Opinion from South Gloucestershire Council.

1.4 Terminology

1.4.1 The following terms have been used within this Scoping Report:

- '**Proposed Development'** – the application for which planning permission is being sought, as described in **Chapter 3**;
- **'the Site'** – the Site area being developed, as per **Appendix A** and described in **Chapter 2**;
- '**SGC** – South Gloucestershire Council (the determining authority);
- '**the Applicant'** – YTL Developments;
- **'2014 ES'** – The Environmental Statement (ES) submitted in 2014 by BAE Systems;
- **'2015 ES Addendum'** – A Regulation 22 submission comprised of further information required as a result of consultation and consultee feedback on the 2014 ES;
- **'2017 ES Addendum'** – An ES Addendum to the 2014 ES which was submitted in 2017 by YTL;
- **'2021 S73'** – A Section 73 application submitted by YTL in 2021 to make allowance for the arena in the development proposals;
- **'2021 ES'** – the ES submitted with the S73 application;
- **The extant planning consent** – outline planning permission for 2,675 dwellings and associated development at the former Filton Airfield, granted in March 2018; and
- **Brabazon Phase 1** – The phase of the extant planning consent comprising 302 units that is currently under development (at the time of writing). These units have been included in the 2036 baseline (**Section 6.2**).

1.5 Report Structure

1.5.1 This report continues with the following:

- **Chapter 2:** Site Description
- **Chapter 3:** Proposed Development

- **Chapter 4:** Planning Policy and Context
- **Chapter 5:** EIA Process
- **Chapter 6:** Proposed Scope of the EIA
- **Chapters 7 – 14:** Topics included in the EIA Scope;
- **Chapter 15:** Topics Not included in the EIA Scope;
- **Chapter 16:** Summary and Next Steps; and
- Appendices.

2 Site Description

2.1 Introduction

2.1.1 The Site lies between the A38, the A4018 and the residential areas of Filton, Patchway, Brentry and Catbrain, in an area known as the North Fringe of Bristol. The Site is located within the administrative boundary of SGC. The Site extends to approximately 141.7 hectares (ha), with the majority of the Site comprising the former Filton Airfield and associated buildings and hangars. A Site Location Plan is provided in **Appendix A**.

2.2 Site Location

2.2.1 The boundaries of the Site are broadly defined by the A38 (Gloucester Road) and Royal Mail sorting office to the east, the Charlton Hayes mixed-use development and Hayes Way / Merlin Road to the north (with the Cribbs Causeway Regional Shopping Centre beyond Merlin Road), the A4018 to the west and the Hallen Freight Line and Airbus Estate to the south.

2.2.2 The section of the A38 adjacent to the Site is dual carriageway and provides a key link between Bristol and the M5, to the north. Current principal access to the Site from the public road is from the A38 and then New Road via an underpass under the A38. Anew access has been created off Hayes Way as part of the Phase 1 development.

2.2.3 The Royal Mail sorting office is a substantial structure immediately adjacent to the eastern boundary of the Site. It is serviced by a slip road from the A38 (the B4057) that runs parallel to the A38 and re-joins to the north of the sorting office. A small part of the Site lies to the east of the A38 and includes a lagoon, which was designed to contain a fuel spillage on the eastern side of the airfield in an emergency.

2.2.4 The B4057 also provides access to Hayes Way / Merlin Road that runs close to the northern boundary of the Site. Hayes Way serves the residential area of Charlton Hayes.

2.2.5 West of Charlton Hayes is the Cribbs Causeway Regional Shopping Centre and Patchway Trading Estate. Principal access to Cribbs Causeway is via Junction 17 of the M5 but local access is also available via Hayes Way and Highwood Road.

2.2.6 The Hallen Freight Railway Line (also known as the Henbury Loop Line and Filton to Avonmouth line) runs to the south of the Site. This line was opened in 1910 as a direct route to Avonmouth Docks, and connection to Severn Beach. The line historically had a number of stations, including one at Filton and carried passengers until 1964. Since 1964 the line has only been used for rail freight.

2.2.7 Immediately to the south of the Site fronting on to the A38 is the Airbus estate, comprising the Airbus freehold Site and land leased from BAE. Adjacent sites are occupied by Rolls Royce, GKN, MBDA and BAE Systems, which together employ over 10,000 workers and form a tight cluster of high-tech industry that comprises the majority part of the internationally recognised aerospace / defence cluster in the southwest.

2.2.8 Within and to the south of the Site the Applicant has submitted four planning applications for a new arena. The arena will comprise a change of use, refurbishment and external alterations to the Brabazon Hangar building, construction of a pedestrian bridge over the Henbury railway line, connecting the Hangar to Filton Airfield, demolition of existing structures around the hangar and alterations to existing areas of hardstanding and temporary car parking provision on the Site. Further detail on the arena development is provided in **Section 6.4**.

2.3 Site Description

2.3.1 The Site lies on a gentle slope, south-east of a ridgeline followed by the M5 motorway up to its junction with the M4. The land across the Site rises from approximately 55 metres Above Ordnance Datum (AOD) in the southeast corner to approximately 70 metres AOD half way along the runway before gently falling to approximately 40 metres AOD beyond the end of the runway at Henbury Trym stream.

2.3.2 The principal existing feature of the Site is the main runway, which runs in an east-west direction. The runway is 2,467 metres in length.

2.3.3 At either end of the runway are large circular areas for turning of aircraft, approximately 180 metres in diameter, and at the western end of the runway is an area of concrete used as part of an arrestor system to prevent overrun of aircraft.

2.3.4 In addition to the main runway, there are the remnants of a crosswind runway, which runs almost perpendicular to the eastern end of the main runway. North of the main runway there are three former taxiways, which were used for the movement of aircraft, and four areas of airfield apron, which were used for aircraft parking. A cluster of airfield buildings remains to the north of the runway and these include three hangar buildings that are nationally listed (grade II).

2.3.5 Apart from areas of concrete hardstanding forming the runways, ground cover within the Site boundary is predominantly grassland, consistent with the former use as an airfield. North of the main runway there are areas of more substantial vegetation and trees, the most notable of which is the Filton Wood Site of Nature Conservation Interest (SNCI). A range of buried services is present on the Site including surface water drainage, foul water drainage and electrical connections.

2.3.6 The functional space across the Site is open and expansive in character with long distance views from the highest point in the centre of the runway. Views to the west are of the ridgeline beyond the M5 with Haw Wood on the summit. Views to the south are of the edge of Brentry, Elm Farm, the caravan park, Cedar House and the BAE Systems / Airbus estate. Views to the east are of the very distant Cotswold Hills and views to the north are of Cribbs Causeway and the new link road (Hayes Way) and the Charlton Hayes development.

2.3.7 Brabazon Phase 1 is the first phase of the extant planning consent which comprises 302 units that are currently being constructed (at the time of writing). Brabazon Phase 1 lies in the north-east of the Site and accessed from the Blenheim roundabout on Hayes Way.

2.4 Environmental Context

2.4.1 The existing Filton Airfield Site has one access provided via the Combination Junction. The Combination Junction links the Site to the A38 Gloucester Road.

2.4.2 The Site is well placed in relation to both the strategic and local road and public transport network. It is situated to the south of the M5 motorway junctions 16 and 17 and lies between the A4018 and A38 which provide radial connections into Bristol city centre and key public transport corridors as part of the Greater Bristol Bus Network. The Site is also well placed in relation to the A4174 Avon ring road providing access to the M32 and M4 in the east.

2.4.3 North of the Site, beyond the urban areas of Patchway and Cribbs Causeway, and the M5 corridor is an area of Green Belt containing scattered dwellings, farms, villages and the settlement of Almondsbury. Northwest of the Site, along the shore of the Severn Estuary are areas of heavy industry, power stations, trading estates, manufacturing, and other commercial uses. These land uses lead to Avonmouth Docks, which is to the south-west of the Site.

2.4.4 East of the Site is the manufacturing site operated by Rolls Royce and office employment uses. Beyond these land uses are the urban areas of Patchway, Stoke Gifford and Harry Stoke, which are predominantly residential areas with associated schools and other community uses. East of the Site there is also significant railway infrastructure including main lines to Bristol, London Paddington and South Wales.

2.4.5 Land to the south east of the Site has a predominantly urban character but this is a lower density than other areas to the north, east and south of the Site. An area of Green Belt extends in towards the city beyond the M4 leading to a registered park and garden at Lockleaze. This green corridor either side of the B4058 is flanked by University of the West of England Frenchay campus and the residential areas of Frenchay and Broomhills.

2.4.6 Land south of the Site includes Filton Golf Course (which is an SNCI) and the predominantly residential areas of Filton, Brentry, Southmead and Henbury, with the City of Bristol further south.

2.4.7 There are relatively few Sites designated for their natural or cultural heritage interest in the vicinity of the Site. Intertidal areas in the Severn Estuary are designated as a Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Special Protection Area (SPA), with particular interest for migratory fish and birds. There are also two smaller SSSIs north of the M5 to the south west of Almondsbury.

2.4.8 There are areas of ancient woodland within the green belt to the west of the Site, registered parks and gardens to the south east and south west and scheduled monuments to the south west, south and east, although these are some distance from the Site. There are relatively few listed buildings in the immediate vicinity of the Site, although there are higher numbers of listed buildings in the wider area to the south, including at Henbury, Westbury on Trym, Stapleton and Frenchay.

3 Proposed Development

3.1 Introduction

3.1.1 The description of the Proposed Development is as follows:

Mixed use development on 141.7 hectares of land comprising: residential development for up to 6,500 dwellings; Student Accommodation up to 50,000 sqm (Sui Generis); Business Office and Research development up to 270,000 sqm (Use Class E); General Industry up to 55,000m2 (B2); 3 no. Hotels (Use Class C1); Extra Care accommodation up to 600 units (Use Class C2); Education provision to include a Secondary School (8.31ha), 2 no. Primary Schools (total 5ha), 2 no. Children's Nurseries (total 0.8ha) and up to 55,000 sqm of further education buildings (Use Class E and F1); Community facilities (Use Class E, F1 and F2); Other E use class and Sui Generis development inclusive of nightclubs, public house and other drinking establishments, and hot food takeaway together with; supporting infrastructure and facilities including demolition, ground works and remediation, highways and parking, utilities, landscaping, sustainable urban drainage system, water basins and public open space. Outline application including access, with all other matters reserved.

3.2 Development Proposals

3.2.1 The proposal to increase the scale of development is a product of an ever-changing context. In part it is in response to the consent of the YTL Arena, which was granted in March 2020; this has transformed the Site from being a mixed-use residential led neighbourhood to a destination in its own right. We are also facing a climate and ecological emergency. We not only need to build more homes, but also build them in the right places. This means maximising the potential of brownfield land like Brabazon. Otherwise, more new homes will be required on our green fields and the Green Belt. The Proposed Development seeks to accord with meeting South Gloucestershire Council's emerging Urban Lifestyle policies which aim to maximise new housing on sustainable brownfield sites. Brabazon lies in a highly sustainable location incorporating new major public routes; the existing outline consent ultimately represents a missed opportunity to 'do more'; something that this revised application will seek to address.

3.2.2 Within the extant planning consent for the Site there is provision for 2,675 dwellings. The Proposed Development will see an increase to 6,500 dwellings, accommodated through an increase in building height and density. This will address the current shortfall in meeting the Core Strategy allocation of 5,700 homes at the Cribbs Patchway New Neighbourhood as presently consent for only circa 4,700 homes exist.

3.2.3 The Density Parameter Plan will show greater densities across the Site. For example, 'low range' density in the extant planning consent was between 30 and 60dph, now increased in the Proposed Development to 60dph. A 'High range 2' density in the extant planning consent was up to 150dph, now increased in the Proposed Development to up to 300dph. As for the extant planning consent, density will still broadly decrease from east to west across the Site.

3.2.4 The Building Heights Parameter Plan will show an increase in building heights, with greater building heights in the eastern part of the Site and an area within the central eastern part, around Brabazon Park, with building heights of up to 18 storeys and for 2 buildings up to 30 storeys.

3.2.5 The land use that is predominantly proposed to be residential will be up to 90% residential, with up to 10% to be occupied by non-residential uses. This will help to enable areas to be more varied in character, such uses might include shared community or leisure facilities, or small scale retail or commercial uses. Residential use also includes care homes and senior living.

3.2.6 The extant planning consent provided for an area of employment land use in eastern part of the Site, adjacent to the A38. The Proposed Development retains employment land use; however, it is proposed that this be incorporated into mixed use development areas that will include retail, commercial spaces, offices, university, student accommodation, residential, hotel, community uses and also live-work uses. The proposals seek to move away from the strict zoned approach to land use that pertains in the extant consent.

3.2.7 As part of the transport strategy, additional densification sought within the Proposed Development will be achieved through additional public transport capacity alongside enhanced cycle and pedestrian infrastructure. Some realignment of the internal road layout is currently being considered albeit many of the amendments have already been secured through the 2021 S73 process.

3.2.8 The Landscape Strategy approved through the extant planning consent is broadly being retained, however there will be some modifications to accommodate the Proposed Development particularly in the western half of the Site.

3.2.9 The extant planning consent includes the provision of a Secondary School, 2 Primary Schools and 2 Children's Nurseries. These are being retained within the Proposed Development, and will be broadly located within the same part of the Site as previously proposed.

3.2.10 Other land uses which formed part of the extant planning consent will also be retained within the Proposed Development, including hotels, extra care, community centre incorporating a library, built sports facilities, doctors surgery and dental surgery.

3.2.11 As for the extant planning consent, the Proposed Development will also comprise supporting infrastructure and facilities including demolition, ground works and remediation, highways and parking, utilities, landscaping, sustainable urban drainage system, water basins and public open space.

3.2.12 The higher density proposal will result in significantly more jobs, during the construction phase and at completion for local people. The Economic Benefits Statement prepared by Quod for the Original Outline Application suggested there could be 7,785 jobs created at end use from the scheme. Given the proposed increase in density, the number of jobs created will be significantly higher than this and will be discussed in more detail in the Environmental Statement. As such, there will be significant economic benefits surrounding this revised application.

4 Planning Policy and Context

4.1 Introduction

4.1.1 The Site has a long history and has played an important role in Bristol's aerospace engineering sector. The historic landmark is now being transformed into a thriving new neighbourhood for Bristol and the South-West. Brabazon aims to be different, providing a wide range of house types, but beyond that delivering a new vibrant community and wide-ranging facilities for residents and visitors alike to live, work and enjoy.

4.1.2 The Site is a substantial part of the Cribbs Patchway New Neighbourhood (CPNN) and extends to some 141.7 hectares. The Site lies between the A38, the A4108 and the communities of Filton, Patchway, Brentry and Catbrain Hill. The Proposed Development will integrate with these existing surrounding communities and will help to address the local housing need and provide a range of new jobs both during the construction period and operational phases of development. The Site is allocated for mixed use development within the adopted South Gloucestershire Core Strategy as part of Policy CS26: CPNN.

4.1.3 Outline planning consent was granted in 2018 to transform the former Filton Airfield into "Brabazon" (PT14/3867/O). In 2020, detailed planning consent was also received to reimagine the historic Brabazon Hangars into a new 17,000-capacity Arena for Bristol (19/05500/P).

4.1.4 This chapter highlights the key national and local policy relevant to the Proposed Development and EIA Scoping Opinion Process.

4.2 National Planning Policy

National Planning Policy Framework (2021):

4.2.1 At a National level planning policy is set out within the National Planning Policy Framework (the Framework). The Framework explains that the purpose of the planning system is to contribute to the achievement of sustainable development. The Framework continues to explain that in order to achieve this aim the planning system has three overarching objectives; an economic objective; a social objective and an environmental objective.

4.2.2 Paragraph 60 of the NPPF states:

'To support the Government's objective of significantly boosting the supply of homes, it is important that a sufficient amount and variety of land can come forward where it is needed, that the needs of groups with specific housing requirements are addressed and that land with permission is developed without unnecessary delay.'

4.2.3 In the context of Brabazon, significant weight should be placed on the need to deliver a strategic development for South Gloucestershire and the wider West of England sub-region on a brownfield Site. The Site is well established as being in a highly sustainable location and has a long-standing allocation for development in the adopted Core Strategy.

4.2.4 Part of Paragraph 119 of the NPPF states:

'Strategic policies should set out a clear strategy for accommodating objectively assessed needs, in a way that makes as much use as possible of previously-developed or 'brownfield' land.'

4.2.5 Paragraph 141 of the NPPF states before thinking of altering Green Belt boundaries, the strategies should make *'as much use as possible of suitable brownfield Sites and underutilised land.'* The Brabazon proposals are in line with this policy and represent a

suitable use of currently underutilised brownfield land in a sustainable location. National Planning Policy makes it clear that the development of brownfield land is highly favourable over greenfield and especially Green Belt land.

4.3 Local Planning Policy

South Gloucestershire Core Strategy 2006 - 2027 (2013):

4.3.1 South Gloucestershire adopted the Core Strategy on 11th December 2013. Brabazon is included within the Cribbs Patchway New Neighbourhood (Policy CS26). The key part of this policy states: '*provision will be made for approximately 5,700 dwellings in new mixed-use communities, around 50ha of employment land, and greater diversity of commercial uses including additional retail, together with supporting infrastructure and facilities.'*

CS1: High Quality Design

4.3.2 Design has always been at the heart of the scheme at both a strategic masterplan scale and at the detailed level. The Masterplan proposals have been subject to two Design Review (Design West) workshops. At a detailed level the homes have been built to last and be flexible for residents. All houses have been fitted with solar panels and electric vehicle charging points; energy efficiency has been incorporated into all homes. Many of the houses have double height ceilings to the main living spaces and parking has been neatly incorporated into the design of homes, to reduce the rat run and focus on cars across the scheme. The design of the 'Hangar District' (phase 1) has won several awards which plays testament to the quality delivered throughout the initial phase.

CS7: Strategic Transport Infrastructure

4.3.3 Policy CS7 (Strategic Transport Infrastructure) requires priority to be given to the implementation of strategic infrastructure proposals. Under this policy several key projects are listed – this includes the Cribbs/Patchway New Neighbourhood Package and the re-introduction of passenger services on the Hallen Line/ Henbury Loop. Both packages will serve Brabazon and enable sustainable living.

CS8: Improving Accessibility

4.3.4 Policy CS8 sets out criteria by which new proposals will be assessed against providing a range of travel options other than the private car and states*: 'Priority will be given to providing the users of new development with a range of travel options other than the private car. The following principles will be applied in the consideration of planning applications and formulation of other Local Development Documents.*' The Brabazon proposals comply with this policy, with the emphasis of this development on being moving reliance away from the car and focussing on sustainable modes of transport. A new train station at Filton North is due to open in 2023 and the MetroBus will serve the Site with a frequency of six times an hour. There will be a range of dedicated cycle lanes and pedestrian only areas across the Site, making a movement towards sustainable transport a viable option.

CS11: Distribution of Economic Development Land

4.3.5 This Policy refers to the distribution of economic development land across SGC and identifies a total of 355ha of safeguarded employment in the North Fringe of Bristol. The redevelopment of the former Airfield offers an opportunity to respond to and to enhance the area's strength in research and development and the wider aerospace sector. The proposals will create significant job opportunities during both construction and operational phases of development.

CS15: Distribution of Housing

4.3.6 This policy states that: 'Between 2006 and 2027, covering a period of up to 14 years from adoption of the plan, a supply of deliverable and developable land will be identified to secure the delivery of a minimum of 28,355 new homes in accordance with the plan.' The policy sets out that the Cribbs Patchway New Neighbourhood is expected to deliver a total of 5,700 of these homes and therefore makes a vital contribution towards meeting these aims.

4.3.7 There is a focus on the relationship between local employment growth and housing to provide a prosperous and balanced local economy. Policies CS16 (Housing Density), CS17 (Housing Diversity), CS18 (Affordable Housing) and CS20 (Extra Care Housing) require developments to make efficient use of land; providing both market and affordable and provide Extra Care Housing in new neighbourhoods. Policy CS23 (Community Infrastructure and Cultural Activity) requires new development to provide or contribute towards additional, extended, or enhanced community and cultural infrastructure.

CS16: Housing Density

4.3.8 It is clear from the policy wording that the Council is supportive of higher density living, stating that: 'housing development is required to make efficient use of land, to conserve resources and maximise the amount of housing supplied.' In the context of Brabazon, which is an existing brownfield Site and is well located for a range of facilities and transport connections a higher density scheme is appropriate in this location. The highest densities are proposed within and around the proposed urban centre. This location is adjacent to the proposed new railway station serving the district and the public transport hub. Allowing a high-density scheme in this location will ensure that a generous provision of homes is delivered and will make an important contribution to the five-year housing land supply.

CS17: Housing Diversity

4.3.9 Brabazon will provide a range of housing types, both market and affordable, and in a range of sizes and tenure. There will be a particular focus on apartments where there is a current shortfall in the area, the policy states: '*in all localities, new housing development, comprising both market and affordable, must provide a wide variety of housing type and size to accommodate a range of different households.'* The Brabazon proposals follow this policy and acknowledges the shortfall of apartments in the urban fringe.

CS18: Affordable Housing

4.3.10 Policy CS18 states that on proposals of 10 or more dwellings, developers are required to achieve 35% onSite affordable housing. Following a detailed assessment of viability through the CPNN Framework Agreement and subsequent Site-Specific Agreement (SSA) processes, the extant consent establishes an affordable housing provision of 17%. This is commensurate with the significant infrastructure costs associated with the CPPN delivery plan. There will still be a considerable and important contribution towards the provision of on-Site affordable housing given the proposed numbers of dwellings; the proposed uplift in homes will naturally secure more affordable homes at Brabazon.

CS24: Green infrastructure, sport, and recreation

4.3.11 Policy CS24 states: '*Green Infrastructure assets are integral to sustainable communities.*' YTL wholly acknowledges this statement and Brabazon has a range of high-quality green and blue infrastructure provision across the scheme.

CS25: Communities of the North Fringe of Bristol

4.3.12 This policy sets out South Gloucestershire Council's aspirations for development in the North Fringe which includes the former Filton Airfield Site as part of the CPNN. Bringing forward the revised proposals will enable SGC to demonstrate delivery of a strategic housing and employment allocation and deliver more than what was previously envisaged.

CS26: Cribbs Patchway New Neighbourhood (CPNN)

4.3.13 This policy provides further detail regarding the CPNN proposals and sets out the requirement for an area-wide SPD to act as the policy delivery mechanism to ensure development is comprehensively planned and delivered in accordance with the vision. Brabazon takes up the largest land parcel of the CPNN Allocation and is looking to deliver not only the most homes in the CPNN, but also the highest quality sustainable living principles. The proposals ensure that a range of facilities will be delivered onSite to deliver a vibrant and sustainable community, the scheme will be well integrated and connected to the existing north Bristol community and will provide excellent transport links to the city centre and other locations across the UK.

4.3.14 There is an ambitious transport proposal for Brabazon which will be of benefit to the wider area. A new train station at Filton North and a range of Metrobus, park and ride and bus services will move reliance away from the car as a generous public transport programme is delivered over time, and active and sustainable travel methods encouraged.

4.3.15 In line with the policy requirement, Brabazon includes a range of services and amenities expected as part of a new high-quality imaginative community, including three new schools, medical facilities, a range of retail and leisure facilities, as well as the new YTL Arena. Brabazon will be a vibrant destination for visitors, and an accessible and sustainable community for new residents. A range of employment opportunities will be provided during the construction phase and permanent opportunities at both the Brabazon and new YTL arena, this scheme will provide a host of benefits to the local economy.

SGC Policies, Sites and Places Plan (2017)

4.3.16 The Policies, Sites and Places Plan (PSP) forms part of the Local Plan. The PSP was adopted on 8th November 2017. The document is split into two parts, with section one covering policies for managing new development, and part two covering the allocation and protection of Sites and places within South Gloucestershire.

4.3.17 The following policies are of most relevance to the Proposed Development:

PSP1: Local Distinctiveness

4.3.18 This policy states: ‘Development proposal(s) will be acceptable where the proposals demonstrate an understanding of and respond constructively to the buildings and characteristics that make a particularly positive contribution to the distinctiveness of the area / locality.’

4.3.19 Brabazon has been cleverly designed to incorporate and pay homage to the aviation history of the Site. Key roads have been named with the aviation past in mind, a heritage trail has been included to ensure residents and visitors are aware of the history of the Site and are able to visit key heritage points of the Site, such as the Brabazon Hangars and BACT Museum. The design of the houses has also incorporated unique aviation styles into the design.

PSP13: Safeguarding Strategic Transport Schemes and Infrastructure

4.3.20 This policy provides details on the MetroBus route extension which will serve the Site; there will be three MetroBus stops, each of which will be served by Metrobus six times an hour. The route will be segregated from other traffic to ensure a fast, direct, and reliable service is delivered. Furthermore, there will be a range of other public transport offerings at the Site, such as a new train station and alternative bus routes all of which are in accordance with Policy PSP13.

PSP19: Wider Biodiversity

4.3.21 Biodiversity is an increasingly important issue in today's world, with the Government's Environment Bill achieving Royal Ascent in early November 2021.

4.3.22 Policy PSP19 states: 'Where appropriate, biodiversity gain will be sought from development proposals. The gain will be proportionate to the size of the scheme and be secured through an appropriate planning condition or legal undertaking. This will include Sites of low nature conservation interest (for example, intensive agricultural land) where new semi-natural habitat (green infrastructure) would provide opportunities and gains for local wildlife.'

4.3.23 In line with this policy, Brabazon is looking to deliver at least 10% Biodiversity Net Gain. Ecological enhancements will be incorporated across the scheme to provide an attractive, green landscape for residents and visitors, and a range of habitats for various species and animals. This provision will come through a network of green corridors across the Site and along the margins to facilitate biodiversity and habitat connectivity.

PSP21: Environmental Pollution and Impacts

4.3.24 Within this policy, consideration is given to noise, air quality and contaminated land. Previous Noise and Air Quality Assessments show that during the construction phases, noise impact will need to be controlled via an appropriate Construction Environmental Management Plan (CEMP) to avoid any unreasonable impacts.

Cribbs Patchway New Neighbourhood Development Framework Supplementary Planning Document (March 2014)

4.3.25 The Cribbs Patchway New Neighbourhood Supplementary Planning Document (SPD) was adopted by South Gloucestershire Council in 2014 and provides an overview and a range of objectives for new development in this area, the focus being on the sustainability and accessibility of this locality. The SPD ensures that development in this area is comprehensively planned and delivered, rather than on a piecemeal basis on individual disparate Sites.

4.3.26 Details the vision and objectives for the CPNN, sets out that the development will deliver sustainable development through:

- A strong new landscape and movement framework for the area;
- Good physical connections with the surrounding area;
- Healthy, lively and well-connected communities with their own sense of identity;
- Distinctive and high quality public realm;
- Local jobs, services and facilities and a full range of dwelling types and tenures; and
- Recognition of the history of the area.

4.3.27 It is evident from this document that strategic transport objectives are of key importance to the success and delivery of this New Neighbourhood. The SPD sets out that the overall aim of the development should be to provide as many low carbon connections as possible to the existing and proposed surrounding network to give people as much choice as possible about how they travel to and from destinations in and around the Bristol North Fringe area.

4.3.28 A range of community infrastructure will be provided across the new neighbourhood and will include facilities such as playing pitches, schools, cafes, medical facilities, indoor and outdoor leisure. Brabazon will provide a significant proportion of these facilities on Site, all of which will

be delivered to a high standard. YTL is committed to delivering a range of attractive facilities and amenities to ensure Brabazon offers the highest standards of placemaking.

SGC Local Plan 2020

4.3.29 South Gloucestershire Council is currently in the process of preparing a new Local Plan, this is currently at very early stages and is known as the South Gloucestershire Local Plan 2020.

4.3.30 An Issues Paper was published in November 2020, and a consultation on this plan ran between 27th November 2020 until 1st March 2021.

4.3.31 Within this draft document, a section on Urban Lifestyles is set out which includes the following new urban lifestyle themes:

- Optimising density and making efficient use of land
- Mixed uses
- Private amenity spaces and public realm
- Internal living space size
- Adaptability, views and natural light
- Reduced car parking

4.3.32 Brabazon is in accordance with all identified themes, and YTL acknowledges what South Gloucestershire Council is looking to deliver through the draft urban lifestyle themes. The scheme optimises density where appropriate and provides mixed use communities which remove reliance on the car.

4.3.33 The draft policies for this emerging plan are currently being prepared and are regularly changing, as such very limited weight can be given to this document at this stage. It is understood that a Cabinet meeting in December 2021 will consider the next stages of the Local Plan.

5 EIA Process

5.1 EIA Regulations

5.1.1 The process of EIA is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended) ("the EIA Regulations"). The EIA Regulations implement EC Directive 2014/52/EU and the implications were enacted in the UK on 16th May 2017 to form the 2017 EIA Regulations.

5.1.2 The EIA Regulations set out the requirements for undertaking an EIA, and Regulation 18 and Schedule 4 detail the required information for inclusion in an ES. For ease of reference, Regulation 18 and Schedule 4 are presented in **Appendix B**.

5.2 Screening

5.2.1 As the original planning application (Planning Application Reference: PT14/3867/O) required an EIA, the Applicant intends to voluntarily undertake an EIA to assess the increase in residential units. The EIA will be documented in an Environmental Statement (ES). The ES, which will be prepared in compliance with the requirements of the EIA Regulations. Therefore, no EIA screening request was prepared for the Proposed Development.

5.3 Scoping

5.3.1 The purpose of Scoping is to document the scoping exercise that has been undertaken to identify the nature and extent of the likely significant environmental effects of a development. It also allows for the issues identified to be subject to the appropriate level of assessment, thereby providing a focus for the EIA. Scoping also gives relevant stakeholders an opportunity to express their views on a development and to comment on the scope of the EIA.

5.3.2 An EIA Scoping Report was submitted for the 2014 ES to agree the scope of the assessments with SGC. This EIA Scoping Report considers the scope in the context of the previous environmental assessments undertaken, their conclusions and the mitigation proposed and the Site potential for new or different likely significant effects to be introduced.

5.4 Consultation

5.4.1 The Proposed Development is being progressed through an iterative process of design, assessment, and review. It is therefore the intention that the proposals submitted for planning permission will incorporate measures to mitigate potential adverse environmental effects, and to enhance environmental benefits, where possible through its design.

5.4.2 Consultation with statutory and non-statutory consultees, along with the local community, will continue to inform both the EIA and the design of the Proposed Development. Key statutory consultees include:

- South Gloucestershire Council;
- Bristol City Council;
- The Environment Agency (EA);
- Wessex Water;
- Historic England;
- Natural England;

- Local Residents and Neighbours; and
- Parish Councils.

5.5 Assessment

5.5.1 In general terms, the main stages in the EIA are as follows:

- **Data Review** – draw together and review available data;
- **Scoping** – identify significant issues, determine scope of EIA;
- **Baseline Surveys** – undertake baseline surveys and monitoring;
- **Assessment and iteration** – assess likely significant effects of development, evaluate alternatives, provide feedback to design team on adverse effects, incorporate any necessary mitigation, assess effects of mitigated development;
- **Preparation of the ES –** preparation of technical chapters; and
- **Consultation on the ES** and **decision making**.

5.5.2 The proposed scope of the EIA and approach to the assessment of likely significant effects is set out in **Chapter 6.**

5.5.3 The ES will inherently include an assessment of cumulative effects as the future baseline is the year 2036, as outlined in **Section 6.4**.

5.6 Mitigation

5.6.1 One of the most important functions of the EIA process is to identify ways to mitigate adverse environmental effects and identify opportunities that the Proposed Development may have for environmental improvements. The EIA Regulations require an ES to contain: "*A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment".*

5.6.2 A hierarchy of methods for mitigating significant adverse effects will be followed; these are, in order of preference:

- **Avoidance** – designing a Proposed Development in such a way that avoids effects on the environment;
- **Reduction** – design the development or employ construction methodologies such that significant effects identified are reduced;
- **Compensation** – providing on and off-Site enhancement in order to compensate for where onsite mitigation has not been possible;
- **Enhancement** - opportunities that The Proposed Development may provide to enhance the local and wider environment;

5.6.3 The ES will identify mitigation measures for demolition, construction and operation the of the Proposed Development. Environmental effects remaining after mitigation measures have been incorporated are termed residual effects and these will be fully described in the ES.

Embedded Mitigation

5.6.4 There is a distinction between mitigation that is incorporated or 'embedded' into the design of the development (embedded mitigation) and mitigation that is subsequently identified in order to prevent, reduce or offset any remaining significant adverse effects (further mitigation). Embedded mitigation may include, for example, incorporation of drainage attenuation.

5.6.5 Embedded mitigation evolves through the iterative design process and early consideration of the likely significant impacts is essential to incorporating suitable embedded mitigation measures. Design principles of the development have been established and the ES will document the embedded mitigation measures that have been employed within the design in response to the identification of potentially significant effects. The ES, within each of the topic chapters as appropriate, will also document the subsequent/secondary mitigation that is required to complement the embedded mitigation.

5.6.6 A Framework Construction Environmental Management Plan will be submitted with the planning application (as an appendix to the ES) and will be considered within the ES as embedded mitigation for potential adverse effects arising from the construction phase of the Proposed Development.

5.7 Monitoring

5.7.1 The 2017 EIA Regulations introduce new requirements in relation to monitoring. The Regulations require "*the monitoring of any significant adverse effects on the environment of Proposed Development*". It is important to note that the Regulations only require the monitoring of significant adverse effects. The ES will therefore ensure that it is clear to the reader which, if any, effects are both adverse and significant and may therefore require monitoring.

5.7.2 It is important to note that Regulation 26 (3) of the 2017 EIA Regulations state that planning authorities should:

"(b) take steps to ensure that the type of parameters to be monitored and the duration of the monitoring are proportionate to the nature, location and size of the Proposed Development and the significance of its effects on the environment; and

(c) consider, in order to avoid duplication of monitoring, whether any existing monitoring arrangements carried out in accordance with an obligation under the law of any part of the United Kingdom, other than under the Directive, are more appropriate than imposing a monitoring measure."

5.7.3 Schedule 4 of the 2017 Regulations identifies that an ES should identify "*any proposed monitoring arrangements*". The ES will therefore provide a schedule of proposed monitoring to clearly identify the monitoring that is proposed in relation to any significant adverse effects that have been identified. Any such monitoring will be proportionate, as noted above.

5.8 Environmental Statement

5.8.1 The EIA process will be documented in an ES which will describe the Proposed Development and set out the policy context; give full detail of the EIA methodology and any technical methodologies and data used in support of the assessment; present the assessment of likely significant environmental effects; detail any mitigation and enhancement measures that have been employed; and provide a schedule of proposed monitoring arrangements. The ES will present the residual effects, and an assessment of the cumulative effects and impact interactions as described in **Chapter 6** below.

5.8.2 In accordance with requirement 9 of Schedule 4 of the 2017 EIA Regulations a Non-Technical Summary of the ES shall also be provided.

5.9 Consideration of Alternatives

5.9.1 The 2017 EIA Regulations require an ES to include "*A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects*."

5.9.2 This legal requirement is expressed in very general and high-level terms, requiring only the inclusion of a *"description"* of *"reasonable"* alternatives and an *"indication"* of *"main"* reasons. Although a full description of alternatives and a full assessment of their likely environmental effects are not required, sufficient detail should be provided to allow for a meaningful comparison between the alternatives and the Proposed Development.

5.9.3 It is a matter for the developer to decide which alternatives it intends to consider. The 2017 EIA Regulations do not expressly require that an applicant considers alternatives.

5.9.4 The ES will fulfil the requirements of the 2017 EIA Regulations through identifying the reasonable alternatives considered by the developer and explain the main reasons for the choices made. A comparison of environmental effects will also be provided.

5.10 EIA Team

5.10.1 Regulation 18 of the 2017 EIA Regulations requires that, to ensure the completeness and quality of environmental statements, *"the developer must ensure that the environmental statement is prepared by competent experts".*

5.10.2 In accordance Regulation 18 the ES will be *"accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts."* At this scoping stage, **Table 5.1** identifies the organisations that will contribute to the EIA and provides an outline of their relevant expertise.

Table 5:1: EIA Team and Relevant Experience

Organisation	Relevant Experience	Discipline
Stantec	Stantec is a founder member of the Institute of Environmental Management and Assessment's (IEMA) EIA Quality Mark scheme for quality in EIA. Stantec has a dedicated EIA team that specialises in leading the EIA process for development projects, including land development, regeneration, energy and infrastructure projects. Stantec typically leads 10-20 EIA projects each year. Each of Stantec's EIA team have suitable academic and professional qualifications, with professional qualifications including Principal EIA Practitioner, Practitioner and Associate membership of IEMA, member of Royal Town Planning Institute and Chartered Environmentalist.	EIA Coordination; Landscape; Air Quality; Noise; Socioeconomics; Climate Change
Momentum Transport Consultancy	Momentum has extensive experience in the production of transport assessments and Traffic and Transport chapters of an EIA. Our team have suitable qualifications and experience consisting of Chartered Civil Engineers, members of the Chartered Institution of Highways and Transportation (MCIHT) and the Institution of Civil Engineers (MICE).	Traffic and Transport

Organisation	Relevant Experience	Discipline
Architectural Aerodynamics Ltd. (ArcAero)	ArcAero is led by established figures within the wind engineering community, each with more than 13 years experience in the wind engineering and wind microclimate industries. ArcAero are experts in using both wind tunnel testing and CFD technologies to deliver accurate and reliable wind microclimate assessments over hundreds of previous projects. ArcAero also have access to several tunnels worldwide and in house computational facilities.	Wind Microclimate
Wessex Water	Within the wider company of WW the Environmental and Sustainable Development Team (ESD) operate an environmental management system certified to ISO 14001 to ensure high standards within all their work. Works are mainly conducted for internal schemes and include environmental screening, ecological surveys and protected species licences / mitigation. In addition WW will undertake all necessary consultations and achieve all consents required to commence work. Planning Liaison and preparation of applications and supporting information are included which culminate in regular productions of Environmental Impact Assessments for development.	Biodiversity

6 Proposed Scope of the EIA

6.1 Technical Scope

6.1.1 The technical scope describes the environmental topics that should be addressed by an EIA, in accordance with the requirements of Regulations 4(2) and 18 and Schedule 4 of the EIA Regulations. Schedule 4 sets outs that the ES must include a description of the aspects of the environment, which are likely to be significantly affected by the Proposed Development.

6.1.2 This requirement and the broad categories set out in Schedule 4, along with others which are considered to have the potential to lead to significant environmental effects, have been interpreted and applied in the context of the Proposed Development. **Table 6.1** therefore sets out those topics that it is proposed to both scope into and out of the EIA.

6.1.3 Section references are provided to where these categories have been included within the EIA Scope. **Chapters 7 – 15** of this report provides a detailed analysis of the resultant proposed technical scope of the EIA, while **Chapter 15** identifies those topics which it is proposed to scope out of the EIA as it has been shown that significant environmental effects are unlikely to occur.

Table 6:1: Technical Scope

EIA Regulations Topic	Scoped in / Scoped out?	Explanation within this Scoping Report
Population	✓	Chapter 7 Socioeconomics
Human Health	✓	Chapter 8 Transport and Access Chapter 9 Air Quality Chapter 10 Noise and Vibration Chapter 7 Socioeconomics Chapter 13 Wind Microclimate
Biodiversity (for example Flora and Fauna)	✓	Chapter 12 Biodiversity
Land (for example land take)	X	Chapter 15 Section 15.4 Ground Conditions and Contamination
Soil (for example organic matter, erosion, compaction, sealing)	X	Chapter 15 Section 15.4 Ground Conditions and Contamination
Water (for example hydromorphological changes, quantity and quality)	X	Chapter 15 Section 15.2 Flood Risk and Drainage
Air	✓	Chapter 9 Air Quality
Climate (for example greenhouse gas emissions, impacts relevant to adaptation)	✓	Chapter 14 Climate Change
Material assets	X	Chapter 15 Section 15.8 Waste

EIA Regulations Topic	Scoped in / Scoped out?	Explanation within this Scoping Report
Cultural heritage, including architectural and archaeological aspects		Chapter 15 Section 15.3 Archaeology and Cultural Heritage
Landscape	✓	Chapter 11 Landscape and Visual
The inter-relationship between the above factors	✓	Chapter 6 Section 6.4 Cumulative Effects and Impact Interactions
The Risk of Major Accidents and/or Disasters	x	Chapter 15 Section 15.6 Accidents and Disasters

6.1.4 The following therefore sets out the principles for the temporal and spatial scope, and the approach to the assessment of effects, that will be applied to the EIA of the topics identified in **Chapters 7 – 14.**

6.2 Temporal Scope

Environmental Baseline

6.2.1 As a general principle, environmental effects will be assessed by comparing the predicted state of the environment without the Proposed Development, with the state of the environment with the Proposed Development for a particular year. The ES will also document the current state of the environment.

6.2.2 Given the planning history for the Site, the ES will consider the current state of the environment and the 2036 baseline.

Current State of the Environment

6.2.3 The ES will document the current state of the environment. The effect of the pandemic on the current state of the environment will be given due consideration in the ES.

6.2.4 The current state of the environment will include the 302 dwellings currently under construction as Brabazon Phase 1 (which form part of the overall 6,500 dwellings), as this development is already partially visible. Whilst it is not completed in its entirety, it is considered that the development is sufficiently complete to enable it to form part of the baseline. It is due to be complete by mid-2023.

2036 Baseline

6.2.5 The year 2036 has been identified as the future baseline due to this being the end year of the transport model being prepared for the Transport Assessment that will accompany the ES.

6.2.6 The supporting assessments to the extant planning consent assumed completion in 2031. The original planning application was made in 2014 therefore a 17-year build out was assumed. it is reasonable to assume that the extant planning consent could still be built out by 2036, with phase 1 underway and 14 years still to complete the works.

6.2.7 It should however be noted that 2036 is not the date of completion of the Proposed Development. The Transport Phase 3 and 4 go into the 2030s and 2040s with consideration of Park and Ride services, train routes to Parkway and the Bristol rapid mass transit system.

However, 2036 has been identified in relation to the future baseline for the Transport Assessment and will therefore provide a realistic and tangible basis for assessment.

6.2.8 For development beyond 2036, the mitigation relating to transport is not yet committed and therefore cannot be used for an assessment. Discussions are currently ongoing with SGC regarding the agreement of a series of 'gate checks', along with further assessment if required, as phases of the Proposed Development are brought forward, to enable subsequent reserved matters to be approved. These 'gate checks' will be required not just for transport related matters but also other aspects, for example Biodiversity Net Gain and Education provision.

6.2.9 Finally, it is considered that it is increasingly challenging to make meaningful predictions when looking too far into the future. Therefore 2036 is considered to provide a realistic assessment year to support robust and credible environmental assessments.

6.2.10 Given the approach as set out in **Section 6.4**, approved developments (or those considered likely to have been approved and implemented by 2036) will be factored into the 2036 baseline, and therefore the assessment of likely significant cumulative effects with these developments is inherent to the assessment and will not be reported separately.

6.2.11 The 2036 baseline will therefore comprise:

- The extant Filton Airfield planning consent, including 2,675 dwellings;
- The additional works as consented through the 2021 S73 consent, which are measures required to be in place on the Site prior to the opening of the Arena;
- The YTL Arena adjacent to the Site;
- The likely changes to the natural environment between now and 2036. This will include natural changes such as growth in vegetation and establishment of habitats, especially of any landscaping implemented as part of the S73 consent, in particular for the Brabazon Park. It will also include anthropogenic changes such as changes to air quality and human behaviors where there can be a high degree of confidence that such changes will occur (for example the transition towards electric vehicles on the basis of clear Government policy on the phasing out of internal combustion engines and the increase in bus services to avoid private vehicle usage as promoted in the recently published national bus strategy). Each chapter of the ES will outline as appropriate how these changes have been considered in establishing the 2036 baseline.

6.2.12 In addition to this approach, the approved developments that will be included in the 2036 baseline have been identified in **Section 6.4**.

6.2.13 Therefore, the ES will not include a separate assessment of cumulative effects as the cumulative developments listed in **Section 6.4** will have been included in the 2036 baseline and will be assessed in the scenario where the full Proposed Development is assessed against the 2036 baseline.

6.2.14 The approach set out above is consistent with the EU's Guidance on the preparation of the Environmental Impact Assessment Report (2017), which states: *"The state of the environment and the nature of impacts such as pollution rates or emission limits change over time, and this has to be accounted for in the Baseline assessment. In addition, the Baseline should consider Projects in the vicinity that exist and/or that have been approved (see Part B section 1.4.3 on Cumulative Effects). The Baseline should, therefore, be dynamic, going beyond a static assessment of the current situation. This is especially important for issues where there is considerable uncertainty, such as climate change, or for longer-term developments, such as large infrastructure Projects."*

Duration of Effects

6.2.15 Environmental effects will be classified as either permanent or temporary, as appropriate. Permanent changes are those which are irreversible or will last for the foreseeable future.

6.2.16 The duration of temporary environmental effects will be defined as short, medium or long term based on the likely durations of the construction and operational phases of the development. These definitions will be considered within the assessment of the likely significant effects and will be set out in the ES. Given the timeframe of the Proposed Development, some construction effects are considered to be long-term, albeit temporary.

6.2.17 Where environmental effects will be infrequent or intermittent (such as effects related to activities that will not be continuous during construction) this will be noted in the ES; and the frequency of these activities will be considered in the assessment.

Phases of the Scheme

6.2.18 There are two discrete phases of the Proposed Development which will be considered in relation to the likely significant effects: the construction phase and the operation phase.

Construction

6.2.19 Certain environmental effects will only occur during the construction phase of the Proposed Development and will cease once construction activities have ceased. These will typically be the temporary effects of the scheme and will be described as “short-term” or “medium-term”, as appropriate, using the definitions determined to be appropriate and set out in the ES. Examples include but are not limited to:

- Creation of dust;
- Risk of pollution during construction; and
- Changes to views during construction.

Operation

6.2.20 Environmental effects that occur during the operation of the Proposed Development will typically be permanent or “long-term”. Examples of permanent effects which might occur during the operation of the scheme include but are not limited to:

- Changes to people’s key views;
- Loss of grassland adjacent to the runway; and
- Introduction of new sensitive receptors.

6.2.21 The extant planning consent included a planning condition for a site-wide phasing plan, which has now been discharged. It will require to be updated periodically. The sitewide phasing plan will be submitted with the planning application for the Proposed Development. As previously noted, Phase 1 is under construction and due to be complete in mid-2023. Commercial, and employment development will be market-driven. Further information on phasing will be provided in the ES.

6.3 Spatial Scope

6.3.1 The spatial extent of each of the technical assessments will vary from one to another in accordance with the relevant policy and guidance for the assessment of that topic; in some

instances, the environmental effects will extend no further than the boundary of the Site and in other cases the assessment will extend to a buffer beyond the Site boundary. The study area for each technical assessment will be identified and described as appropriate in each of the topic chapters of the ES.

6.4 Assessment of Effects

Types of Effects

6.4.1 In assessing the significance of effects identified during the EIA, account will be taken as appropriate as to whether effects are:

- Direct Effects – effects that are caused by activities which are an integral part of The Proposed Development (e.g. change in uses);
- Indirect Effects – effects arising indirectly from the demolition, construction or use of a development (e.g. supply chain effects in demolition or construction stage, regeneration benefits attributed to the scheme);
- Secondary Effects – are 'knock-on'/one-removed effects arising in consequence of indirect effects (e.g. the decision of firms to locate in a particular area following increased custom from new residents);
- Cumulative Effects – many effects that singly are not significant, but when assessed together may be significant and also the cumulative effects of The Proposed Development and other approved local developments;
- Short-Term and Medium-Term – Environmental effects that occur during the demolition and construction of a project will typically be Short or Medium Term;
- Long-Term – Environmental effects that occur during the operation of a project will typically be Long Term;
- Temporary Effects – Environmental effects that occur during the demolition and construction of a project will typically be temporary;
- Permanent Effects – Environmental effects that occur during the operation of a project will typically be permanent;
- Positive Effects – effects that have a positive influence on the environment; and
- Negative Effects – effects that have a negative influence on the environment.

6.4.2 For clarity within the assessment, ‘impact’ will be used in relation to the outcome of the project (e.g., the generation of emissions to air), while the ‘effect’ will be the consequent implication in environmental terms (continuing the above example, e.g. the reduction in local air quality).

Residual Effects

6.4.3 The incorporation of mitigation measures, primarily as part of the scheme design demolition phase and construction phase, will be reported where appropriate and likely significant residual effects that remain will be described and assessed according to the significance criteria set out in **Table 6.2** below.

6.4.4 As noted above, the EIA Regulations require that the ES describes likely significant effects of the Proposed Development. However, there is no applicable definition of significance and interpretations differ. In accordance with the European Commission’s Guidance on Scoping (revised 2017), the EIA will study those effects that will influence decision-making or those

where there is uncertainty about their magnitude. This approach is consistent with best practice for EIA in the UK.

6.4.5 The significance of an effect is typically the product of two factors, the sensitivity of the environmental resource affected and the magnitude of the impact, while consideration may also need to be given to the likelihood of an effect occurring.

6.4.6 This approach to assessing and assigning significance to an environmental effect will rely upon such factors as legislative requirements, guidelines, standards and codes of practice, consideration of the EIA Regulations, the advice and views of statutory consultees and other interested parties and expert judgement. The following questions are relevant in evaluating the significance of likely environmental effects:

- Which risk groups are affected and in what way?
- Is the effect reversible or irreversible?
- Does the effect occur over the short, medium or long term?
- Is the effect permanent or temporary?
- Does the effect increase or decrease with time?
- Is the effect of local, regional, national, or international importance?
- Is it a positive, neutral, or adverse effect?
- Are health standards or environmental objectives threatened?
- Are mitigating measures available and is it reasonable to require these?

6.4.7 Specific significance criteria will be prepared for each specialist topic as appropriate, based on the above and the generic criteria set out in **Table 6.2** below and adapted to accord with topic-specific guidance.

Table 6.2: Significance criteria

Significance Level	Criteria
Substantial	Only adverse effects are assigned this level of significance as they represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with Sites and features of national or regional importance. A change at a county scale Site or feature may also enter this category.
Major	These effects are likely to be important considerations at a district scale but, if adverse, are potential concerns to the project and may become key factors in the decision-making process.
Moderate	These effects, if adverse, while important at a local scale, are not likely to be key decision-making issues. Nevertheless, the cumulative effect of such issues may lead to an increase in the overall effects on a particular area or on a particular resource.
Minor	These effects may be raised as local issues but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in enhancing the subsequent design of the project and consideration of mitigation or compensation measures.
Negligible	Either no effect or effect which is beneath the level of perception, within normal bounds of variation or within the margin of forecasting error. Such effects should not be considered by the decision-maker.

6.4.8 Effects that are described as 'substantial', 'major' or 'moderate' are determined to be *significant*; and effects that are described as 'minor' or 'negligible' are determined to be *not significant* in the context of the EIA Regulations.

Cumulative Effects

6.4.9 As set out in **Section 6.2** the ES will not include a separate assessment of cumulative effects as these cumulative developments will have been included in the 2036 baseline and will be assessed in the scenario where the full Proposed Development is assessed against the 2036 baseline. The approved developments that have been considered are set out in **Table 6.3**.

Table 6.3: Cumulative Developments

Location	Application Number	Description of Development	Status
Cribbs/Patchway New Neighbourhood Allocation	Adopted 2014	Approximately 5,700 new homes and around 50ha of employment land, together with a range of community services and facilities.	Adopted 2014
Cribbs Urban Village, Almondsbury Bristol South Gloucestershire BS10 7TE	PT14/0565/O	Mixed use development of 44 hectares of land comprising: up to 1,000 new dwellings (Use Class C3); an 86-bed Extra Care Home (Use Class C2): a mixed use local centre including a food store up to 1,422sqm net internal sales area (Use Classes A1, A2, A3, A4, A5, B1, D1, D2); a 2-form entry primary school; community facilities including a satellite GP surgery, dentist and community centre; associated public open space and sporting facilities; green infrastructure integrated with foot and cycle paths; together with supporting infrastructure and facilities including three new vehicular accesses. Outline application including access, with all other matters reserved	Approved January 2021
Wyck Beck Road / Fishpool Hill Patchway Cribbs Causeway South Gloucestershire	PT12/1930/O	Mixed use development across 53.80 hectares of land comprising up to 1,100 new dwellings (Use Class C3) a local centre (Use Classes A1,A2,A3,A4, A5,B1,D1,D2) a primary school together with supporting infrastructure and facilities including: new vehicular access with Wyck Beck Road, public open space and landscaping. Outline application including access with all other matters reserved.	Approved July 2020

Land off Charlton Road, Filton Bristol South Gloucestershire BS10 6LB	PT15/4165/F	Proposed Development of 80 dwellings (use class C3 including affordable homes), open space (including children's play space and improvements to Charlton Common), sustainable urban drainage, vehicular access, pedestrian and cycle accesses, pumping station and related infrastructure and engineering works.	Approved May 2019
Laurel Hill	PT14/2646/O and PT14/1886/O	Mixed use development on 3.15ha of land comprising offices (Use Class B2) Storage (Use Class B8) car showrooms (sui generis) and all associated ancillary facilities. Outline application including access with all other matters reserved.	Approved January 2015
Asda extension Highwood Lane Patchway Bristol South Gloucestershire BS34 5TL	PT15/4386/O	Alterations and reconfiguration of the Site with access to be determined (Outline) all other matters reserved including the erection of up to 14,674sqm of new buildings for uses within Use Classes A1 (shops) up to 12,723sqm, A3 (restaurants and cafes) up to 1,665sqm, A4 (drinking establishments) up to 930sqm, A5 (hot food take-away) up to 116sqm and D2 (assembly and leisure) up to 1,951sqm. Alterations to the front elevation of the Asda store (including removal and replacement of existing entrance structures), altered circulation, servicing and car parking layout (including alterations to lighting and landscaping), relocation and re-provision of bus stops and bus turning facility. Demolition of existing filling station and car wash and erection of new filling station. Provision of new public realm, including public space and landscaped areas.	Approved January 2017
Land South of Merlin Road (Ice Rink and Sky Diving Centre) South Gloucestershire Cribbs	PT15/5319/O and PT18/1459/F	Hybrid planning application for development of an indoor ice rink (D1 use), indoor skydiving venue (D1 use), coffee drive thru (A3/A5 use), restaurant (A3 use) and car showroom (sui generis), and associated landscaping, access, infrastructure and parking (detailed application). Outline	Approved October 2018

Causeway BS10 7UD		application for development to provide hotel (C1 use) (up to 2,787 sqm GIA) and A2/A3 uses (up to 465 sqm GIA) or up to 2,323 sqm (GIA) retail floorspace (A1 use). Revised scheme to PT15/5319/O	
East Works Site Gloucester Road North Filton South Gloucestershire BS34 7BQ	PT18/4908/F	Development of 10,872sqm of research and development facility (B1b) including ancillary offices, external compound and associated parking, landscaping, highways and drainage infrastructure.	Approved January 2019
Application Site A – Arena complex comprises the Brabazon Hangars BS34 7DU	19/05500/P	Hybrid planning application comprising: the demolition of existing ancillary buildings and structures; full details associated with the change of use of, and associated external alterations to, the Brabazon Hangar buildings from Class B8 use to a mixture of Class D1, D2, A1, A3, A4 and B1a uses, along with outline details associated with infrastructure works including: revised vehicular access arrangements; redevelopment and reorganisation of the former aircraft apron to provide parking, servicing and associated infrastructure provision; plus associated landscaping, service infrastructure and other associated works and improvements.	Approved April 2021
Application Site B – West Way	P19/16740/F	Amendments to the existing highway and highway junction at Charlton Road and West Way.	Approved April 2021
Application Site C – Temporary Car Park	P19/16741/F	Formation of a temporary car park for up to 2,000 vehicles and bus, taxi, park and ride, pick up and drop off areas on the eastern end of the former Filton Airfield.	Approved April 2021
Application Site D – Pedestrian Bridge	P19/16742/F	Construction of a new pedestrian bridge linking the former Filton Airfield and the Brabazon Hangar site over the Henbury Loop railway line, including associated demolition, earthworks and landscaping.	Approved April 2021

Northfield Park Charlton Hayes Hayes Way Northfield Charlton Hayes Filton South Gloucestershire BS34 5BZ	PT14/5028/O	Mixed use development on 6.24 hectares of land comprising up to 120 new dwellings (Use Class C3) up to 8000 sq m of office development (Use Class B1) and up to 400sqm of ancillary retail use (Use Classes A1, A2, A3, A4 and A5) together with supporting infrastructure and facilities, including new vehicular access, landscaping and services. Outline application including access with all other matters reserved.	Approved April 2016
East Works Site Gloucester Road North Filton South Gloucestershire BS34 7BQ	PT15/1634/RVC	Redevelopment of site for mixed use development comprising Use Classes: B1(a) Offices, B1(c) Light Industry, B2 General Industry, B8 Storage and Distribution, C1 Hotel including ancillary leisure and food and drink, sui generis trade units and car dealerships, with associated infrastructure, access, parking (Outline) with access to be considered with all other matters to be reserved.	Approved 15 July 2015
Land At Harry Stoke Stoke Gifford Bristol South Gloucestershire BS34 8QQ	PT06/1001/O	Residential development on 39.57 hectares of land (Outline) with infrastructure, public open space and ancillary facilities. Means of access to be determined, all other matters reserved.	Approved January 2007
Land At The South Of The Railway East Of Harry Stoke Bradley Stoke Bristol South Gloucestershire	PT16/4782/O	Outline planning permission for mixed use development comprising up to 1,290 dwellings including an extra care facility (Use Class C2/C3); community facilities (comprising use classes D1 and D2); provision of a mixed use local centre (Use Classes A1, A2, A3 and D1) together with the supporting infrastructure and facilities including: new vehicular and pedestrian accesses, public open space and landscaping with access to be determined and all other matters reserved.	Approved March 2020

Impact Interactions

6.4.10 A dedicated chapter of the ES will assess the potential impact interactions, i.e., receptors being affected by more than one environmental effect and therefore potentially being subject to a more significant combined effect than the individual effects reported in each of the topic chapters.

6.5 Uncertainty and Difficulties Undertaking the Assessment

6.5.1 The prediction of future effects inevitably involves a degree of uncertainty. Where necessary, the ES will describe the principal factors giving rise to uncertainty in the prediction of environmental effects and the degree of the uncertainty.

6.5.2 Confidence in predictions will be engendered by employing accepted assessment methodologies, e.g., Guidance for Ecological Impact Assessment by the Institute of Ecology and Environmental Management. Uncertainty inherent within the prediction will be described.

6.5.3 Uncertainty also applies to the success or otherwise of measures to mitigate negative environmental effects. Where the success of a mitigation measure is uncertain, the extent of the uncertainty will be identified in the ES.

6.5.4 All works undertaken during the EIA will comply with any COVID-19 requirements in place at the time. This may have implications, for example, for Site surveys and Site visits, meetings with statutory consultees and third parties, and data collection and provision. However, every effort will be made to ensure the robustness of the EIA and the information provided within the ES, with any uncertainties and difficulties highlighted and the measures taken to address them stated.

6.5.5 The ES will identify, in accordance with Schedule 4 of the EIA Regulations, any difficulties that have been encountered in undertaking the assessment.

7 Socioeconomics

7.1 Introduction

7.1.1 The socio economics chapter will assess the likely significant effects associated with the Proposed Development in relation to this topic. Socio-economics has been scoped into the ES due to the potential for likely significant effects (both beneficial and adverse) resulting from the construction and operational stages of the Proposed Development on sensitive receptors including the local labour and housing market, community infrastructure such as nurseries, schools and GP surgeries as well as recreation and public access on the Site.

7.1.2 The assessment will be carried out based on the methodology proposed in this Scoping Report. The assessment scope and methodology will take account of relevant socio-economic considerations previously identified within the ES for the extant planning consent and the ES for the consented Arena.

7.2 Baseline

Study Areas

7.2.1 A detailed desk-based study will be undertaken to identify and set out the baseline characteristics of the site and surroundings including the existing community, economic and social environment in both the Filton and the Charlton & Cribbs wards (within which the Site lies) and South Gloucestershire as a whole. Where appropriate, consideration will be given to the interaction between the site and the Bristol City Council area which lies immediately to the south of the Site.

7.2.2 The study areas identified for the purposes of assessing the effects of the Proposed Development on relevant receptors are set out below:

7.2.3 **Housing Market Study Area**: South Gloucestershire Housing Market Area taking cognisance of the wider strategic housing market including the City of Bristol.

7.2.4 **Labour Market Study Area**: the unitary authority areas of South Gloucestershire, City of Bristol and North Somerset will be used to define the labour market study area. This area has been chosen as it takes into account the interaction of the site with both the City of Bristol and the M5/M4 transport corridors, housing market areas, and commercial property market to best represents the mobility of labour across administrative boundaries.

7.2.5 **Education Study Area**: defined as local primary schools within 3.2km (2 miles) and local secondary schools within 4.8km (3 miles) of the site, taking account of catchment areas which will be impacted by the operational phase of the Proposed Development. This takes into account home to school travel guidance from UK Government[1]. Due regard will also be had to relevant expansion of schools contribution as defined within South Gloucestershire's Infrastructure Delivery Plan (2014) and schools included within the extant planning consent for 2,675 dwellings on the Site.

7.2.6 **Healthcare Study Area:** defined in line with the NHS Bristol, North Somerset and South Gloucestershire Clinical Commissioning Group (CCG) area. The health care study area will take into account LSOA health indices for the relevant local ward areas across the site including Charlton & Cribbs and Filton wards.

[1] Department for Education (2014) Home to School Travel and Transport Guidance

7.2.7 **Recreation and Public Access Study Area:** defined as the Site and surrounding area within 1km including access to the metrobus network.

7.2.8 A detailed socio-economic baseline of the Study Areas will be collated to establish the sensitivity of identified receptors. Key data sources will be reviewed including:

- Office for National Statistics (ONS) datasets;
- Local and Regional planning and economic policy and strategy documents including Supplementary Planning Documents (SPD);
- Wider Bristol Strategic Housing Market Assessment Update (2019) – housing mix and affordable housing;
- South Gloucestershire Housing Strategy and Plans;
- South Gloucestershire Infrastructure Delivery Plan (2014);
- South Gloucestershire Council school organisation plans and forecast;
- Bristol, North Somerset and South Gloucestershire Clinical Commissioning group (CCG) needs assessment;
- South Gloucestershire Joint Health and Wellbeing Strategy (2017); and
- South Gloucestershire Council Annual Monitoring Reports.

7.2.9 There could be circumstances where information required to undertake the assessment as stated in this EIA Scoping Report is not available, is very dated or the quality of information is poor. In such circumstances, the latest publicly available information will be used in the assessment and any gaps in the data will be clearly identified and noted.

7.2.10 Initial analysis of the socio-economic baseline indicates the following:

Population

7.2.11 The Site lies within South Gloucestershire Council (SGC) area, which has an estimated population of 287,800 (up from 262,767 in 2011). The working age population of the area, as a whole, is similar to that of the national average and higher than the South West regional average. South Gloucestershire (62.3%) is above the South West Regional (60.0%) and Great Britain (62.4%)[2] average.

Labour Market

7.2.12 The Site and surroundings form part of the West of England Local Enterprise Partnership (LEP) which covers the four unitary authorities of Bath and North East Somerset, Bristol City Council, North Somerset and South Gloucestershire.

7.2.13 South Gloucestershire's location and its proximity to the City of Bristol present a number of cross boundary opportunities and challenges which are worked through in partnership with the neighbouring authorities of Bristol, Bath and North East Somerset and North Somerset. The location of the site close to the M5 / M4 corridor and the City of Bristol will be taken into account when considering the potential effects of the Proposed Development on the labour market.

[2] ONS Population estimates 2020 - local authority based by five-year age band

7.2.14 South Gloucestershire is more economically active (83%) than the South West as a whole (80%) or Great Britain (78.4%)[3] and also has a job density higher than one (1.04). This means that there is more than one job for each of the resident working age population of the area compared to 0.91 for the South West region and 0.87 for Great Britain. When combined with a low employment rate this suggests that there is limited capacity within the labour market to respond and take up new employment opportunities.

Housing Market

7.2.15 The site lies within South Gloucestershire which is part of the West of England Housing Market Area but has a close interaction with the City of Bristol. South Gloucestershire produced a guidance note in 2020[4] to identify the mix and scale of housing that the local population is likely to need over a plan period. The wider Bristol Strategic Housing Market Assessment was prepared in 2015 and provided evidence to inform planning and housing policy up to 2036. This work was updated and published in 2019.

7.2.16 The Joint Spatial Plan (JSP) for Bristol, South Gloucestershire and North Somerset was formally withdrawn on 7 April 2020. As a result, any evidence that relates specifically to the JSP strategy has now been retracted. This has meant that the Strategic Housing Market Assessment (SHMA) Volume 1 has now also been retracted. Whilst the SHMA Volume 2 was also commissioned to support the JSP, SGC consider it to be relevant to support South Gloucestershire's affordable housing delivery.

7.2.17 The West of England Housing Needs Assessment was published in September 2021 (West of England Local Housing Needs Assessment, September 2021).

7.2.18 As the Council's Core Strategy is now more than five years old, they have identified and updated a supply of specific deliverable sites sufficient to provide a minimum of five years' worth of housing supply against local housing need (LHN). South Gloucestershire's 2020 annual monitoring report suggest that they have a supply of 7,833 between 2019/20 to 2023/24[5].

Key Business Sectors

7.2.19 The site lies within the SGC's administrative boundary but has a clear interaction with the BCC area which lies immediately to the south. Given the location of the Proposed Development on the northern fringes of Bristol it has significant linkages to the City and will be considered within that context.

7.2.20 South Gloucestershire has a diverse economy ranging from small and medium enterprises to world leading companies in key high growth sectors vital to the national economy.

- Construction: the construction sector employs some 10,000 workers within South Gloucestershire equating to 6.5% of the total jobs. This is above the proportion of employment in the construction sector across the South West (5.1%).

- Manufacturing: is one of the largest business sectors and employs 16,000 workers in South Gloucestershire, equating to 10.3% of the total workforce, a higher proportion when compared to the South West (8.6%). The eastern half of the Site is within the West of England Local Enterprise Partnership (LEP) Filton Enterprise Area, which is one of a number of strategically important employment locations across the West of England area. This designation is centred

[3] ONS annual population survey 2021

[4] SHMA South Gloucestershire Guidance Note 2020

[5] South Gloucestershire Council (2020) Annual Monitoring Report

around the historic advanced engineering and aerospace cluster, which consists of manufacturers supporting and supported by an array of local supply chains.[6]

- Wholesale and Retail Trade: This is the largest single business sector within South Gloucestershire employing some 21,000 people (13.5% of the total workforce). Although, this is a lower proportion than the wider South West at 15.3% showing that whilst it is a key sector it is less dominant than in other areas.

Indices of Deprivation

7.2.21 Indices of multiple deprivation (IMD) provide a comparative ranking of local authorities and the 32,844[7] Lower Layer Super Output Areas (LSOA) throughout England. Geographical areas are ranked using a number of domains including income deprivation, employment, health, education, barriers to services, living environment and crime. A score of 1 is considered to be the most deprived LSOA and 32,844 the least deprived.

7.2.22 The IMD information across the site indicates that two of the LSOAs (South Gloucestershire 005A and 011D) are in the top 50% of most deprived areas in England. A third LSOA (South Gloucestershire 018G) is in the 40% of least deprived areas.

7.2.23 The influences of specific domains (e.g. health, education and crime) vary depending on the characteristics of individual LSOAs and these will be reviewed in greater detail and set out in the baseline section of the ES Chapter.

Education

7.2.24 There are eight primary schools and five secondary schools in the respective study areas set out in Section 7.2. The extant planning permission on the site includes two new primary schools, one secondary school and two nurseries. The ES Chapter will take into account the embedded mitigation within the extant consent when assessing the impact of the Proposed Development on education infrastructure.

Healthcare

7.2.25 Health Deprivation and Disability data for the Filton and Charlton & Cribbs wards show they contain amongst the 30% least deprived LSOAs. It is recognised however that there are more deprived wards close to the site such as Henbury and Bentry, which contain LSOAs within the 10% most deprived for Health Deprivation and Disability indicators[8].

7.2.26 There are seven NHS dental practices in the vicinity of the Site: Patchway Dental Practice, Charlton Dental Practice, Filton Dental Practice, mydentist Gloucester Road, Passage House Dental Care, Southmead Dental Practice and Twindent Dental Care.

Recreation and Public Access

7.2.27 The previous planning proposals and extant planning permissions on the site addressed a number of concerns raised by SGC in relation to Public Right of Way and access across the site which will be considered within Proposed Development taking into account the infrastructure requirements as part of the implementation of the Arena consent.

[6] South Gloucestershire Council Enterprise Areas available at: https://www.insouthglos.co.uk/enterprise/

[7] (2019) Index of Multiple Deprivation

[8] Index of Multiple Deprivation for Health Deprivation and Disability (2019)

Local Centres

7.2.28 The planning permissions and related ES Chapters identified three local centres near the site: Filton Town Centre, Patchway District Centre and an emerging centre at Charlton Hayes. The socio-economic ES Chapter will draw upon the separate Retail Impact Assessment (RIA) that will be prepared to support the Proposed Development, in considering the impact of introducing new retail floorspace as part of the Proposed Development in relation to existing local centres.

7.2.29 The socio-economics ES Chapter will consider the potential additional household spend attributed to new housing on site and this will inform potential spending power within the RIA catchment.

Approach to 2036 Baseline

7.2.30 With regard to the future baseline, current conditions and conditions in 2036 will be identified and the effects of the Proposed Development assessed against the 2036 baseline.

7.2.31 The future baseline will also consider likely trends anticipated between 2021 and 2036.

7.2.32 The 2036 baseline comprises:

- The extant Filton Airfield planning consent, including 2,675 dwellings;
- The additional works as consented through the 2021 S73 consent, which are measures required to be in place on the Site prior to the opening of the Arena;
- The Arena;
- And Committed Development as agreed through EIA Scoping.

7.2.33 There is potential for changes to the current state of the environment arising out of interactions between the Proposed Development and the developments which are anticipated within the 2036 baseline scenario. Potentially significant socio-economic impacts are identified in **Section 7.4** below.

7.3 Consultation

7.3.1 Consultation with relevant stakeholders including South Gloucestershire Council Economic Development and Community Services, Bristol City Council and the West of England Local Enterprise Partnership (LEP) will be undertaken as relevant to explore the local and regional socio-economic impacts of the Proposed Development.

7.3.2 Relevant socio-economic data will be input to a bespoke economic model to predict the gross and net socio-economic effects, including with respect to expenditure and employment, from the construction and operation of the Proposed Development. This model will incorporate economic multipliers and additionality assumptions.

7.4 Potential Effects

7.4.1 All new developments have the potential to generate socio-economic effects at the local, regional and/or national level, principally in relation to changes in economic development, employment, area regeneration, community infrastructure provision and usage, retail expenditure and public access to recreational assets. In this case, the range of likely significant socio-economic effects generated by the Proposed Development depends upon the characteristics of the Proposed Development combined with the 2036 baseline socio-economic conditions into which the development would be introduced.

Insignificant Effects

7.4.2 Operational effects on key business sectors such as manufacturing have been identified at this stage as being insignificant in EIA terms.

Significant effects

7.4.3 Having regard to the Proposed Development and the characteristics of the Site it is considered that the following socio-economic effects are likely to be significant and therefore require further consideration through EIA:

Construction

- Labour market effects resulting from direct and indirect employment generated by temporary construction activity;
- Direct and indirect effects on recreation and public access through restrictions on public access in and around the Site. (Public Access will be assessed in the Transport Chapter with findings relevant to socio-economics reported within Socio-economics Chapter).

Operational

- Labour market effects resulting from direct and indirect employment generated by the new and intensified employment space delivered by the Proposed Development;
- Housing market effects resulting from the provision of up to 5,700 homes. As the Site has been allocated for housing delivery and benefits from existing consents for 2,675 homes, no assessment of wider demographic effects is considered necessary;
- Effects on community infrastructure provision and use including dental and GP surgeries and the school and nursery facilities included within the existing consent for 2,675 homes;
- Effects on recreational activities and access to open space (effects on public access will be assessed separately with the Transport chapter); and,
- Indirect retail expenditure effects resulting from additional spending power of new residents.

7.4.4 The assessment will be focused on the temporal and spatial scales at which there is the potential for likely significant effects to occur from the Proposed Development. Appropriate Study Areas corresponding to local authority administrative boundaries, census geography, health geography, built up areas and built-up area sub-divisions maintained by the UK Government will be adopted to ensure accurate use of data, as set out in **Section 7.2**.

7.5 Methodology

7.5.1 An assessment of the likely significant socio-economic effects associated with the Proposed Development will be undertaken in accordance with the Green Book: Appraisal and Evaluation in Central Government (HM Treasury, 2020) as well as with other relevant legislation discussed in further detail within **Section 4**.

7.5.2 The following activities will be undertaken to complete the socio-economic assessment:

- Reviewing relevant legislation and planning policy;

- Establishing baseline conditions with the relevant Study Areas to identify potential receptors and receptor groupings for consideration in the assessment, including the identification of likely changes to the current state of the environment to 2036;
- Defining receptor sensitivity to likely changes resulting from the Proposed Development;
- Examining likely economic changes from the Proposed Development on identified receptors and receptor groupings, with consideration given to phasing, magnitude, duration, and nature of the change;
- Considering likely cumulative economic changes from the Proposed Development in combination with the wider development context (noting cumulative is included in the 2036 baseline). This includes the transition and continuity anticipated within the construction sector labour force as the development timeline for the completion of the Arena and supporting infrastructure;
- Determining the likely level of socio-economic effects, including cumulative effects, from the Proposed Development, having regard to both receptor sensitivity and the characteristics of predicted change;
- Identifying the significance of likely socio-economic effects in the context of the assessment criteria;
- Identifying mitigation measures to address any likely significant adverse socio-economic effects; and
- Identifying likely residual socio-economic effects from the Proposed Development taking account of all mitigation measures.

7.5.3 There are no specific methodological guidelines or requirements for socio-economic assessments within the context of EIA. However, the proposed assessment methodology has been informed by the principles outlined in The Green Book (2020).

7.5.4 The level and significance of likely socio-economic effects from the Proposed Development will be judged with reference to the following factors:

- Sensitivity of affected receptor; and
- Predicted magnitude of change.

7.5.5 Definitions of receptor sensitivity will be confirmed in the methodology section of the Socio-economics chapter of the ES. In overall terms, the sensitivity of the labour market will be defined in relation to:

- The availability of skilled labour relative to national averages;
- The proportion of employment in relevant sectors (e.g. construction);
- The availability of labour (including the unemployed); and,
- Relevant education and training provision.

7.5.6 Plentiful labour and/or skills capacity results in a low sensitivity, whilst limited labour and/or skills capacity results in a high sensitivity. Sensitivity criteria which will be applied to the labour market considered in this assessment are detailed in **Table 7.1** below.

Table 7.1 Labour Market sensitivity criteria

Sensitivity	Example
High	There is a shortfall of appropriate labour and skills. The proposed development would therefore lead to labour market pressure and distortions (i.e. skills and capacity shortages, import of labour, wage inflation).
Medium	There is a low/limited supply of appropriate labour and skills. The proposed development may therefore lead to labour market pressure or distortions.
Low	The is a readily available supply of appropriate labour and skills. The proposed development is therefore unlikely to lead to labour market pressure or distortions.

7.5.7 For wider socio-economic effects, including changes in expenditure, housing supply, community infrastructure and recreation, receptor sensitivity will be determined with reference to the importance and susceptibility of the relevant receptor, i.e. the extent to which any change could affect socio-economic performance. This will consider how the receptor is likely to respond to external changes which could result in socio-economic effects.

7.5.8 Consistent definitions of magnitude of change across different types of socio-economic effects (employment, community infrastructure (education & health), recreation and public access are provided in **Table 7.2**.

Table 7.2 Magnitude of Change Criteria

Magnitude of Change	Type of Change	Criteria
High	Adverse	Employment changes: the number of jobs lost in the Study Area would be 250 or greater (based upon the EU definition of small and medium enterprises (European Commission, 2003)). Other socio-economic changes: adverse changes to identified receptors would be observed on an international, national or regional scale. Changes are likely to be experienced over the long term (i.e. 5+ years).
	Beneficial	Employment changes: the number of jobs created in the Study Area would be 250 or greater. Other socio-economic changes: beneficial changes to identified receptors would be observed on an international, national or regional scale. Changes are likely to be experienced over the long term (i.e. 5+ years).
Medium	Adverse	Employment changes: the number of jobs lost in the Study Area would be 50 or greater, but fewer than 250. Other socio-economic changes: Noticeable adverse changes, judged to be important at a local scale, to identified receptors. Changes are likely to be experienced over the medium term (i.e. 3-5 years).
	Beneficial	Employment changes: the number of jobs created in the Study Area would be 50 or greater, but fewer than 250. Other socio-economic changes: Noticeable beneficial changes, judged to be important at a local scale, to identified receptors. Changes are likely to be experienced over the medium term (i.e. 3-5 years).
Low	Adverse	Employment changes: the number of jobs lost in the Study Area would be greater than 10, but fewer than 50. Other socio-economic changes: Small scale adverse changes to identified receptors at the local level only. Changes are likely to be experienced over the short term (i.e. 1-2 years).
	Beneficial	Employment changes: the number of jobs created in the Study Area would be greater than 10, but fewer than 50.

Magnitude of Change	Type of Change	Criteria
		Other socio-economic changes: Small scale beneficial changes to identified receptors at the local level only. Changes are likely to be experienced over the short term (i.e. 1-2 years).
Negligible	Adverse	Employment changes: the number of jobs lost in the Study Area would be less than 10. Other socio-economic changes: very small scale adverse changes to identified receptors at the local level only. Changes are likely to be experienced over the short term (i.e. less than 6 months).
	Beneficial	Employment changes: the number of jobs gained in the Study Area would be less than 10. Other socio-economic changes: very small scale beneficial changes to identified receptors at the local level only. Changes are likely to be experienced over the short term (i.e. less than 6 months).
No Change		No change would be perceptible, either beneficial or adverse.

7.5.9 In line with standard EIA practice, a matrix-based approach has been adopted to consider the sensitivity of identified receptors in tandem with the likely magnitude of change from the Proposed Development. This method allows the level and significance in EIA terms of all predicted socio-economic effects to be determined. The EIA significance matrix adopted in this assessment is detailed in **Table 7.3** below.

7.5.10 Where appropriate, magnitude of change levels have been fixed to relevant quantitative thresholds. In particular, net employment change which will be calculated based on the gross employment potential of the Proposed Development (construction and operation) and taking account of additionality factors:

- Deadweight – what would happen in the absence of the Proposed Development;
- Leakage – the proportion of new employment opportunities accessed by people living outside the Study Area;
- Displacement – the proportion of the new employment created as a result of reduced employment elsewhere in the Study area; and,
- Multipliers – indirect and induced employment generated by the effects of the direct employment on the supply chain and income.

Table 7.3 Significance Matrix of Socio-Economic Effects

Sensitivity	Magnitude of change			
	High	Medium	Low	Negligible
High	Substantial	Major	Moderate	Minor
Medium	Major	Moderate	Minor	Negligible
Low	Moderate	Minor	Minor/Negligible	Negligible

7.5.11 Following the identification of likely socio-economic effects, the need for further mitigation measures to address the predicted adverse effects will be considered.

7.5.12 The assessment will conclude by reporting the level and significance of likely residual socio-economic effects from the Proposed Development, taking account of all proposed mitigation measures. If residual significant adverse effects are identified, the requirement for monitoring will be considered.

7.6 References

- Office for National Statistics Annual Population Survey (2019)
- Nomis - Official Labour Market Statistics
- Bristol, North Somerset and South Gloucestershire CCG Health Services https://bnssgccg.nhs.uk/health-services/
- South Gloucestershire Infrastructure Delivery Plan (2014)
- South Gloucestershire Core Strategy (2013)
- South Gloucestershire Annual Monitoring Report (2019)
- South Gloucestershire SHMA Guidance Note (2020)
- The Wider Bristol SHMA (Strategic Housing Market Assessment) Update Volume 2 (2019)
- Indices of Multiple Deprivation (2019) http://dclgapps.communities.gov.uk/imd/iod_index.html
- West Of England Economic Overview and Strategic Evidence (2021) https://www.westofengland-ca.gov.uk/about-us/regional-insights/economic-overview/

8 Transport and Access

8.1 Introduction

8.1.1 The Transport Chapter will assess the likely significant impacts associated with the Proposed Development on the local area and sensitive receptors in respect to transport, including the highway network, public transport, cycling and walking.

8.1.2 As part of the transport strategy, additional densification sought within the Proposed Development will be achieved through additional public transport capacity alongside enhanced cycle and pedestrian infrastructure. To reflect the increase in public transport provision, four transport phases will be assessed each representing different levels. Transport Phase 1 consist of existing committed schemes (a one train per hour service at North Filton Station and a six MetroBus services per hour through the masterplan) with Transport Phase 4 to include the potential for a proposed Mass Transit Network. Additional trips to those in the consented planning application will be attributed to improvements to public transport, cycling and walking and will exceed the sustainable transport trips reflected within the consented planning application.

8.1.3 Additional car trips are expected to and from the site from the displacement of 1,000 homes from Patchway Estate to within the masterplan. However, the level of car trips generated by the site will be in line with the volume forecasted as part of the Cribbs Patchway New Neighbourhood, therefore there would be no increase in wider traffic flows as a result of the site densification.

8.1.4 Table 8.1 shows the level of public transport provision for each Transport Phase. It should be noted that Transport Phase 2 onwards consists of additional public transport provision that was not considered as part of the consented planning application.

Table 8.1: Transport Phases

Public Transport	Transport Phase 1 Committed Service Level – Consented OPA	Transport Phase 2 - Proposed Service Level	Transport Phase 3 - Proposed Service Level	Transport Phase 4 - Proposed Service Level, Max Density
MetroBus services per hour per direction	6	8	8	8
Train services per hour per direction (Bristol Temple Meads)	1*	3	3	3**
Train services per hour per direction (Parkway Station)	-	-	2	2**
Park and Ride spaces	-	-	500	500
Mass Transit Network	-	-	-	8
Total public transport capacity per hour per direction (people) (gross capacity)	1,546	4,612	7,440	11,440

**Assumes 3 car trains*
***Assumes 5 car trains*

8.1.5 It is envisaged that the volume of vehicle trips generated by the Proposed Development will be in line with the 2014 Planning Consent (reference: PT/14/3867/O), with additional trips from

the displacement of 1,000 homes from the Patchway Estate, consented as part of the CPNN, onto the Site.

8.1.6 Additionally, the Proposed Development seeks to obtain access from Concorde Roundabout and Combination Junction, which will redistribute some of the traffic from the 2021 Planning Consent.

8.1.7 The displacement of homes from Patchway Estate and additional proposed accesses are expected to change the forecast traffic distribution on the local network. Therefore, the likely effect on local links is expected to change when compared with the effects set out in the consented scheme.

8.1.8 Details of the forecast additional trips for each mode of transport will be outlined within the Transport Assessment (TA).

8.2 Baseline

8.2.1 This section outlines the baseline transport conditions that will be considered for the assessment. The baseline transport conditions will assume the 2014 Planning Consent as the baseline assessment.

8.2.2 The existing site is bounded by Hayes Way and Merlin Road to the north, A38 Gloucester Road to the east, railway line to the south and the A4018 to the west.

8.2.3 As part of the 2014 Planning Consent, it was agreed that the proposed accesses to the site will be via the Blenheim Roundabout, Brabazon Roundabout, A38 Gloucester Road and Fishpool development site in addition to the existing access via Combination Junction. Additionally, a MetroBus only access was agreed via San Andreas Roundabout.

8.2.4 Planning Condition 5 (Design Codes, reference DOC21/00067) was submitted in 2021, providing concept designs for the internal highways within the Eastern Framework. Following this application, a Reserved Matters Application (reference: P21/05318/RM) was submitted for the construction of primary access through the Brabazon Eastern Framework.

8.2.5 The Design Code and Reserved Matters Application provide further details of the proposed pedestrian network and cycle routes within the Eastern Framework of the Masterplan. The proposed pedestrian network will connect the site with the primary footways that are provided near the Site and run adjacent to the A38 and B4057.

8.2.6 Additionally, the proposed cycle lane will connect the site with the shared pedestrian / cycle way on the western side of the A38. The cycleway is provided from the junction of the A38 / Filton Avenue in the south to the B4057 in the north.

8.2.7 The site will also be served by the Henbury Line that will serve the Site through the proposed North Filton Station. A separate planning application was submitted to build the rail station (P21/06296/F).

8.2.8 The Site will be connected with the consented YTL Arena (reference: 19/0550/P), a 17,000-capacity venue with retail, conference centre and other leisure-related land uses.

8.3 Consultation

8.3.1 The following consultation has been undertaken to date:

- Weekly pre-application meeting(s) with South Gloucestershire Council Highways Officer to agree on the assessment methodology (fourteen meetings to date, which are planned to be continued until submission)

- Pre-application meeting(s) with other relevant stakeholders including WECA, National Highways and Bristol City Council.

8.4 Potential Effects

Insignificant Effects

8.4.1 The likely insignificant environmental effects that will be excluded from the ES are as follows:

- Likely effect on the strategic highway network. This is in line with the Environmental Statement submitted for the 2014 Planning Consent, which has excluded the assessment of the strategic highway network.

- Likely effect of construction on the existing highway network. The ES for 2021 Planning Consent has assessed the impact of construction assuming a robust scenario of 400 staff being on-site during the development of any phase. This assumption remains robust; therefore the likely effect of construction will be excluded from the assessment.

Significant effects

8.4.2 The likely significant environmental effects to be considered within the ES are as follows:

- Likely significant effects of increases in traffic on the existing local highway network (e.g. Hayes Way, A38 Gloucester Road and Merlin Road) as traffic distribution of the Proposed Development would vary compared to the 2021 Planning Consent, due to the displacement of the 1,000 homes from Patchway Estate onto the Site, and the opening of Concorde Roundabout and Combination Junction.

- Likely significant effects of increase in passengers on the existing public transport and the proposed MetroBus, MetroWest and Mass Transit Network schemes. An assessment of the likely significant effects for each Transport Phase as set out in Table 7.1 will be undertaken.

- Likely significant effects of increase in users on the existing local cycle and pedestrian network within the vicinity of the Site, and the proposed network within the Site.

8.5 Methodology

8.5.1 The ES Chapter will set out the methodology applied to assess the potential effects of the Proposed Development. The approach will be consistent to the requirements of the Institute of Environmental Assessment (IEA) Guidelines (Guidelines for the Environmental Assessment of Road Traffic, IEA (now IEMA) 1993) and LA 101 Introduction to Environmental Assessment (published by Highways England, Transport Scotland, Welsh Government and Department for Infrastructure). Guidance provided by the IEMA will also be consulted in order to identify significant criteria applicable to the assessment. Where there are no defined thresholds of significance, professional judgement will be applied based on knowledge of the site. The IEMA guidelines will be used to define receptor sensitivity and impact magnitude.

8.5.2 Where there are no thresholds of significance available, in such instances, interpretation and professional judgement will be applied. Criteria for assessing the potential effects are:

- Negligible: no material effect;

- Minor: slight, very short or highly localised effect of no significant consequence;

- Moderate: limited effect (by extent, duration or magnitude);

- Major: considerable effect (by extent, duration or magnitude); and
- Substantial: effect of more than local significance or in breach of recognized acceptability, legislation, policy or standards.

8.5.3 The potential effects will be characterised as:

- Beneficial: meaning that the changes produce benefits in terms of transportation and access (such as a reduction of traffic, travel time or vehicle miles travelled, or a provision of a new service, access or facility);
- Negligible: meaning that their bearing is too small to measure meaningfully; or
- Adverse: meaning that changes produce adverse effects in terms of transportation and access (such as increase of traffic, travel time, patronage or loss of service or facility).

8.6 References

- Institute of Environmental Management and Assessment (IEMA)
- Greater Bristol Area Transport Study (GBATS)
- Bristol City Council (BCC) and South Gloucestershire Council (SGC) planning policies
- Department for Transport (DfT) Annual Average Daily Traffic (AADT) factors
- Service timetables for trains and buses
- Planning references for 2021 Planning Consent

9 Air Quality

9.1 Introduction

9.1.1 This section has been prepared by Stantec UK and sets out the technical details of the air quality assessment which will be reported in the ES.

9.1.2 Air quality has been scoped into the ES due to the potential for significant effects as a result of emissions to air primarily associated with emissions from traffic during the operational stage. The proposed methodologies and scope of the assessment are provided in the following sections.

9.2 Baseline

9.2.1 The Site is located within the administrative boundary of South Gloucestershire Council (SGC). SGC has investigated air quality within its administrative boundary as part of its responsibilities under the Local Air Quality Management (LAQM) regime. Three Air Quality Management Areas (AQMAs) have been declared by SGC due to exceedances of the annual mean nitrogen dioxide (NO_2) National Air Quality Objective (NAQO). The closest AQMA to the Site is located more than 5 km away at Staple Hill. In 2020, SGC revoked AQMA 1 (Cribbs Causeway), encompassing a single property adjacent to the M5 junction 17, approximately 860 m from the Site, due to continued compliance with the annual mean NO_2 NAQO.

9.2.2 The neighbouring local authority, Bristol City Council (BCC), has also investigated air quality within its administrative boundary. BCC has declared an AQMA encompassing the city centre and parts of the main radial roads including the M32. The AQMA has been declared due to exceedances of the annual mean and hourly mean NO_2 NAQO, as well as the 24-hour mean particulate matter (PM_{10}) NAQO and is located approximately 2.2 km south of the Site at its closest point.

9.2.3 In 2019[9], SGC undertook automatic (continuous) monitoring at one site for NO_2 and PM_{10} and non-automatic (passive) monitoring of NO_2 at 107 locations. The closest monitoring location (DT130) at the A4018 Cribbs Causeway, approximately 600 m from the Site measured annual mean NO_2 concentrations of less than 30 µg/m^3 between 2015 - 2019 (well below the NAQO of 40 ug/m^3). In addition, there were no exceedances of the annual mean NO_2 NAQO at any SGC monitoring locations in close proximity to the Site between 2015 - 2019.

9.2.4 The main source of pollution likely to affect the Site are vehicles on the surrounding road network, namely the A38 Gloucester Road North, A4018 Cribbs Causeway, Merlin Road and Hayes Way. The M5 represents the largest local sources of traffic-related emissions however it is not in close proximity (>500 m) to the Proposed Development and therefore considered unlikely to significantly affect baseline air quality within the Site.

9.2.5 There is also a railway line located adjacent to the southern boundary of the Site which is currently used by freight trains only. However, an extension of this line to passenger trains is proposed, along with the opening of a new railway station at North Filton, also adjacent to the southern boundary of the Site. Therefore, existing and future emissions from trains using this line and idling trains at the new railway station have potential to influence air quality within the Site.

[9] Due to temporary changes in travel patterns in 2020 resulting from the COVID-19 pandemic, 2019 is the latest year of representative monitoring data.

9.3 Consultation

9.3.1 Consultation with the Environmental Health Officers (EHOs) at SGC and BCC will be undertaken to agree the proposed approach to the air quality assessment.

9.4 Potential Effects

Insignificant Effects

9.4.1 The Institute of Air Quality Management (IAQM) guidance (IAQM, 2014) recommends that no judgement of the significance of effects of construction dust without mitigation is made, as mitigation is assumed to be secured by planning conditions, legal requirements or required by regulations. Following the implementation of appropriate mitigation measures, construction dust is unlikely to be considered significant and will not be considered further within the EIA. Mitigation for construction dust will be secured through a Construction Environmental Management Plan (CEMP) which will be provided as an appendix to the ES.

9.4.2 An assessment of the risk of potential construction dust impacts will, however, be undertaken with reference to relevant guidance and provided as an appendix to the ES.

9.4.3 Taking into account the location of ecological sites and likely routing of traffic movements from the Proposed Development it is considered that the overall effect of the Proposed Development on ecology via indirect air quality impacts will be 'not significant'. Therefore, the potential indirect effects of air quality on ecology will not be considered within the Air Quality ES Chapter.

9.4.4 There is no combustion-based energy centre proposed as part of the development and therefore an assessment of the impacts on existing receptors is not required.

Significant Effects

Construction

9.4.5 There is the potential for impacts on air quality as a result of emissions of NO_2, PM_{10} and $PM_{2.5}$ from construction traffic associated with the Proposed Development. These impacts have the potential to occur at sensitive existing receptors (e.g., residences) that are located in close proximity to roads along which the construction traffic will travel.

Operation

9.4.6 Given the location of the Site, there is the potential for impacts on the proposed residential receptors during operation from the existing road network. The impact of road traffic emission sources, in particular the adjacent road network, on air quality at proposed receptor locations will be assessed. In addition, the impact of emissions from trains, using the railway line to the south of the Site, on proposed receptor locations will need to be considered.

9.4.7 There is also the potential for impacts on air quality from traffic associated with the Proposed Development itself during operation. These impacts have the potential to occur at sensitive receptors (e.g. existing residences, schools and any potential proposed onsite sensitive land uses) that are located in close proximity to roads along which the operational traffic generated by the Proposed Development will travel.

9.4.8 The principal air pollutants of concern in relation to human receptors will be NO_2, PM_{10} and $PM_{2.5}$.

9.4.9 The assessment of potential impacts as a result of emissions from traffic associated with the Proposed Development will consider the potential for cumulative impacts that may occur as

the result of the combined impacts of traffic generated by both the Proposed Development and identified cumulative developments.

9.5 Methodology

Construction

9.5.1 It is expected that the Proposed Development will result in an increase in traffic flows on the surrounding road network during the construction phases, however traffic flows are currently unknown. If the traffic generation for the Proposed Development exceeds criteria provided within the Environmental Protection UK (EPUK) / IAQM guidance, (EPUK / IAQM, 2017), a detailed air quality assessment will be undertaken in accordance with the same methodology used for assessment of operational impacts which is defined in the following section.

Operation

9.5.2 Information regarding baseline air quality will be obtained by collating the results of monitoring carried out by SGC and BCC and referring to maps of AQMAs as well as exceedances of the EU Limit Values from DEFRA NO_2 and PM projections data (DEFRA, 2020a). Background concentrations will be defined based on the national pollution maps published by DEFRA (DEFRA, 2020b).

9.5.3 For assessment of road traffic emissions, the Study Area (based on the Environmental Protection UK (EPUK) / IAQM guidance) includes all roads (and any adjacent sensitive properties) within 250 m of any roads where development traffic flows are predicted to exceed the EPUK / IAQM screening criteria of an increase of 500 total Annual Average Daily Traffic (AADT) or 100 Heavy Duty Vehicle (HDV) AADT (or an increase of 100 total AADT or 25 HDV AADT inside of an AQMA).

9.5.4 Air quality will be assessed at a range of representative worst-case human health receptor locations, the model will be used to predict concentrations within the Site to assess the suitability of the Site for the proposed end-uses, and also at off-site receptors to assess the impacts of additional traffic associated with the Proposed Development. For traffic-related impacts these will be existing sensitive receptors (schools, residential properties, care homes, hospitals and nurseries) that are closest to busy roads, in particular those close to junctions, where traffic emissions are greatest.

9.5.5 The Transport section of this Scoping Report details how baseline and future traffic flows for the road network and suitable assessment scenarios will be defined; this data will then be used to inform the air quality assessment. The existing baseline year, used for air quality model verification, will be chosen to reflect the most recent year for which sufficient air quality monitoring data are expected to be available. Due to temporary changes in travel patterns in 2020, it is unlikely that data from 2020 will be suitable and therefore 2019 is expected to be the most appropriate year for model verification.

9.5.6 Concentrations of NO_2, PM_{10} and $PM_{2.5}$ at identified residential receptors will be modelled using the ADMS-Roads dispersion model (v5). To create a robust model, verification will be undertaken to compare the results of modelling against those from monitoring. Emissions associated with the traffic will be calculated using the most recent version of the Emissions Factor Toolkit (EFT), currently v10.1. Traffic data will be entered into the EFT to provide emissions rates for each of the road links modelled.

9.5.7 There has been an acknowledged disparity between national road transport emissions projections and measured annual mean concentrations of nitrogen oxides (NOx) and NO_2 for many years. However, recent monitoring has shown that reductions in concentrations are now being measured in many parts of the country (Air Quality Consultants Ltd., 2020a) and current toolkits used to quantify pollutant emissions are representative (Air Quality Consultants Ltd., 2020b). Whilst there is still some uncertainty regarding the rate at which NOx emissions will

reduce in the future, the existing toolkit incorporates very limited uptake of Electric Vehicles (EVs) and therefore is likely to over predict NOx emissions in future years and its application is therefore considered sufficiently precautionary.

9.5.8 The assessment of traffic emissions will assess the future baseline which includes traffic associated with identified cumulative schemes, including the extant permission for the Brabazon site, and predicted concentrations will be compared to the relevant NAQOs to identify any exceedances and impacts will be determined using the criteria outlined in the EPUK/IAQM guidance.

9.5.9 The impacts of railway emissions on air quality at proposed receptor locations within the southern part of the Site will be considered taking into account the screening criteria in DEFRA's LAQM TG.16 (DEFRA, 2021). Should a detailed assessment be required, railway emissions will be included in the ADMS-Roads model.

9.5.10 The result of the above will be summarised in an appropriate ES chapter with supporting figures. All technical data used in the air quality assessment will be appended to the ES.

9.6 References

- Air Quality Consultants Ltd. (2020a). 'Nitrogen Oxides Trends in the UK 2013 to 2019'
- Air Quality Consultants Ltd. (2020b). 'Comparison of EFT v10 with EFT v9'Bristol City Council (2020). '2020 Air Quality Annual Status Report'.
- Bristol City Council (2020). '2019 Air Quality Annual Status Report'.
- DEFRA (2021). 'Local Air Quality Management Technical Guidance (LAQM TG.16)'.
- Department of the Environment, Food and Rural Affairs (DEFRA) (2020a) '2020 NO_2 and PM Projections Data (2018 Reference Year)'. Available at: https://uk-air.defra.gov.uk/library/no2ten/2020-no2-pm-projections-from-2018-data
- Department of the Environment, Food and Rural Affairs (DEFRA) (2020b). '2018 Based Background Maps'. Available at: https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2018
- Environmental Protection UK and the Institute of Air Quality Management (EPUK / IAQM) (2017). 'Land-use Planning & Development Control: Planning for Air Quality'. V1.2. The Institute for Air Quality Management, London
- Institute of Air Quality Management (2014). 'Assessment of Dust from Demolition and Construction', IAQM, London
- South Gloucestershire Council (2021). '2019 Air Quality Monitoring Data'.

10 Noise and Vibration

10.1 Introduction

10.1.1 This chapter identifies the proposed scope of the EIA due to the potential for likely significant effects in relation to noise and vibration. The operational stages of the Proposed Development will be assessed.

10.1.2 To assess the likely significant effects of the Proposed Development, the assessment will consider the impact of both existing and proposed noise and vibration sources on existing and proposed noise and vibration sensitive receptors.

10.2 Baseline

10.2.1 The main noise and vibration sources likely to affect the site are trains using the railway line to the south of the site and vehicles on the surrounding road network, namely A38 Gloucester Road North, Hayes Way and Merlin Road.

10.2.2 Sound and vibration surveys will be undertaken at representative locations to quantify the noise and vibration climate on the site and at nearby receptors.

10.2.3 A computer acoustic model of the Site and surrounding areas will be prepared using industry standard software SoundPLAN version 8.2. The noise model will be used to evaluate the baseline noise climate across the site.

10.2.4 The proposed assessment will consider a 2036 future baseline which includes the extant Filton Airfield planning consent and the consented Arena. The ‘Full development’ scenario will be assessed against this 2036 future baseline.

10.2.5 The 2036 future baseline will be determined and based on traffic flow data from the project Transport consultants. This information will be incorporated into an acoustic model of the Proposed Development which will allow the 2036 future baseline to be calculated inclusive of the extant permission.

10.3 Consultation

10.3.1 Consultation on the assessment method will be undertaken with the Environmental Health Officer at South Gloucestershire Council.

10.4 Potential Effects

Insignificant Effects

10.4.1 Construction phase works have the potential to be a significant source of noise and vibration would include site levelling/clearance, ground excavation and road works. For the assessment, construction phase effects will be considered as temporary (albeit long-term) effects on nearby sensitive receptors.

10.4.2 However, as was proposed for the extant permission, the impact from the construction phase and specifically on-site plant can be managed by appropriate mitigation measures such as screening and hoarding, limited working hours and specific work methods. These measures will be set out in the Framework CEMP which will be appended to the ES. With effective mitigation through the CEMP, the impact from on-site construction is not considered to give rise to new, different or greater residual effects when compared with the 2036 baseline.

10.4.3 Construction traffic impacts were also assessed as part of the extant planning consent. With mitigation through CEMP, the impact from construction traffic is not considered to give rise to new, different or greater residual effects when compared with the 2036 baseline.

10.4.4 Therefore, construction phase impacts are not considered to be significant and are scoped out of the ES.

Significant effects

Operation

10.4.5 Aspects associated with the operation of the Proposed Development which have the potential to cause significant effects on existing and proposed receptors are considered to be:

- Changes in road traffic flows resulting from the Proposed Development on the surrounding road network and the subsequent change in noise levels at existing sensitive receptors;.
- Transportation noise affecting proposed residential dwellings;
- Transportation vibration from the railway affecting proposed residential dwellings; and
- The potential noise impact associated with the proposed employment use (including building services plant) on proposed and existing noise sensitive receptors.

10.5 Methodology

10.5.1 The assessment will have regard for the relevant sections of the following documents:

- National Planning Policy Framework (NPPF);
- Planning Practice Guidance (PPG);
- Local Planning Guidance; and
- Noise Policy Statement for England (HMSO, 2010).

10.5.2 In accordance with national policy, the Lowest Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL) for each source of noise and vibration will be defined based on appropriate guidance and standards.

10.5.3 The LOAEL and SOAEL will form the basis of the assessment of significance of noise and vibration effects. Based on the IEMA Guidelines for Environmental Noise Assessment and relevant guidance, the relationship between the noise impact, adverse effect level, noise effect, and significance is described in **Table 7.1**.

Table 7.1: Relationship between Noise and Vibration Impact, Effect and Significance

Magnitude (Nature of Impact)	Response	Description of Effect (on a specific receptor)	Significance
Major Beneficial	Very Noticeable Improvement	Causes a material change in behaviour and/or attitude, e.g. individuals begin to engage in activities previously avoided due to preceding environmental noise conditions. Quality of life enhanced due to change in character of the area.	More likely to be Significant
Moderate Beneficial	Noticeable Improvement	Improved noise climate resulting in small changes in behaviour and/or attitude, e.g. turning down volume of television; speaking more quietly; opening windows. Affects the character of the areas such that there is a perceived change in the quality of life.	
Minor Beneficial	Just Noticeable Improvement	Noise impact can be heard, but does not result in any change in behaviour or attitude. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life.	Less likely to be Significant
Negligible	No Response	N/A = No discernible effect on the receptor	Not Significant
Minor Adverse	Present and Not Intrusive	Noise impact can be heard, but does not cause any change in behaviour or attitude, e.g. turning up the volume of television; speaking more loudly; closing windows. Can slightly affect the character of the area but not such that there is a perceived change in the quality of life	Less likely to be Significant
Lowest Observed Adverse Effect Level (LOAEL)			
Moderate Adverse	Present and Intrusive	Noise impact can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows. Potential for non-awakening sleep disturbance. Affects the character of the area such that there is a perceived change in the quality of life.	
Significant Observed Adverse Effect Level (SOAEL)			
Major Adverse	Present and Disruptive	Causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in character of the area.	More likely to be Significant
Substantial Adverse	Very Disruptive and Harmful	Significant changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory.	Significant

Operation

Transportation Noise – Impact on Proposed Dwellings

10.5.4 Transportation noise will be calculated using noise prediction procedures as detailed in the Department of Transport and Welsh Offices' 'The Calculation of Road Traffic Noise' (CRTN) and Department of Transport 'Calculation of Railway Noise' (CRN).

10.5.5 Using the measured sound levels and acoustic modelling, noise levels will be predicted for a 'with' development scenario.

10.5.6 Based on the calculated with development sound levels, an assessment of the suitability of the site for residential use will be undertaken. The assessment of the magnitude and effect of noise on the Proposed Development will reference the following industry standards:

- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings
- World Health Organisation Guidelines for Community Noise

Transportation Vibration

10.5.7 The assessment of the magnitude and effect of vibration from train movements on the railway line will reference the industry standard BS 6472:2008.

Operational Phase – Impact on Existing Dwellings

10.5.8 Changes in road traffic flows associated with the Proposed Development have the potential to adversely affect existing noise sensitive receptors adjacent to those roads. The assessment of road traffic noise implements the noise prediction procedures as detailed in the Department for Transport (DfT) and Welsh Office's 'The Calculation of Road Traffic Noise' (CRTN). The assessment uses criteria to compare changes between the baseline and with development scenarios.

10.5.9 The significance of these changes will be based on guidance criteria proposed in the Design Manual for Roads and Bridges (DMRB).

10.5.10 Building services plant associated with the Proposed Development could also impact on existing dwellings. Drawing on guidance contained in BS 4142, suitable noise emission criteria will be suggested to minimise any adverse impacts of fixed plant and building services associated with the commercial uses.

10.6 References

- Department for Communities and Local Government (2012); National Planning Policy Framework. London: HMSO.
- Department for Environment, Food and Rural Affairs (2010); Noise Policy Statement for England. London: HMSO.
- Department for Communities and Local Government (2016); National Planning Practice Guidance. https://www.gov.uk/government/collections/planning-practice-guidance [accessed: 12/12/2017]
- British Standards Institution (2014); BS 8233:2014 Guidance on sound insulation and noise reduction for buildings. London: BSI.
- British Standards Institution (2008); BS 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings Part 1 Vibration sources other than blasting. London: BSI.
- The Highways England (2020); Design Manual for Roads and Bridges LA 111 Noise and vibration. London: HMSO.
- Department of Transport Welsh Office (1988); Calculation of Road Traffic Noise. London: HMSO.
- Department of Transport (1995); Calculation of Railway Noise. London: HMSO.

11 Landscape, Townscape and Visual Impact

11.1 Introduction

11.1.1 This section sets out the proposed approach and methodology for undertaking the Landscape, Townscape and Visual Impact Assessment (LTVIA).

11.1.2 A summary overview of the landscape, townscape and visual baseline data that will be used within the assessment is provided. Landscape/townscape designations and published character assessments, which are relevant to the Site, are identified. Proposed view locations and visual receptors for the visual assessment, and reasoning for their selection, are also given.

11.1.3 The LTVIA will identify and assess the negative and positive effects and significance of change arising from the Proposed Development on the landscape / townscape as an environmental resource in its own right and on people's views and visual amenity.

11.1.4 **Landscape** is defined by the European Landscape Convention, Article 1, 2006 as:

"*…an area perceived by people whose character is the result of the action and interaction of natural and/or human factors*".

11.1.5 **Townscape** is defined by the Landscape Institute in paragraph 1.2 of the Landscape Institute Technical Information Note 05/2017: Townscape Character Assessment, as:

"*…the landscape within the built-up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces and the relationship between buildings and open spaces*."

11.1.6 **Townscape** is also defined in Transport Analysis Guidance (WebTAG) Unit A3, chapter 7: Impacts on Townscape (Department for Transport, May 2019), paragraphs 7.1.1 and 7.1.2:

"7.1.1 Townscape is the physical and social characteristics of the built and unbuilt urban environment and the way in which we perceive those characteristics. It is this mix of characteristics and perceptions that make up and contribute to townscape character and give a 'sense of place' or identity.

7.1.2 The physical characteristics of a townscape are expressed by the development form of buildings, structures, and spaces. The development form influences the pattern of uses, activity and movement in a place and the experience of those who visit, work and live there."

11.1.7 This chapter has been prepared by a Chartered Landscape Architect at Stantec.

11.2 Baseline

Study Area

11.2.1 The study area comprises 3km from the Site boundary. This is in accordance with the study area utilised in the LVIA chapter of the earlier 2017 ES prepared for the extant planning consent and reflects the nature of the Site's location within a wider built-up area. Professional experience of other assessments and site appraisals for this type of development indicates that landscape or visual effects would not be significant beyond 3km from the Site boundary.

11.2.2 The spatial scope, together with a review of potential visual receptors, has guided the selection of representative view locations that would be included within the visual impact assessment.

11.2.3 Listed Buildings are considered within or adjacent to the Site. The Heritage Desk Based Assessment (DBA) prepared for the extant planning consent considered Listed Buildings in greater detail.

Baseline

Landscape / Townscape Designations

11.2.4 Relevant designations to the Site and the surrounding area are set out in **Table 11.1**, below.

Table 11.1: Landscape / Townscape Designations

Typical Designation and Importance (Value)	Description	Actual Designation Applicable to the Site and Surrounding Area
World Heritage Site: **International (Very High)**	Unique sites, features or areas of international importance with settings of very high quality.	None within 3km of the Site.
National Parks, Areas of Outstanding Natural Beauty (AONB), Conservation Areas, curtilage of Grade I, II* and II Listed Buildings. Registered Parks and Gardens of Special Historic Interest, Scheduled Monuments. **National (High).**	Sites, features or areas of national importance with settings of high quality.	**National Parks** None within the 3km study area. **Area of Outstanding Natural Beauty (AONB)** None within the 3km study area. **Conservation Areas** The Site is not within a Conservation Area. Conservation Areas within the 3km study area are: • Brentry situated approximately 0.8km to the south-west; • Henbury situated approximately 1.6km to the south-west; • Kingweston and Trym Valley situated approximately 1.9km to the south-west; • Winterbourne situated approximately 3km to the east; and • Hambrook situated approximately 3km to the south-east **Listed Buildings within the Site or adjacent to the Site** Listed Buildings within the Site include: WWII Pillbox at Filton Airfield, adjacent to the southern boundary – Grade II; and WWI Aircraft Hangar, Single GS Type (16U) – Grade II. There are also two Grade II listed WW1 aircraft hangars on land adjacent to the northeastern site boundary (Hangars 16S and 16M); and Cedar House adjacent to the southern site boundary is a c1750 farmhouse, Grade II Listed Building. **Register of Parks and Gardens of Special Historic Interest (RPG)** The Site is not within a RPG. Within the 3km study area: Royal Victoria Park (formerly Brentry House), Grade II (situated approximately 1.2km to the south west of the site), Blaise Castle and Hamlet, Grade II* (situated approximately 2km to the south west) and Stoke Park, Grade II (approximately 2.6km to the south east of the site) are entries on the RPG. **Scheduled Monuments within 3km of the Site** There are no Scheduled Monuments within the Site. Within the 3km study area, are: Blaise Castle - Iron Age hillfort, Roman and medieval remains, and post-medieval garden; and King's Weston Hill camp, Henbury.

Typical Designation and Importance (Value)	Description	Actual Designation Applicable to the Site and Surrounding Area
Long distance paths, London, and National Cycle Routes **Regional (High/ Medium)**	Sites, features or areas of regional importance with intact character.	**Long Distance Walking Routes:** None within the Site. The Community Forest Path National Trail / Long Distance Route is situated approximately 1km to the west of the Site. **National Cycle Route:** None within the Site. National Cycle Route 4 is located 0.4km to the north-west of the site, running from Henbury to Cribbs Causeway and on to Spanorium Hill. The North Bristol local route runs along the A38 east of the site, joining Highwood Road to Cribbs Causeway retail area.
Designated Public Open Space **Local (Medium) or Regional (High or Medium)**	Public open spaces, parks, recreational spaces; Country Parks, Local Historic Parks and Gardens	There is a network of designated open spaces throughout the urban area within the 3km study area. Currently there is no designated open space within the Site. Local historic parks and gardens (LHPG) are designated by Bristol City Council. There are none within the Site. LHPG are located within the 3km study area: Brentry Hospital, Blaise Hamlet and Blaise Castle.
Tree Preservation Orders (TPOs)	Protected trees within the Site	An Area Tree Preservation Order (TPO) was designated upon the former airfield in February 2014. Other TPOs in proximity to the Site include Yew and Cedar trees at Cedar House and adjacent to the southern boundary of the site; a group TPO upon an area of Oak trees and TPOs on individual Oak trees along the Henbury Trym, just beyond the Site boundary.

Landscape / Townscape Character

11.2.5 The Site lies within the following character areas:

- **National Landscape Character Area** 118: Bristol, Avon Valleys and Ridges.
- **South Gloucestershire's Revised Landscape Character Assessment SPD** Area 15: Patchway, Filton and the Stokes Landscape Character Area (LCA).

11.2.6 Other character areas within the 3km study area are:

- **South Gloucestershire's Revised Landscape Character Assessment SPD:**
  - Area 13: Frome Valley
  - Area 15: Patchway, Filton and the Stokes Landscape Character Area (LCA).
  - Area 18: Severn Ridges
  - Area 2: Pilning Levels.

Landscape / Townscape Features of the Site

11.2.7 Landscape / Townscape Features of the Site are:

- **Landform and watercourses:** The Site lies on landform between 50m AOD and 70m AOD; the higher landform runs across the centre of the airfield from north to south. Higher and rising landform is situated to the north and south of the airfield.

- **Land use and settlement:** The Site comprises the extents of the former Filton Airfield, which has outline planning consent for development (Brabazon). Phase 1 of Brabazon is currently undergoing construction. Elsewhere within the Site, there is remnant airfield buildings and structures, grassland, runway and service roads / hardstandings. Some parts of the Site are being used for storage and other meanwhile uses.

- **Vegetation and tree cover:** A small area of woodland, Filton Wood, lies just within the northern boundary of the Site on the edge of the Charlton Hayes development. Dead elms are evident in hedgerows in fields to the west of Filton Airfield and within the Henbury Trym valley. An area of vegetation is located along the railway cutting to the south of the airfield, between the Site and the Arena/BAE Systems/Airbus estate. There is very little vegetation within the Site, as a result of it being a former airfield. Most of the Site vegetation comprises mown grassland around the concrete aprons and runway. Hedgerows extend around the boundary of the airfield from Charlton Road, west, following the fence line; north at the end of the runway and east to a small area of woodland. There are a number of mature trees located around the listed building hangars on the northern boundary, east of Filton Wood and to the site boundaries.

- **Townscape elements: Scale, Grain and Massing:** The Site is a large expanse of open space, with a few structures at the perimeter including large scale hangars. This open space separates and is in contrast with the close-grained nature of the residential and commercial areas to the north and south of the site, and therefore has little to no scale, grain, or massing.

- **Townscape elements: Appearance:** Although the grassland is well maintained, the former airfield appears as a disused commercial / infrastructure area with associated airfield buildings and structures, some of which are large scale, for example the hangars. Local views from public areas into the Site are through chain link fencing. The remnant runways, taxiways and hardstanding areas are large-scale and visible in local views.

- **Townscape elements: Legibility:** In local views, the Site has distinctive legibility as a former airfield and therefore a large scale open, space within the townscape which is undergoing regeneration and development; as such it contributes to legibility of the wider Filton character and townscape. However, as the Site is not publicly accessible beyond the Public Rights of Way at the northern and western edges of the Site, there is little connection between the Site and adjacent areas. There are no obvious navigable public routes through the Site, and few signs or elements within the Site or at the Site boundaries that function as way-markers. Remnant airfield structures and features provide some local landmarks and focal points, such as the runway, hangars and former control tower.

- **Townscape elements: Public Realm, Open Space and Public Rights of Way:** There are no areas of public open space or public realm within the Site. There are no Public Rights of Way within the fenced former airfield, as a result of restrictions required by its previous operational nature. A footpath route, called Charlton Walk, is a 3-mile public footpath which has been created around the boundary of the airfield, passing from Filton Golf Course, past Cedar House and west along the southern boundary of the Site to the end of the runway; then northwards at the western end of the Site, before heading eastwards along the northern Site boundary to Highwood Road.

People's Views and Visual Amenity

11.2.8 **Key Views** are those published strategic views, panoramas or contained views which are identified as being important views across the townscape or landscape; these being views from parks and other public spaces, or streets, that take in important or defining landmark features to urban landscapes, and which help to define key characteristics of that townscape or landscape location. Key Views may be protected and designated through local planning policy.

11.2.9 However, there are no published Key Views or view cones relevant to the Site nor the 3km study area.

11.2.10 **Visual receptors** are always people and their views at particular places; and will, for example, comprise people using Public Rights of Way (PRoW), public open spaces, public realm areas or other outdoor recreational facilities; people who may be visiting, living, or working within the study area; and people travelling by roads and rail.

11.2.11 **Visual amenity** is defined in paragraph 2.20 of Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, 2013 (GLVIA3): "*…the views that people have and their visual amenity – meaning the overall pleasantness of the views they enjoy of their surroundings.*"

11.2.12 The previous LTVIA from the 2017 ES and the current background data have been reviewed, including published information regarding local views and designated parks and open spaces. This information aided the identification of sensitive visual receptors, local key views, and features of historic or townscape significance. Visual receptors have been selected on the basis of the following types of views:

- **Representative** views (for example, representing views of users of a particular public right of way);
- **Specific** views (for example, a key view from a specific visitor attraction or heritage asset);
- **Illustrative** views (chosen to demonstrate a particular effect/specific issue); and
- **Important sequential** views (for example, along key transport routes).

11.2.13 As a result of dense urban development and low-lying, gently undulating landform within the study area, views towards the Site are typically limited to local views from surrounding roads. However, there are some views of the former airfield from open spaces and higher landform; though in these views the former airfield is seen within the context of a regenerating urban area.

11.2.14 An initial desktop analysis of the potential design changes to the extant planning consent, including the proposed tall building zones, has been carried out. The tall building zone which was considered is that as shown on the Draft Parameter Plan: Heights Track 2 (FAD-FCB-000-XX-PL-A-8005 issued on 25-11-2021) with the tallest building height zone proposed for up to 18 storeys and within which two tall buildings of up to 30 storeys may be located. It is acknowledged that the Draft Parameter Plans are in process of amendment as the design changes to the Proposed Development evolve.

11.2.15 To inform the LTVIA, a Zone of Theoretical Visibility (ZTV) plan will be prepared, which utilises LiDAR data to take into account existing visual barriers such as the urban built form and existing trees and woodlands. The ZTV plan will indicate the theoretical extent of the area from which the proposed development is likely to be visible. It is important to note that the ZTV would illustrate the **worst-case scenario** and that, in reality, there may be additional filtering of views.

11.2.16 As part of the desktop analysis, the potential visual influence of the Proposed Development was reviewed using viewshed analysis on Google Earth Pro. A maximum height of 134m was applied as a target point, within the proposed tall building zones and at potential locations of the 30 storey buildings. It is understood at this stage, that the proposals for an iconic building would not exceed 134m height.

11.2.17 **Table 11.2** sets out the preliminary selection of visual receptors for the visual impact assessment in the LTVIA, alongside the reasoning for inclusion. The preliminary selection of visual receptors and view locations is based upon those view locations utilised for the 2017 ES

and that were agreed through consultation with South Gloucestershire Council's (SGC) Landscape Officer at that time. Additional view locations have been included to represent people's views from areas that have undergone change since the 2017 ES, and which as a result have potential for significant visual effects.

Table 11.2: Preliminary Selection of Visual Receptors for Visual Impact Assessment in the 2021 LTVIA

View Location:	Visual Receptors and Reason for Selection:	Type 4 Verified Wireframe Visualisation*
VL1: Hayes Way at Concorde Roundabout	People walking, driving, cycling along Hayes Way. Low sensitivity. 2017 ES view location.	✓
VL2: Hayes Way at Brabazon Roundabout	People walking, driving, cycling along Hayes Way. Low sensitivity. 2017 ES view location.	✓
VL3: Earth Sculpture, land south of Cribbs Causeway (edge of Patchway)	Recreational use, focus on surrounding landscape / townscape. Medium sensitivity. 2017 ES view location.	✓
VL4: Road on Catbrain Hill adjacent to housing at Medlar Close	Residents accessing their homes. High sensitivity. 2017 ES view location.	✓
VL5: Fishpool Hill (end of road, emergency access to airfield)	High sensitivity for few residents from upper storeys. 2017 ES view location.	✗
VL6: Filton Golf Course (high point)	Recreational use, activity focussed on golf and landscape. Medium sensitivity. 2017 ES view location.	✓
VL7: Filton Golf Course, from PROW outside Golf Club House at 85m AOD	Recreational use, activity focussed on golf and landscape. Medium sensitivity. 2017 ES view location.	✗
VL8: A38 Gloucester Road, eastern footpath on A38 approach to Bristol.	People walking, driving, cycling along A38. Low sensitivity. 2017 ES view location.	✗
VL9: Haw Wood, Community Forest PROW on Berwick Drive	Recreational use, by walkers and cyclists, activity focussed on landscape. Medium sensitivity. 2017 ES view location.	✓
VL10: PROW from golf course to Brentry	Important Open Space (Elderberry Walk Open Space, Southmead), PROW and recreational route, PROW links to RHPG at Brentry. Medium sensitivity. 2017 ES view location.	✓
VL11: Bristol Parkway Station	Key travel node to / from Bristol. Many users on trains and waiting on platforms. Forest of Avon area. Medium sensitivity. 2017 ES view location.	✓
VL12: Southmead Road	Drivers, walkers, cyclists, residents, workers on Southmead Road (key route). In Forest of Avon. Medium sensitivity. 2017 ES view location.	✓
VL13: Bishopthorpe Road, Horfield	At edge of Important Open Space (Land at Kellaway Avenue, Horfield). Recreation / residents. Medium sensitivity. 2017 ES view location.	✓

VL14: Dragon Road / Down Road corner with Harcombe Road, Winterbourne	Forest of Avon. Within Settlement Boundary with oblique views and views across Green Belt countryside. Residents, walkers, drivers, cyclists. Medium sensitivity. 2017 ES view location.	✓
VL15A: Blaise Castle Estate (western end)	RHPG (Blaise Castle and Hamlet), LHPG Blaise Castle, area of Important Open Space (Blaise Castle, Henbury), Conservation Area. (Henbury for B and Kingsweston and Trym Valley for A), recreation, public access. High sensitivity. 2017 ES view locations.	✗
VL15B: Blaise Castle Estate (PROW, north of Coombe Hill)		✓
VL16: Charlton Hayes: Charlton Boulevard / Borkley Street	Residential receptors. Medium sensitivity. 2017 ES view locations (formerly numbered VP-LPA-A)	✓
VL17: A38 Approach – footway direction into Bristol	Drivers, walkers, cyclists; low sensitivity. 2017 ES view location (formerly numbered VP-LPA-B)	✓
VL18: The Mall at Cribbs Causeway – raised footway on car park	Pedestrians and car park users visiting The Mall. Low sensitivity. 2017 ES view location (formerly numbered VP-LPA-C)	✓
VL19: The Mall at Cribbs Causeway – south of central entrance	Pedestrians visiting The Mall. Low sensitivity. 2017 ES view location (formerly numbered VP-LPA-D)	✗
VL20: Okebourne Road Open Space	Recreational use by local residents. Medium sensitivity. 2017 ES view location (formerly numbered VP-LPA-E)	✗
Considered but scoped out:		
Almondsbury Intersection	Approach from M4 Wales onto M5 southbound. Raised carriageway. Drivers and passengers at speed. Low sensitivity. It is anticipated that any view of the tallest buildings would be fleeting, and the focus would be on the highway and driving, and therefore would not result in a significant visual effect and is scoped out from the 2021 LTVIA.	
Northville Millennium Green (Northville Road)	Open Space (Millennium Green). Forest of Avon. Recreation, nearby residents. Medium sensitivity. 2017 ES identified no view. It is anticipated that any glimpse view of the tallest buildings would not result in a significant visual effect and therefore this is scoped out from the 2021 LTVIA.	
Royal Victoria Park, Brentry RHPG	RHPG (Royal Victoria Park), LHPG (Brentry Hospital), area of Important Open Space (Brentry Hill), Conservation Area, informal footpaths, use by local residents. High sensitivity. 2017 ES identified no view and therefore this is scoped out from the 2021 LTVIA.	
Hollywood Estate Folly Tower	Historic garden, not previously open to the public, located at the Wild Place Project and which now has potential public access to the area in front of the Folly Tower. Viewshed analysis suggests only upper most storeys of tallest buildings visible and intervening trees prevent clear views. Recreational use with focus on the Wild Place Project rather than the surrounding landscape / townscape. It is anticipated that any glimpse view of the tallest buildings would not result in a significant visual effect and therefore this is scoped out from the 2021 LTVIA.	

11.2.18 No private views will be assessed in the LTVIA. However, where appropriate, representative views have been selected from publicly accessible locations within the urban area or at the edge of settlements, or adjacent to sensitive receptor property groupings or other buildings which are likely to be significantly affected by the Proposed Development.

Verified Views

11.2.19 Visual representations of the Proposed Development will be prepared to inform the LTVIA, as Type 4 Visualisations as set out in the Landscape Institute's Technical Guidance Note 06/19 Visual Representation of Development Proposals. The selection of the views in **Table 11.2** that are to be supplemented by verified views is proposed based upon those utilised for the 2017 ES and new views for the LTVIA for the Proposed Development are to be agreed with SGC through this Scoping process.

11.3 Consultation

11.3.1 Consultation will be undertaken with SGC's Landscape Officer to seek agreement to the proposed LTVIA methodology and to agree the visual receptors and verified views to be prepared to support the LTVIA. This is anticipated to take place during the scoping opinion determination period.

11.4 Potential Effects

Not Significant Effects

11.4.1 Receptors anticipated to receive Not Significant effects are set out below and are therefore proposed to be scoped out from the 2021 LTVIA. This is based upon the findings of the LTVIA in the 2017 ES:

- National Landscape Character Areas
- South Gloucestershire Landscape Character Assessment: Landscape Character Areas 13, 15, 18
- Listed Building: Aircraft Hangar, Single GS Type (16S)
- People's views from Almondsbury Intersection, Northville Millennium Green, Royal Victoria Park and the Hollywood Estate Folly Tower.

Significant effects

11.4.2 Based upon the findings of the LTVIA in the 2017 ES, likely significant effects, which may be adverse or beneficial, are anticipated for the following receptors, arising from the change from open, former airfield with an area undergoing construction of new housing, to a new townscape and urban area comprising buildings, streets, open space and associated infrastructure:

- Listed Buildings: Aircraft Hangars Single GS Type (16U and 16M) and Pillbox at Filton Airfield
- Character and Townscape Features of the Site: Character; scale, grain and massing; appearance; legibility; public realm, open space and PROW; other townscape features including vegetation
- Visual receptors as set out in **Table 11.2**.

11.5 Methodology

11.5.1 Stantec's methodology for LTVIA is based on professional experience of landscape, townscape and visual impact assessments and tall building studies, the **Guidelines for Landscape and Visual Impact Assessment (GLVIA3)** (Landscape Institute / Institute of Environmental

Management and Assessment, 3rd Edition, 2013). In addition, the LTVIA methodology considers the principles set out in the following technical notes and guidance:

- LI Technical Information Note 08/2015: Landscape Character Assessment (LI, revised February 2016)
- LI Technical Information Note 05/2017: Townscape Character Assessment (LI, revised April 2018)
- Landscape Institute Technical Guidance Note 06/19: Visual Representation of Development Proposals (LI, 2019)
- GLVIA3 Statement of Clarification 1/13 (Landscape Institute, 2013)
- Technical Guidance Note 02/21: Assessing landscape value outside national designations (Landscape Institute, 2021); and, where appropriate,
- The Transport Analysis Guidance (WebTAG) Chapter 7: Impacts on Townscape, TAG Unit A3 Environmental Impact Appraisal (July 2021).

11.5.1 Landscape / townscape and visual effects are related but distinct topics, so are considered and assessed separately. Effects on the landscape arise from a development causing direct changes to the physical elements of the landscape, affecting its features, character, and quality, and more widely, from indirect effects of the development on the character and quality of the surrounding landscape and townscape. Visual effects arise where a development changes the character and quality of the views that people (visual receptors) may enjoy. The LTVIA will consider the effects on landscape/townscape (including character) and people's views / visual amenity as separate assessment components.

11.5.2 The assessment of townscape and visual effects will make comparison with the baseline year, and will include assessment during the construction period, on completion of the development (i.e., operation) and, where appropriate, 15 years after completion of the development when new tree planting is assumed to have successfully established and grown to provide effective mitigation.

The Context of Landscape/Townscape and Visual Effects in an Urban Environment

11.5.3 Within urban locations, there tends to be a general level of expectation for: regeneration, redevelopment, and renewal; the efficient use of land to adapt and change; and anticipation of change to views within the urban area taking place over time.

11.5.4 In other words, **an urban environment is not static**; change and renewal are an integral part of that urban environment. Accordingly, the expected changing nature of the urban environment, or within areas of planned change, is to be considered within the LTVIA.

11.5.5 New buildings may create either beneficial or adverse effects upon an urban environment, or a combination of both. The evaluation of the quality of architectural design and appearance of buildings is a subjective issue, and one which does not form part of the LTVIA process. Instead, it is assumed that the quality of the design of the proposals would be appropriate to the existing and forward-planned urban context, as will be set out in a separate Design and Access Statement for the Proposed Development. The LTVIA will therefore be based on assessing the **key design principles** of the Proposed Development and the consequential effects upon landscape/townscape elements and landscape/townscape character.

11.5.6 Whether new development located within an urban area leads to a positive or adverse visual change is largely subjective. The assessment of visual effects in the LTVIA will have regard to the level of anticipated change and renewal of the urban environment, for example through the

planned regeneration and development for an area, as set out in adopted local planning policies, together with consideration of the changes to visual compositions.

Site Appraisal and Photographic Record

11.5.7 The Site and surrounding area were visited in March 2021 and a photographic record to represent baseline views of the selected assessment view locations was undertaken, to:

- Determine the extent of visibility of the Site and understand the existing built form context;
- Gain further understanding of the baseline year urban components which create the landscape/townscape character;
- Understand the nature of people's baseline views and visual amenity.

11.5.8 Another visual survey visit is planned for winter 2021/22 to collect additional views photography.

Zone of Theoretical Visibility Plans

11.5.9 To help understand the potential worst-case visibility of the Proposed Development, zone of theoretical visibility (ZTV) plans will be prepared and utilised to inform the visual impact assessment of the LTVIA.

Assessment Stages

11.5.10 A three-stage assessment process will be adopted for the LTVIA, in accordance with GLVIA3. Firstly, the nature of receptors (sensitivity) will be assessed. Secondly the nature of effects (magnitude) likely to result from the Proposed Development will be assessed. Lastly, the significance of the identified landscape/townscape and visual effects on receptors will be assessed.

Assessment of Landscape/Townscape Effects

11.5.11 This will assess how the Proposed Development will affect the components of the environment (the 'landscape and townscape fabric', for example land use, scale, trees and vegetation, street pattern and layout, urban grain and massing, legibility, public realm, and appearance), and the key characteristics which contribute to its distinctive character (the 'landscape or townscape character').

11.5.12 A methodical consideration of each effect upon each identified landscape/townscape receptor will be undertaken, to determine the significance of effects, in terms of:

a. Value and susceptibility to change (sensitivity of the landscape/townscape receptor); and

b. Size / scale, extent, duration, and reversibility (magnitude of the landscape/townscape effect).

Sensitivity of Landscape/Townscape Receptors

11.5.13 The assessment of landscape/townscape receptor sensitivity will combine judgements on the value attributed to the receptor and the 'susceptibility to change' of the receptor to the specific type of development proposed.

11.5.14 The value of potentially affected landscape/townscape receptors will be assessed, including character and the individual elements or features which contribute to that character. Landscapes and townscapes may be valued at community, local, national or international levels. Existing

designations will be taken as the starting point for the assessment, and the value of undesignated landscapes/townscapes will also be assessed.

Magnitude of Landscape/Townscape Effects

11.5.15 The magnitude of a landscape/townscape effect will be assessed in terms of its size or scale, the geographical extent of the area influenced and its duration and degree of reversibility.

11.5.16 The size or scale of change in the landscape/townscape relates to the loss or addition of features which are likely to result from the Proposed Development, and considers:

a. The extent/proportion of landscape/townscape elements that are lost or added;

b. The contribution of those elements to character and the degree to which aesthetic/perceptual aspects are altered; and

c. Whether the effect is likely to change the key characteristics of the landscape/townscape, which are critical to its distinctive character.

Assessment of Effects on Views and Visual Amenity

11.5.17 The visual impact assessment will assess how the Proposed Development will affect the views available to people and their visual amenity. A methodical consideration of each visual effect upon each identified visual receptor will be undertaken, to determine the significance of effects, in terms of:

a. Value and susceptibility to change (sensitivity of the visual receptor, or viewer); and

b. Size / scale, extent, composition, duration, and reversibility (magnitude of the visual effect).

Sensitivity of Visual Receptors

11.5.18 The assessment of visual receptor sensitivity will combine judgements on the value attributed to the visual receptor and the 'susceptibility to change' of the receptor to the specific type of development proposed.

11.5.19 The value assigned to views will have regard to several factors, including:

a. Recognition through planning designation or heritage assets; and

b. The popularity of the viewpoint, its appearance in guidebooks, literature, or art, on tourist maps, and the facilities provided to enable enjoyment of the view.

11.5.20 The susceptibility of people to changes in views is a function of:

a. The occupation or activity of the viewer at a given location; and

b. The extent to which a person's attention or interest may therefore be focussed on a particular view and the visual amenity experienced.

Magnitude of Visual Effects

11.5.21 The magnitude of a visual effect will be assessed in terms of its size or scale, the geographical extent of the area influenced and its duration and degree of reversibility.

11.5.22 The size or scale of change in the view relates to the degree of contrast to, or integration with, the visual composition, which is likely to result from the Proposed Development; and is

influenced by the relative time over which a view is experienced and whether it is a full, partial, or glimpsed view.

Landscape/Townscape and Visual Mitigation Measures

11.5.23 Measures proposed for preventing/avoiding, reducing or, where possible, offsetting or compensating for significant adverse landscape/townscape or visual effects will be described. Mitigation measures comprise:

a. Primary measures – developed through the iterative design process, and which have become integrated or embedded into the project/scheme design, such as site layout, retention of existing trees, use of vernacular materials or appropriate form, detailed design, colours and finishes, new street tree planting or incorporation of key views and vistas.

b. Secondary measures – further mitigation measures or proposals to address potential adverse effects which remain after primary measures and standard construction practices have been incorporated into the scheme, for example, additional new planting.

11.5.24 Standard construction and operational management practices for avoiding and reducing environmental effects, such as hoardings around buildings or tree protection fencing will be separately identified, in the Framework Construction Environmental Management Plan (CEMP), which will be submitted with the ES.

11.5.25 Embedded mitigation measures and standard construction and operational management practices will be described in the project description in the ES and the separate Design and Access Statement.

11.5.26 Secondary mitigation measures, if required, will be described in the LTVIA.

Levels of Significance of Landscape / Townscape and Visual Effects

11.5.27 The **levels of significance** of landscape/townscape and visual residual effects, including cumulative effects, vary with location, context and the type of development that is proposed.

11.5.28 A three-stage assessment process is to be adopted for the LTVIA, in accordance with **GLVIA3** (see Box 3.1 EIA Significance Terminology, and paragraph 3.24, pages 37-38, GLVIA3). Firstly, the nature of receptors (the receptor's **sensitivity**) which is likely to be affected is assessed. Secondly the nature of effects (**magnitude**) likely to result from the Proposed Development is assessed. Lastly, the **levels of significance** of the identified landscape/townscape and visual effects on receptors are determined, by combining judgements of sensitivity and magnitude, as required by the European Union Directive 2011/92/EU, and as amended by 2014/52/EU and UK Country Regulations. The TVIA assessor makes those judgements based upon the combinations set out in **Table 11.3**.

11.5.29 Effects in that are identified in the LTVIA as a significance level of 'minor' or 'negligible' are determined as being '**not significant**'; and effects that are assessed as being of 'moderate', 'major' or 'substantial' levels of significance are determined to be '**significant**' in the context of the EIA Regulations.

Table 11.3: Levels of Significance of Landscape/Townscape and Visual Effects

Sensitivity of Receptor	Magnitude of Effect				
	Major Effect	Moderate Effect	Slight Effect	Negligible Effect	Neutral Effect
High	**Substantial** or **Major to Substantial**	**Major**	**Moderate**	Minor (Not significant)	Negligible (Not significant)
Medium	**Major**	**Moderate**	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)
Low	**Moderate**	Minor (Not significant)	Minor (Not significant)	Negligible (Not significant)	Negligible (Not significant)

11.5.30 A substantial level of significance would typically be assigned where a landscape/townscape or visual effect or cumulative landscape/townscape or visual effect is considered to be a key factor in decision-making. The 'substantial' level of significance of effect is generally, but not exclusively, associated with altering the integrity of sites and features of national or regional importance. A change at a district scale to a site or feature might also enter this category, though the assessment is subject to professional judgement and will be proportional to the type and extent of development that is being assessed. Where there is a combination of a receptor's high sensitivity and a major magnitude of effect, professional judgement may be applied to determine a 'major to substantial level of significance', where it is considered by the LTVIA assessor that the effect either does not represent a key factor in the decision-making process, or where the development effects would be limited such that it would not alter the integrity of sites and features of national or regional importance.

11.5.31 The above table of significance has regard to guidance in **GLVIA3** at paragraphs 3.32-3.33, pages 40-41; paragraph 5.56, page 92 (significance of landscape effects) and paragraph 6.44, page 116 (significance of visual effects).

11.5.32 A comparison table summarising the levels of significance of effects as identified in the LTVIA for the 2017 ES and for the 2021 LTVIA will be included in the LTVIA chapter, for transparency and to identify where there may be any assessment differences as a result of the Proposed Development.

11.6 References

- Déjeant-Pons, M. (2006). The European Landscape Convention. *Landscape Research*, 31(4), pp.363–384.
- Department for Transport (2019). *TAG UNIT A3 Environmental Impact Appraisal*. [online] Available at: https://www.gov.uk/guidance/transport-analysis-guidance-tag.
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- Landscape Institute (2013b). Guidelines for landscape and visual impact assessment. London: Routledge.
- Landscape Institute (2016). *Landscape Character Assessment Technical Information Note 08/2015*. [online] London: Landscape Institute. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-

org/2016/01/Landscape-Character-Assessment-TIN-08_15-20160216.pdf [Accessed 8 Nov. 2021].

- Landscape Institute (2018). *Townscape Character Assessment Technical Information Note 05/2017*. [online] London: Landscape Institute. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2017/12/tin-05-2017-townscape.pdf [Accessed 8 Nov. 2021].

- Landscape Institute (2019). *Visual Representation of Development Proposals Technical Guidance Note 06/19*. [online] London: Landscape Institute. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/09/LI_TGN-06-19_Visual_Representation.pdf [Accessed 8 Nov. 2021].

- Landscape Institute (2021). *Technical Guidance Note | 02/21 Assessing landscape value outside national designations*. [online] London: Landscape Institute. Available at: https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2021/05/tgn-02-21-assessing-landscape-value-outside-national-designations.pdf [Accessed 8 Nov. 2021].

12 Biodiversity

12.1 Introduction

12.1.1 The Biodiversity chapter of the ES will assess the likely significant impacts associated with the Proposed Development on flora and fauna and associated habitats. All receptors associated with the development will be described and detail completed, current or programmed mitigation strategies to be implemented and whether it is possible to scope out or scope in those receptors during this assessment. Additionally, the following sections address the potential change in the scope of the original assessment as a result of the updated proposal. Further sections will consider the potential effects of the Proposed Development.

12.1.2 This chapter should be read in conjunction with Chapter 11: Natural Heritage of the 2017 ES Addendum.

12.1.3 Key changes to the Proposed Development from the existing consent are an increase to the capacity of the site from the consented 2,675 dwellings (along with other uses) to up to 6,500 dwellings (and other uses, that include, education, health and community, sports and commerce that are set out in more detail in earlier chapters. It is proposed that this is achieved through increased density and height within the current site boundary.

12.2 Baseline

12.2.1 The year 2036 has been identified as the future baseline due to this being the end year of the transport model being prepared for the Transport Assessment that will accompany the ES.

12.2.2 The 2036 baseline comprises:

- The extant Filton Airfield planning consent, including 2,675 dwellings;
- the additional works as consented through the 2021 S73, which are measures required to be in place on the Site prior to the opening of the Arena;
- The Arena;
- The likely changes to the natural environment between now and 2036. This will include natural changes such as growth in vegetation and establishment of habitats, especially of any landscaping implemented as part of the S73 consent, in particular for the Brabazon Park. It will also include anthropogenic changes such as changes to air quality and human behaviours where there can be a high degree of confidence that such changes will occur (for example the transition towards electric vehicles on the basis of clear Government policy on the phasing out of internal combustion engines and the increase in bus services to avoid private vehicle usage as promoted in the recently published national bus strategy). Each chapter of the ES will outline as appropriate how these changes have been considered in establishing the 2036 baseline.

12.2.3 Therefore, the ES will not include a separate assessment of cumulative effects as these cumulative developments will have been included in the 2036 baseline and will be assessed in the scenario where the full Proposed Development is assessed against the 2036 baseline.

12.2.4 The approach set out above is consistent with the EU's Guidance on the preparation of the Environmental Impact Assessment Report (2017), which states: *"The state of the environment and the nature of impacts such as pollution rates or emission limits change over time, and this has to be accounted for in the Baseline assessment. In addition, the Baseline should consider Projects in the vicinity that exist and/or that have been approved (see Part B section 1.4.3 on Cumulative Effects). The Baseline should, therefore, be dynamic, going beyond a static assessment of the current situation. This is especially important for issues where there is*

considerable uncertainty, such as climate change, or for longer-term developments, such as large infrastructure Projects."

12.2.5 A combination of a desk study and a suite of ecological field surveys have been used to provide the baseline information on which this assessment has been based. A desk-based study of the Site was undertaken in 2016, initially as part of the (Preliminary Ecological Appraisal (PEA). The aim of the desk study was to identify sites designated on the basis of nature conservation importance, and records of protected and/or notable habitats and species potentially relevant to the Proposed Development. This desk-based study has been updated as required since 2016, with the latest update being concluded in summer 2021.

12.2.6 The Site is approximately 141.7 ha in size and has undergone minor changes since the collation of the previous Environmental Statements and Addendums. Construction of the first phase of development is well underway and some groundworks on additional areas has commenced. The resulting changes however give rise to little alteration to those habitats identified in the original baseline information. The concrete and hardstanding infrastructure remains prevalent and is currently being utilised by a number of 3rd parties as storage space. This feature accounts for approximately 51ha of the land use. Declining semi-improved neutral grassland and semi-improved poor grassland accounts for the majority of habitats within the Site with approximately 40ha of each category totalling 80ha. The remaining habitats within the site consist of broadleaved woodland in 3 different locations at 1.6ha and scrub habitats which are almost exclusively bramble at 1.3ha. The settlement lagoon at the eastern end of the Site constitutes 0.8ha. The boundaries of the site remain the same with approximately 4km of hedgerow and scrub mix and security fencing constituting the remainder where vegetation is absent.

12.2.7 A Phase 1 Habitat Plan is provided at **Appendix D**.

12.2.8 Many of the faunal ecological receptors associated with the site have been mitigated for and species such as common reptiles, great crested newt and common pipistrelle bats associated with roosts can be ruled out. Those species still identified as using the Site consist of Peregrine Falcon, Barn Owl, foraging and commuting bats, badgers and other nesting bird species.

12.2.9 Additionally, the invasive Japanese Knotweed remains on site, and is currently undergoing its 6th year of treatment to eradicate the species.

Sites with Statutory Designations for Nature Conservation

12.2.10 No new statutory designated sites for nature conservation have been identified since the completion of the 2017 ES Addendum.

Sites with Non-Statutory Designations for Nature Conservation

12.2.11 No new non-statutory designated sites for nature conservation have been identified since the completion of the 2017 ES Addendum.

12.3 Consultation

12.3.1 Consultation will be undertaken with the South Gloucestershire Council ecologist, in particular in relation to the approach to BNG.

12.4 Potential Effects

12.4.1 The potential effects on the ecological receptors consider both the impacts from construction and operational phases of the Proposed Development. Mitigation strategies that have either been implemented or were agreed through the existing consent will be considered in the assessment.

12.4.2 There are a number of ecological receptors considered as part of assessment work undertaken for the extant planning consent where there may be new or different potential significant effects as a consequence of the Proposed Development. Those receptors considered are:

- Semi-improved Neutral Grass – Permanent loss of habitat.
- Hayes Wood SNCI – Indirect impacts to habitat.
- Ground nesting birds (skylark) - Permanent loss of habitat.
- Common Reptile (Slow worm) – Permanent loss of habitat.
- Great Crested Newt – Indirect impacts to habitat.
- Hedgehog – Impacts to habitats.
- Bats – impacts to foraging and communication routes.
- Birds (general) – loss of habitats used by breeding and foraging birds.
- Badgers – Impacts to territories, setts and foraging habitats.
- Peregrine Falcon – Impacts to foraging area.
- Barn Owl – Impacts to foraging habitat.
- Japanese Knotweed – Invasive species.

Insignificant Effects

12.4.3 Since the assessment work was undertaken for the extant planning consent, a number of receptors can now be scoped out as the effects are deemed to be insignificant due to mitigation achieved or proposed, the receptor deemed no longer present within the Site boundary or are now not making use of the Site. Those receptors that have therefore been scoped out of this assessment, and the reasons for this, are as follows:

- Hayes Wood SNCI – Indirect impacts to habitat.
- Common Reptile (Slow worm) – mitigated and removed to receptor site.
- Great Crested Newt – mitigated and removed to receptor site.
- Hedgehog – Never been identified on site.
- Birds (general) – Green infrastructure, foraging and nesting opportunities increased through enhancements and creation.
- Peregrine Falcon – Indirect impacts from change in use. Likely improvements in foraging capabilities from increased prey items.
- Badgers – Mitigation of sett loss and enhancement and creation of green infrastructure. Communication routes through the north and south as well as east and west have been implemented through the green infrastructure strategy and will be retained for the Proposed Development.
- Bats – 2021 survey results are still awaiting; however initial headline reports do not suggest much change from the 2017 ES Addendum. Mitigation and enhancement will be

provided in the form of increases in green infrastructure and linkages within site for communication, management of lighting and provision of roosting boxes.

- Japanese Knotweed – Although still present on site, the invasive species has been treated for the last 5 years through an agreed management plan and will continue to do so until a warranty and full eradication is achieved.

12.4.4 Hayes Wood a 30m buffer zone which excludes the site from the Proposed Development; this will protect the site from impacts of disturbance during and post construction. In addition, the creation and enhancement of green infrastructure that link to the SNCI will reduce the current isolation of the receptor. YTL only owns approximately 1/5th of the designation and in conjunction with the LEMP produced look to manage what is possible to ensure the habitat is enhanced. What is in control of YTL will be protected and enhanced and result in a small-scale positive impact; however, we have no control over much of the protected site and cannot affect the whole woodland in a positive manner.

12.4.5 In 2016/17 a 2.4ha mitigation area or receptor site was enhanced and isolated from impact at the western end of the Proposed Development to link in with retained green infrastructure identified in South Gloucestershire Council's Local Plan. This enabled strategies and licencing for both the common reptiles and great crested newts found on site to be translocated into a purpose-built habitat that will be protected from development. Two ponds were also created within this habitat by the previous applicant and developed by YTL to ensure biodiversity survival of the aforementioned species on site. Despite the loss of habitat associated with the development, with mitigation (completed) and management the impacts to both slow worm and great crested newt are neutral and not significant.

12.4.6 Hedgehogs have not been identified on site and are therefore unlikely to be present. No impacts from the Proposed Development are therefore identified and any work associated with the creation of green infrastructure and garden design will create a small-scale positive impact.

12.4.7 Common species of birds will lose some of the existing scrub habitat as part of the development and an abundance in foraging from the grassland habitat, but any losses will be outweighed by the Proposed Development vastly increasing edge habitat, scrub, garden, and woodland planting. Noise, lighting, and human association will likely bring increased disturbance and predation, however.

12.4.8 Habitats that are favoured by passerines will be incorporated into the landscaping of the development and detailed further in the LEMP. Site clearances, where possible, will be timed to avoid the bird breeding season (considered to be March – August); however, if works take place within this period then a suitably qualified ecologist will complete nesting birds checks prior to the commencement. Further nesting opportunities will be created by providing approximately 100 mixed nest boxes and represents a combined mitigation package that will reduce the impacts of the development by increasing the available nesting and foraging resource. The combined mitigation for birds (general) will reduce the impacts of the development by increasing substantially the available areas for nesting and foraging birds to neutral and not significant with a likely small scale positive impact.

12.4.9 Peregrine Falcons continue to nest in adjacent land to the south of the Proposed Development and not be directly impacted by the development. However, the development will alter the foraging conditions, and have a temporary constructional disturbance therefore have some level of impact.

12.4.10 In many cases, peregrines have become accustomed to life in an urban environment and the riches of prey items developments create. Although there may be some shorter-term impacts to the species from construction it is anticipated that there will be benefits from increased foraging resulting in a neutral and not significant.

12.4.11 Badgers on site will be impacted in a number of ways, increased disturbance levels from the habitation of the site, shared green infrastructure for example has the potential to impact on foraging badgers. Furthermore, the Site currently shows limited vehicular usage and has done so for many years, will over time become populated and significantly increase the potential for badgers to come into conflict with road users and result in possible road traffic accidents. The construction phase of the development will also require the destruction of a single outlier sett on the northern boundary and possible destruction of a multi-hole annexe sett. Pathways have changed since the 2017 ES Addendum and now show a stronger north south link across the site, although the east west links previously identified are still actively used on both the northern boundaries and southern boundaries.

12.4.12 A purpose-built artificial sett will be constructed to compensate for any losses of active setts within the Proposed Development. This currently has been identified in a secluded corner on the northern boundary that will retain connections to green space and linked infrastructure. Where intersections with main roads coming into the Site occur, badger tunnels/culverts will be created, and pathways planted to lead the species in order to avoid conflicts. A LEMP will be produced to detail the planting throughout the site that will include species suitable for foraging badgers. The CEMP will also be produced that will highlight measures to prevent impacts to individuals during construction. Dense scrub cleared will be checked by suitably qualified ecologists in case any undefined setts are exposed and any that require closing will be mitigated and closed appropriately under licence. The combined mitigation will help reduce impacts to badgers and potentially increase foraging capabilities as well as securing setts through the development into undisturbed areas. Resulting in an impact that is neutral and not significant.

12.4.13 Bat's communication and foraging usage of the site has the potential to be impacted due to an increase in lighting from both commercial and residential developments and future usage of the events area of Brabazon Park. Species of bat have varying habitat requirements, feeding strategies and flight patterns as well as their sensitivity to external stimuli also being different. Many species will actively avoid well-lit areas and prefer darker corridors of vegetation; conversely species such as pipistrelle will seek out light sources which encourage insects around them.

12.4.14 The development will actively seek to increase natural corridors through the site as well as maintain existing boundaries that currently act as communication routes. Specified dark corridors and lighting plans will extenuate this and have the effect of increasing the potential of the site for its association with the species of bat identified on site. Additionally, it is proposed to supply approximately 100 tubes/boxes and or bricks to erect in/on building either backing onto edge habitat or overlooking green space developed on site. It is considered that with mitigation the development will provide a small-scale positive impact and are not significant.

Significant Effects

12.4.15 It is considered that there is the potential for significant adverse effects on the following ecological receptors:

- Permanent loss of habitat – ground nesting birds (skylark).
- Barn Owl – Impacts to foraging habitat.

12.4.16 The Proposed Development will have an impact upon ground nesting species and the loss of the existing grassland habitat will remove any potential nesting sites for skylark. The Proposed Development will provide for a number of green open spaces and some retained grassland habitat within the ecological receptor site. However, any recreated habitat would not be deemed suitable for the species and disturbance from human interaction would be high, therefore any association to the site from the species would be lost.

12.4.17 South Gloucestershire is a predominantly rural county with extensive suitable habitat for species such as skylark in a wider context. Whilst the loss cannot be mitigated on site it is considered that the gradual removal over time of an isolated group of the species within an urban setting, that has taken advantage of a resource relatively recently available to them, is considered to lessen the impact and influence the species into more suitable and permanent habitat.

12.4.18 Barn Owls have not nested within the Site for as long as site has been in YTL ownership, with the last recorded roost site being in 2014 in the Spitfire Hangar (16U) and no evidence of the species has been recorded using the Site since 2017, however in September 2021 an individual was identified foraging at dusk on two occasions. The observation results suggest that this individual is a new bird seeking advantage of a current resource from known groups in Cribbs village or possibly farther afield from Avonmouth. Nevertheless, the loss of grassland habitat as a result of the Proposed Development will remove foraging habitat for Barn Owls in the long term and have an adverse impact upon this species.

12.4.19 The Proposed Development will permanently remove a large available resource for foraging that has recently been exploited by Barn Owl. A supplementary nesting box has been erected in the receptor site (2017), where over 2ha of retained and enhanced grassland will link into a number of green infrastructures. It is however expected that this will not support the species completely and the habitat will only form part of a viable territory resulting in a long term, adverse impact upon this species.

12.5 Methodology

12.5.1 The assessment for the ES will follow Chartered Institute of Ecology and Environmental Management (CIEEM) *Guidelines for Preliminary Ecological Appraisal (CIEEM, 2017)* and *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal (CIEEM, 2018)*, as well as recognised industry best practice standards. All surveys and assessments have been undertaken with reference to the recommendations given in *BS 42020:2013 Biodiversity: Code of practice for planning and development.*

12.5.2 The value of a receptor within the Site, whether a habitat or species, is assigned by CIEEM (2017) to seven levels in a geographic context, from ‘international’ to ‘within the zone of influence’ which will be described as ‘at site level only’ for the purpose of the application.

12.5.3 Each receptor is also assigned a level of sensitivity to change, based on the level of value in each geographic context as above, (together with consideration of any particular sensitivity to damage or disturbance), and broadly assessed as follows:

Table 12.1: Determination of sensitivity based on geographical frame of reference

Geographical Frame of Reference	Sensitivity of Receptor
International	Very High

National	High
Regional	High / Medium
County	Medium
District (Unitary Authority, City or Borough	Medium
Local (or Parish)	Low
Site Level Only	Very Low

12.5.4 Habitat value can be measured against known selection criteria, i.e. the designation of sites such as SPA's and SAC's or 'Guidelines for the selection of biological SSSI's' and Hedgerow Regulations 1997 for example. However, for the majority of commonly encountered sites the most relevant habitat evaluation is at a more local level and based upon such factors as size, diversity, naturalness, rarity and fragility and their ability to be restored or recreated.

12.5.5 Species value is based on factors including distribution, status historic trends, population size and rarity and can apply across a geographical frame of reference. In particular regard is given to populations where the UK holds a large of significant proportion of the international population of the species. Certain species, 'Priority Species' as listed in Local Biodiversity Action Plans (LBAPS), can form interest at this level but do not necessarily imply a specific level of importance.

12.5.6 Secondary value will also be factored into assessment work and habitats may in themselves have no intrinsic biodiversity value but could still perform an ecological function. For example, buffer zones to valued habitats, linear or continuous green infrastructure or 'stepping-stone' habitats may be of value for the migration or genetic exchange of wild species.

12.5.7 Potential or likely effects are determined with reference to aspects of the ecosystem structure and function on which the feature/receptor depends. This includes factors such as available resources, environmental and ecological resources, human influence, historical content, ecological relationships, ecological role or function, ecosystem properties. Based on thus context, the nature of the impact is characterised and considered under the following parameters:

- Positive or negative – will the activity lead to an adverse, beneficial or neutral impact;
- Extent – geographical scale over which the impact will occur;
- Magnitude – the size, amount, intensity and volume of impact, e.g. the amount of habitat lost or percentage decline in population;
- Duration – the time for which the impact is expected to last prior to recovery or replacement; i.e., short-term or long term, permanent or temporary.
- Timing and Frequency – some changes may only cause an impact if they coincide with critical life stages or seasons, whilst frequent events may cause a greater effect than a single event; and
- Reversibility – an impact may be irreversible in that recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it.

12.5.8 The nature of the impact is then used in conjunction with the 'conservation status' to determine whether an impact on a habitat or species is likely to be ecologically 'significant'. This is assessed in terms of the relevant frame of geographical context. If an impact is found

not to be significant at the level at which the resource or feature has been valued, it may still be significant at a more local level. In determining significance, the key consideration is whether the impact will affect the 'integrity' of the feature/receptor or affect its condition away from a favourable conservation status. This is interpreted as:

- For Habitats – the sum of the influences acting upon the habitat that may affect its extent, structure and functions as well as its distribution and its typical species within a given geographical areas; and
- For Species – the sum of influences acting on the species concerned that may affect its abundance and distribution within a given geographical area.

12.5.9 In the case of impacts to designated sites, consideration will be given as to whether a project is likely to affect the designations conservation objectives, the conversation status or species or habitats for which the site is designated or affect the condition of the site or its interest/qualifying features.

12.5.10 In accordance with CIEEM guidance and EIA Regulations, the detailed assessment of impacts will be focused on those ecological features/receptors for which a significant impact is likely to be generated. Therefore, ecological features/receptors should only be selected for assessment where that feature/receptor is sufficiently valuable, in terms of biodiversity, for an impact to be significant. The relevant decision-making level in in this application is at a District (or medium) level. Therefore, any impact on ecological features/receptors of value at or above the District (or medium) level would be considered potentially significant.

12.5.11 Specific species have protection under European or national legislation. If protected species are present/likely present within or adjacent to the application boundary (Site) then an assessment of impacts in these ecological features will be conducted regardless of the feature/receptor's geographic scale or value.

12.5.12 A desk study was undertaken in 2021 to further assess any information that may have changed since previous assessments undertaken in 2016 and 2017. Any statutory or non-statutory protected sites, protected species or impact zones have been identified under this process.

12.5.13 Field survey, in the form of an Extended Phase 1 Habitat Survey was undertaken in May 2021 to update and supplement previous surveys undertaken in 2016 and 2017. All habitats within the Site boundary were identified and mapped in compliance with the Handbook for Phase 1 habitat survey: a technique for environmental audit (JNCC, 2010).

12.5.14 Phase 2 protected species surveys were conducted throughout 2016 and 2017 to support the submitted ES Addendum in 2017 and included badgers, great crested newts, hedgehog, bats and reptiles.

12.5.15 Updated surveys for badgers, bats and reptiles were undertaken in 2021 as well as acknowledgement of any bird species using the Site. The remainder of the receptors have been ruled out either due to the completion of mitigation strategies, licensing or not having been identified on site during any previous surveys or as evidence during other surveys.

12.5.16 **Table 12.2** below provides a summary of all protected species surveys undertaken to date.

Table 12.2: Summary of protected/notable surveys completed to date

Survey	Date of Survey	Date of Update	Summary of Findings

Phase 1	2014 / 2015 / 2016	2021 – Site wide	No significant change in habitats
Great Crested Newt	2014 / 2016	Translocation occurred in 2017	N/A
Reptiles	2014	2021 - Site wide – suitable habitat within the development boundary.	Small population identified as remnant from translocation process in the north west corner of the Site. Subsequently translocated
Bats	2014 / 2016	2021 - Site wide – transect surveys to identify bat activity within and adjoining the development boundary.	Initial analysis suggests no significant changes in distribution, diversity or Site usage from previous surveys reported in the 2017 ES Addendum.
Badger	2014 / 2016 / 2018	2021 Ongoing - Site wide – all habitats within the development boundary.	Seasonal changes occur throughout the Site, although no additional setts have been identified since the 2017 ES Addendum.
Hedgehog	2016	No Update	N/A

12.5.17 In addition to these surveys undertaken, observations from any site visits identified and recorded any bird species; a pair of peregrine falcons use off site structures to nest and hunt over the Site. Breeding of this pair has been successful since 2018 with at least one young fledging on each occasion until 2021. Barn owls have been recorded using the site for the first time since the completion of the 2017 ES Addendum in September 2021, although there has not been any uptake of the mitigation box at the west end of the site. Skylarks remain present and breed within the grassland habitats and a number of further common species utilise the habitats on and immediately adjacent to the Site.

12.5.18 Previous mitigation undertaken and to be completed that includes documentation such as the Badger Mitigation Strategy, Landscape Environmental Management Plan (LEMP) and the green infrastructure strategy agreed will be reviewed for the Proposed Development and confirmed or modified as appropriate.

Biodiversity Net Gain

12.5.19 An assessment will be made with regards to Biodiversity Net Gain (BNG) for the Proposed Development, in consultation with the SGC ecologist. This BNG Assessment will sit outside the ES and be provided as a separate report.

12.6 References

- JNCC (2010): Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit.
- CIEEM (2018): guidelines for the Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine.
- CIEEM (2017): Guidelines for Preliminary Ecological Appraisal.

- South Gloucestershire Council (2016) Biodiversity Action Plan [Online] Accessed at: Biodiversity-Action-Plan-2016-26.pdf (southglos.gov.uk).
- DEFRA (2021) MAGIC Maps [Online] [Accessed at: Magic Map Application (defra.gov.uk)]

13 Wind Microclimate

13.1 Introduction

13.1.1 The Wind Microclimate study will assess the likely impacts associated with the Proposed Development. The wind microclimate study of a site defines wind speeds in accordance with the industry standard Lawson criteria. By assessing the percentage of time winds are below threshold wind speeds, it can be predicted what activities the Site would be suitable for.

13.1.2 The wind microclimate study will define the wind conditions suitable for the various activities which form part of the Proposed Development, benchmarked against the industry standard Lawson Criteria. The assessment will consider the completed Park in absence of the wider masterplan to determine temporary suitability, as well as key phasing stages of the wider masterplan. Where conditions are not suitable for the proposed use, mitigation measures will be introduced, including interim measures if required, and as such, the resulting wind microclimate would be expected to be safe and comfortable for users of the Site and that there is no adverse impact on wind conditions within the immediate surrounds.

13.1.3 The potential sources of impact on the wind microclimate in and around the Site will be:

- Downdraughts from exposed windward faces of buildings, particularly where they protrude significantly above the immediate surrounds, noting that some buildings may be up to 18 storeys, with up to 2 buildings being up to 30 storeys;
- Channelling of winds along the facades of the proposed buildings could also create locally accelerated winds; and
- Changes in planned usage of the site will introduce more wind sensitive activities and increase pedestrian awareness of the local wind microclimate.

13.2 Baseline

13.2.1 The surrounding area will be modelled according to the updated approved developments, to count for the new microclimate wind conditions on the Site. All approved developments which are considered significant with respect to wind will be explicitly modelled.

Current State of Environment

13.2.2 The existing Site comprises a largely empty airfield, exposed to prevailing winds. Previous microclimate studies completed for the Arena show that the Site currently experiences high wind speeds generally in excess of those suitable for comfortable urban use. However, with little pedestrian use, the current conditions are suitable for the Site as a disused airfield and construction site. The existing site assessment will be updated for the current study.

Baseline

13.2.3 The baseline study will include the surrounding area within 350m. This will include the YTL Arena, which is already constructed, but will account for the pedestrian uses in line with it being in use as an Arena.

13.3 Potential Effects

Construction

13.3.1 The microclimate wind assessment focuses on the likely significant effects of the completed development built to the maximum parameters and illustrative schemes. Whilst maximum parameters are usually driving worst-case wind conditions, for a development as large as this it is likely that they will actually provide more shelter and yield under conservative wind microclimate conditions. It is therefore also necessary to assess the development in key stages of phasing, to ensure that an individual phase or phases in isolation have sufficient protection from the wind.

Operation

13.3.2 Potential effects may arise during the operation phases in areas in and around the Site with high wind speeds and locations that are considered safe/unsafe and suitable/unsuitable for their proposed uses. The assessment will identify areas of the Proposed Development where potential uncomfortable wind conditions may be present for the designated pedestrian activities, according to Lawson's London Docklands Development Corporation (LDDC) Criteria, as outlined in the methodology section below.

13.4 Methodology

13.4.1 There are no national codes of practice or legislative policies relating to the assessment of environmental wind flows in the built environment. The impact of environmental wind on pedestrian spaces and the subsequent suitability of these spaces for planned usage are described by and compared against the industry standard Lawson criteria, which are recognised by local authorities as a suitable benchmark for wind assessments.

13.4.2 The assessment of environmental wind flows in the built environment lies outside the scope of the Eurocode, the current code of practice for the assessment of wind effects on buildings, which concentrates on wind loading issues. As a result, a purposely designed computational fluid dynamics study will be carried out to provide a reliable quantification of the pedestrian and occupant level wind conditions.

13.4.3 The assessment will combine measured wind speeds at key areas in and around the site (from steady-state RANS CFD analyses) with long-term wind frequency statistics (transposed from Bristol Airport to apply directly at the site), to determine the probability of local wind speeds exceeding comfort and safety thresholds for a range of common pedestrian activities, based on the industry standard Lawson criteria.

13.4.4 The steady-state RANS method does not explicitly simulate the fluctuating component of the flow velocity. Instead, turbulence models approximate the magnitude of the time-averaged velocity fluctuations to derive an estimation of the effect of gusts. A degree of conservatism is built into this derivation. Further details on this, as well as technical details of the CFD methodology will be provided as part of the technical report. Architectural Aerodynamics are able to demonstrate good agreement between wind tunnel tests and CFD studies they have conducted.

13.4.5 The study will thus provide a detailed quantitative assessment of the wind environment at key locations around the Proposed Development, and the surrounding area, and assess the impact of the Proposed Development relative to the existing site conditions in terms of suitability for planned and current usage.

13.4.6 Where required, further studies will be used to develop wind mitigation measures, and if necessary, validate the effectiveness of these measures in providing a suitable pedestrian level wind environment for planned pedestrian activities, and minimising residual impacts on

the surrounding area. At outline stage these measures will not be quantitively tested if they are expected to be successful, and they will be verified as needed through reserved matters.

13.4.7 A wind speed of 15 metres-per-second occurring once per year is rated as unsafe, with the potential to de-stabilise the less able members of the public including the elderly, cyclists and children, with the able-bodied could tolerate wind speeds up to 20 m/s.

13.4.8 The LDDC variant of the Lawson criteria prescribes that wind conditions are suitable for a given activity when the threshold is exceeded no more than 5% of the time. The value of 5% has been established as giving a reasonable allowance for extreme and relatively infrequent winds that are tolerable within each category. For more sedentary activities, such as outdoor sitting and recreational use, an allowance for slightly windier conditions outside the summer months is made. This accounts for colder weather where the spaces would be utilised to a lesser extent. These threshold wind speeds are presented in **Table 13.1** below.

Table 13.1: Threshold Wind Speeds

Threshold Wind Speed (m/s)	Comfort Rating / Activity
4	C4 Long term sitting
6	C3 Standing / short- term sitting
8	C2 Strolling
10	C1 Walking
>10	C0 Uncomfortable

13.5 References

- Lawson, T.V. The determination of the wind environment of a building complex before construction. University of Bristol, Department of Aeronautical Engineering, TVL/9025, 1990.

14 Climate Change

14.1 Introduction

14.1.1 The climate change ES chapter will assess the likely significant impacts associated with the Proposed Development. Regulation 4(2)(c) of the 2017 EIA Regulations requires significant effects on climate to be considered, as appropriate, within the EIA process. In addition, Schedule 4 to the 2017 EIA Regulations requires likely significant effects resulting from "*the impact of the project on climate…and the vulnerability of the project to climate change"* to be addressed within an ES.

14.1.2 The climate change assessment is comprised of two elements, which are presented separately within this scoping chapter:

- Greenhouse Gas (GHG) Emissions Assessment (the impact of the proposed development on climate change); and
- Climate Risk and Resilience Assessment (CCRA) (the impact of climate change on the proposed development).

14.1.3 Legislation and planning policies that are relevant to the Proposed Development and climate change include:

- The Paris Agreement, 2015
- Climate Change Act (2008) (2050 Target Amendment) Order 2019;
- Carbon Budget Orders 2009, 2011, 2016 and 2021;
- National Planning Policy Framework (NPPF) (2019): Paragraph 8 (Achieving sustainable development), Paragraphs 148 to 169 (Meeting the challenge of climate change, flooding and coastal change), and the associated Planning Practice Guidance: Climate change (2019);
- The Glasgow Climate Pact 2021;
- COP26 Climate Pact 2021;
- South Gloucestershire Council Policies, Sites and Place Plan (2017): Chapter 3 Responding to Climate Change and High Quality Design; and
- South Gloucestershire Council Climate Emergency Strategy.

GHG Emissions Assessment

14.2 Baseline

Current State of Environment

14.2.1 The Site comprises the former Filton Airfield and associated buildings and hangars. There are currently limited greenhouse gas emissions from the Site given that the former use of the Site is no longer operational. Apart from areas of concrete hardstanding forming the runways, ground cover within the Site boundary is predominantly grassland, consistent with the former use as an airfield, with areas of more substantial vegetation and trees north of the runway. The vegetation may provide a limited amount of carbon sequestration on Site.

14.2.2 There are GHG emissions associated with the construction of Brabazon Phase 1 which is currently being undertaken. These emissions relate to the combustion of fuel for vehicles, plants or equipment, purchased electricity and embodied carbon from purchased materials.

14.2.3 SGC declared a climate emergency in 2019 and have signed up to the UK100 pledge which commits SGC to net zero council emissions by 2030 and net zero area-wide emissions by 2045. SGCs Carbon Emissions Baseline Report (Regen, 2019) sets out a scope 1 and 2 CO_2 emissions baseline for 2017 for the South Gloucestershire area. This is based on BEIS local authority emissions data which has since be published for 2019 (Ricardo Energy & Environment for BEIS, 2020) and are presented below in **Table 14.1**.

Table 14.1 SGC CO_2 emission estimates 2019

SGC CO_2 estimates ($ktCO_2$)					
Industry and Commercial Total	Public Sector Total	Domestic Total	Transport Total	Land Use, Land Use Change and Forestry	**Grand Total**
351.8	40.6	367.6	916.6	-16.5	**1,660.1**

2036 Baseline

GHG Emissions

14.2.4 As set out in Chapter 6, the 2036 baseline comprises the extant planning consent, additional works as consented through the 2021 S73 consent and the YTL Arena. Sources of GHG emissions would include emissions associated with transport to and from the Site. The extant planning consent would also generate emissions associated with purchased electricity from the national grid during operation of the extant planning consent, for example for heating and lighting, as well as indirect emissions for example, from the processing of waste generated on Site.

14.2.5 The retained habitats and proposed planting on Site would provide a limited amount of carbon sequestration.

14.3 Consultation

14.3.1 No direct consultation in relation to climate change in the EIA has been undertaken at the time of writing this chapter.

14.4 Potential Effects

14.4.1 There is an absence of significance criteria or defined threshold for determining the significance of effects resulting from GHG emissions in EIA however IEMA guidance (IEMA, 2017) recommends that all GHGs might be considered as significant and that the ES should demonstrate how the project addresses their occurrence through mitigation.

14.4.2 The World Business Council for Sustainable Development (WBCSD) / World Resources Institute (WRI) Greenhouse Gas Protocol (the GHG Protocol) (WBCSD and WRI, 2019) categorises direct and indirect emissions into three broad scopes:

- Scope 1: all direct GHG emissions;
- Scope 2: indirect GHG emissions from consumption of purchased electricity, heat or steam; and

- Scope 3: other indirect emissions, such as the extraction and production of purchased materials and fuels, transport-related activities in vehicles not owned or controlled by the reporting entity, electricity-related activities not covered in Scope 2, outsourced activities, waste disposal, etc.

14.4.3 These three scopes are considered below to set the boundary for assessment of potential effects within the ES.

Insignificant Effects

14.4.4 Indirect Scope 3 emissions are emitted from activities which are predominantly outside of the Applicant's control, for example, waste disposal and emissions related to the supply chain of construction materials. It is therefore difficult to accurately and meaningfully assess these at the early stage of a project and it is not considered appropriate or proportionate in the context of the Proposed Development and the EIA Regulations. IEMA guidance recognises that the assessment of GHGs should be proportionate in the context of EIA.

14.4.5 Embedded and further mitigation that reduces GHGs, including indirect Scope 3 emissions, associated with the Proposed Development will be considered within the ES. Therefore, the ES will demonstrate how the Proposed Development addresses GHG emissions through mitigation, as recommended by IEMA guidance. It is therefore proposed that Scope 3 emissions are scoped out of further assessment.

Significant Effects

Construction

14.4.6 During construction, GHG emissions would be generated from the following activities which have the potential to cause significant effects:

- Scope 1: enabling activities, land clearance and construction processes such as emissions resulting from the combustion of fuels in the applicant's owned/controlled vehicles, plants or equipment used for construction of the Proposed Development.
- Scope 2: emissions associated with electricity needed for plant and welfare facilities.

Operation

14.4.7 During operation, GHG emissions would be generated from the following activities which have the potential to cause significant effects:

- Scope 1: emissions associated with transport.
- Scope 2: emissions associated with purchased electricity from the national grid during operation of the Proposed Development, for example for lighting and emissions associated with the Energy Strategy.

14.5 Methodology

14.5.1 There is no nationally adopted method for assessing climate change within EIA and therefore the assessment approach draws upon IEMA guidance (IEMA, 2017). IEMA guidance emphasises that a proportionate and appropriate assessment should be undertaken to inform decision making and recognises that qualitative assessments are acceptable where mitigation has been agreed early on in the design phase with design and engineering teams.

14.5.2 The assessment for the Proposed Development will be based on broad parameters. The following design mitigation measures have been considered and will be embedded within the

parameter plans or secured by planning conditions (note that this list is not comprehensive and other mitigation measures may be identified within the ES):

- A Framework CEMP, which will be submitted with the ES, will set out measures that will reduce GHG emissions during construction, for example, no unnecessary idling of engines, maintenance of plant equipment to check they are operating optimally and efficient use of materials to reduce waste.
- The inclusion of cycle and pedestrian routes to create walkable and cyclable neighbourhoods that reduce the need to rely on cars and therefore GHG emissions associated from transport during operation.
- The inclusion of green infrastructure and open space will assist in passively reducing the energy demands, and therefore the GHG emissions as well as the potential for carbon sequestration.
- The Proposed Development will be designed to Building Regulations standards on energy and water efficiency. An Energy Strategy will be submitted with the application which will apply the energy hierarchy to identify energy efficiency measures such as site layout, building form and orientation and building fabric that will be promoted at the detailed design stages.

14.5.3 Given the above mitigation measures, it is considered that a qualitative GHG assessment is appropriate and proportionate in the context of the EIA Regulations.

14.5.4 The following methodology for assessment is proposed:

- Review of policy context for the assessment with reference to National and Local policy;
- Establish the qualitative GHG baseline of the current state of environment and 2036 baseline through a review of Site information and application documents for the extant planning consent:
- Qualitative review of potential GHG emission sources during construction of the Proposed Development, as outlined above. The qualitative assessment will adopt emission boundaries (i.e. scope of the emissions) that align with Greenhouse Gas Protocol (WBCSD and WRI, 2019) and PAS 2070 methodology (BSI, 2013); and
- Identification of embedded and further mitigation measures to reduce the GHG emissions associated with the Proposed Development.

14.5.5 There is an absence of significance criteria or defined threshold for determining the significance of effects resulting from GHG emissions in EIA. Significance of effect is therefore determined using professional judgement, and consideration of the following elements:

- Appraisal of the Proposed Development's emissions in the context of national, regional and local emissions.
- IEMA EIA Guide to Assessing Greenhouse Gas Emissions and Evaluating their Significance (IEMA, 2017).
- How the Proposed Development has embedded design features to reduce GHG emissions and identified opportunities for further mitigation in the Proposed Development's design and delivery.

14.5.6 GHG emissions have a global effect rather than directly affecting specific local receptors to which levels of sensitivity can be assigned. The global climate has therefore been treated as a

single receptor. Given the global scale and severe consequences of climate change and limited recoverability, the receptor sensitivity is considered to be high.

Climate Change Risk Assessment

14.6 Baseline

Current State of Environment

14.6.1 Historic climate averages during the period 1981-2010 for the closest climate station to the site (Filton), obtained from the Met Office website (Met office, undated), indicates the following:

- Average annual maximum temperature was 14.2°C;
- Warmest month on average was July (mean maximum temperatures of 21.5°C);
- Coldest month on average was February (mean minimum temperature of 1.9°C);
- Average total annual rainfall was 802.1 mm;
- Wettest month on average was December (average monthly rainfall of 85.9 mm); and
- Driest month on average was April (average monthly rainfall of 49.3 mm).

14.6.2 The EA *Flood Map for Planning* (EA, 2021) indicates that the site is designated as Flood Zone 1, which is defined as land having a less than 1 in 1,000 annual probability of river or sea flooding.

2036 Baseline

14.6.3 **Table 14.2** below provides a summary of the projected climatic changes for the Site. This is based on the UK Climate Projections 2018 (UKCP18) produced by the UK Met Office (Met Office, 2018), which is explained in **Section 14.9** below.

Table 14.2: 50th Percentile Climate Projections in 2036 for 25 km grid square 362500, 187500 using baseline 1981-2000 scenario RCP8.5

Date	Mean air temperature anomaly at 1.5 m (Â°C)	Annual Precipitation rate anomaly (%)	Maximum Summer air temperature anomaly at 1.5 m (Â°C)	Average Summer Precipitation rate anomaly (%)	Minimum Winter air temperature anomaly at 1.5 m (Â°C)	Average Winter Precipitation rate anomaly (%)
2036	1.11	1.05	1.41	-16.56	1.26	8.52

14.6.4 The projections show that the Site is likely to experience an increase in annual average temperature and annual rainfall. By 2036, the Site is expected to experience warmer, drier summers and milder, wetter winters. Extreme weather events are also expected to change in frequency and intensity in the coming decades. These extremes, such as heatwaves, droughts and heavy rainfall will be considered within the ES.

14.7 Consultation

14.7.1 No consultation in relation to climate change in the EIA has been undertaken at the time of writing this chapter.

14.8 Potential Effects

Insignificant Effects

14.8.1 During the construction phase it is anticipated that the risk of climate hazards, for example from heatwaves or periods of heavy precipitation may increase however it is expected that these will be managed through standard construction and health and safety practices, such as securing material/equipment and not undertaking works during periods of extreme rainfall. Therefore, the vulnerability of the Proposed Development to climate change during construction will be scoped out of the assessment for the ES.

Significant Effects

14.8.2 The Proposed Development may be vulnerable to varying future climate conditions, relating to high temperatures and heat waves, extreme precipitation events, water shortage in drought conditions and other extreme weather events which could result in adverse effects during the operation of the Proposed Development.

14.8.3 There is also the potential for climate change, and in particular changes to seasonal patterns, to exacerbate the effects on environmental receptors to an extent that a new or previously identified effect in other topic chapters becomes significant. These are referred to as in-combination climate change impacts.

14.9 Methodology

14.9.1 The future climate conditions for the Site have been informed by UK Climate Projections 2018 (UKCP18) produced by the UK Met Office (Met Office, 2018). UKCP18 builds upon the previous projections to provide information on how the climate of the UK may change over the rest of this century. This information will be considered to identify the likely changes to climate to describe the future, emerging baseline and to qualitatively assess the likely significant effects of climate change on the Proposed Development.

14.9.2 UKCP18 uses Representative Concentration Pathways (RCPs) to develop projections and consider factors such as economic activity, population growth and land use change, which will result in a different range of global mean temperature increases until 2099. RCP8.5 represents the highest emissions scenario, including extreme climate change scenarios. This is considered the most appropriate scenario for assessing the impact of climate change on the Proposed Development, to provide a suitable conservative approach.

14.9.3 The assessment will therefore utilise the probabilistic projections for the assessment year of 2036 and look at 25 year intervals up to the year 2099. The scenario RCP8.5 will be used for the 25 km grid cell within which the Site is located (362500, 187500). A review of the following data from this data set will be undertaken:

- Average Summer Precipitation (% change);
- Average Winter Precipitation (% change);
- Average Annual Precipitation (% change);
- Maximum Average Summer Temperature;

- Minimum Average Winter Temperature; and
- Annual Mean Temperature.

14.9.4 The climate projections described above will be considered alongside the design information available and embedded mitigation to identify the vulnerability and resilience of the Proposed Development to climate change. The inverse of climate resilience, vulnerability to climate change refers to an aspect of infrastructure, operations or a project which is susceptible to impacts arising from climate change, e.g. a building may be vulnerable to overheating due to future increase in temperatures if it has not been designed with consideration of higher temperatures.

14.9.5 The following receptors will be assessed:

- Future users of the Site.
- Infrastructure including buildings and roads.
- Ecology, landscaping and planting.

14.9.6 Likely significant effects will be identified through the approach set out in the methodology section above. There is no nationally adopted method for assessing and determining significance of climate change impacts within EIA. The assessment approach will therefore draw upon guidance from IEMA (IEMA, 2020). This includes the consideration of whether the effect is temporary or permanent.

14.9.7 Effects that are described as 'minor' or 'negligible' are determined to be 'Not Significant', and effects that are described as 'moderate', 'major' or 'substantial' are determined to be 'Significant'.

14.9.8 Flood risk and drainage has been scoped out of the ES (see **section 15.2**) however a Flood Risk Assessment (FRA) will be submitted with the application and will take account of EA climate change allowances. The conclusions of the FRA will be considered within the CCRA.

14.10 References

- BSI (2013). PAS 2070:2013. Specification for the assessment of greenhouse gas emissions of a city. BSI, London.
- Defra (2017) 'UK Climate Change Risk Assessment 2017' Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/584281/uk-climate-change-risk-assess-2017.pdf
- Defra (2018) 'The National Adaptation Programme and the Third Strategy for Climate Adaptation Reporting' Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/727252/national-adaptation-programme-2018.pdf
- DfT (2018) 'The Road to Zero' Available here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/739460/road-to-zero.pdf
- Environment Agency (EA) (2021) Flood Map for Planning [Online] Available at https://flood-map-for-planning.service.gov.uk/
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- Met Office (2018). UK Climate Projections 2018. Available: https://www.metoffice.gov.uk/research/collaboration/ukcp

- Met Office (undated). Filton station climate averages 1981-2010. Available: https://www.metoffice.gov.uk/research/climate/maps-and-data/uk-climate-averages/gcnjj7h5w Accessed 01/12/21

- Regen (2020) Carbon Emissions Baseline Report. Available here: https://beta.southglos.gov.uk/static/fd6b4d704ef494fb1a43269732fdf924/Carbon-Emissions-Baseline-Report.pdf

- Ricardo on behalf of DBEIS 2021, 'UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2019', Department for Business, Energy & Industrial Strategy, National Statistics [online]: https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2019 Accessed: 01/12/2021

- SGC (2020) SGC Climate Emergency Strategy Available here https://beta.southglos.gov.uk/static/2f6a99c0e8736dfa043ddfacdd8614aa/Climate-Emergency-Strategy.pdf Accessed 01/12/21

- World Business Council for Sustainable Development (WBCSD) / World Resources Institute (WRI) (2019) Greenhouse Gas Protocol. Available: http://ghgprotocol.org/about-us

15 Topics Not Included in the EIA Scope

15.1 Introduction

15.1.1 The ES should be focused, documenting only the assessment of likely significant environmental effects, both adverse and beneficial. Therefore, those effects which are not likely to be significant should not be included in the ES, i.e. they should be scoped out of the EIA, as clearly set out in the PPG (Paragraph: 035 Reference ID: 4-035-20140306). The following section sets out those topics that have been determined not to be significant and therefore are not included in the EIA, as well as those that will be addressed independently in separate assessments. The rationale for scoping these topics out of the EIA is also provided.

15.2 Flood Risk and Drainage

15.2.1 This section covers flood risk to the Site and surrounding area from all sources including tidal and fluvial as well as impacts to local water resources which includes the local watercourses, groundwater and potable water supply infrastructure.

15.2.2 The Site lies in Flood Risk Zone 1; identified as having low risk from fluvial or tidal flooding. The Site falls away to the east and west from its central point forming two catchments to the closest watercourses; the Stoke Brook to the southeast which is culverted through the Site and the Henbury Trym to the northwest. The Site is not at risk of flooding from reservoirs or sewers. Flood maps indicate some small areas at risk of flooding from surface water as result of natural drainage paths for pluvial flows onto the Site.

15.2.3 The Site is currently positively drained by on Site networks which discharge to both watercourses. The catchments are defined by the topography and will be replicated in the drainage strategy for the Proposed Development. Existing surface water discharges will be reduced through the drainage strategy as recommended under the extant planning consent. Phase 1 of the extant planning consent is under construction and connects to the existing Site wide infrastructure. The North Bristol Relief sewer is to be constructed in the northwest part of the Site to accommodate the anticipated developments in north Bristol and is due to be complete in Spring 2023.

15.2.4 The primary receptors in and around the Site for hydrology and flood risk are the future occupants of the Site and adjacent land from a flood risk perspective, the existing watercourses and groundwater/aquifer links as well as the existing public potable water and drainage infrastructure. As the Site is not in an area of flood risk and surface water must be managed to reduce peak flows off Site, it is not considered that there will be any significant effects of the Proposed Development to flood risk. Surface water management including water quality from the Site will be controlled through the planning consultation process by the Environment Agency (EA) and Lead Local Flood Authority (LLFA) and as such there will be no significant impact in this regard. The public drainage and potable water networks are being upgraded to accommodate the Proposed Development and offset any impact as this Site as part of the extant planning consent. As such, the Water Authority will ensure no detrimental impact to the network as a result. Liaison with Wessex Water has been ongoing through the previous application and development of the revised proposals for the Proposed Development.

15.2.5 The previously prepared Flood Risk Assessment (FRA) will be updated for the Proposed Development, to provide an assessment of the flood risk to the existing Site and the impact of the Proposed Development. The FRA will also assess the surface water management for the Proposed Development to ensure no significant impact to the surrounding area from the Site drainage through flood risk or water quality effects. This will cover the same flood mechanisms and principles as for the FRA prepared for the extant planning consent but will consider the surface water management strategy appropriate for the increased density of the Proposed Development.

15.2.6 For the construction stage, a Construction Environmental Management Plan (CEMP) will be required to identify how the works will be managed to protect and mitigate against environmental impacts including surface water runoff, debris, dust, contamination from plant and any additional pathways created by the construction methods e.g., piling. A Framework CEMP will be appended to the ES.

15.2.7 The assessment of impact on Water & Flood Risk from the Site has not significantly altered from the Environmental Statement and Addendums that were prepared for the extant planning consent. The supporting assessment did not identify any residual significant adverse effects and mitigation measures identified were the implementation of existing policy such as surface water management controlled through the FRA and construction stage effects mitigated through the CEMP.

15.2.8 The table below shows the residual effects identified in the previous assessments, their level of significance and the identified mitigation measures.

Table 14.1: Flood Risk and Drainage Residual Effects

Residual Effect	Level of Significance	Mitigation Measures
Construction stage pollution incident	Not significant	Controlled through CEMP
Construction stage surface water management	Not significant	Controlled through CEMP
Development surface water management	Minor beneficial	FRA implementation SuDS systems to reduce peak discharge including attenuation tanks & basins
Increased Foul Drainage	Not significant	Mitigated through North Bristol Relief Sewer
Increased Potable Water demand	Not significant	Managed by Bristol Water

15.2.9 Of the impacts identified above, the only two materially affected by the Proposed Development, due to the increase in demand as a result of increased dwellings, are the foul water drainage and potable water supply, both of which are managed by the Water and Drainage Authorities to reinforce where necessary to mitigate impact. Liaison with both of these authorities has been ongoing.

15.2.10 The Proposed Development does not introduce any additional significant elements that would generate new or different impacts or alter the significance of previously identified impacts.

15.2.11 Legislation and policy changes will be captured in the revised FRA and are primarily limited to the assessment of climate change horizons. This will affect the surface water management; however, the pre-development flow is the controlling factor which remains unaffected.

15.3 Archaeology and Cultural Heritage

15.3.1 This section has been prepared by AC Archaeology to outline the key issues that relate to Historic Environment (Archaeology & Cultural Heritage) for the Proposed Development.

15.3.2 The historic environment was considered in the 2014 ES which included a heritage desk-based assessment, the 2015 Addendum, the 2017 Addendum and the 2021 ES. A heritage parameter plan which incorporated Hangar 16M, 16U, and 16S into the design of the Proposed Development was submitted previously and will be submitted as part of this planning application.

Archaeology

15.3.3 The principal archaeological interests of the site relate to WWII use of the airfield, but there are localised areas where pre-modern interests have been identified by previous site investigations. All of the latter group are considered to be non-designated heritage assets. Arrangements for archaeological mitigation in existing consents have been set out in an overarching Written Scheme of Investigation (WSI) that has been agreed with SGC and implemented as phases of development have come forward.

15.3.4 The determination of archaeological mitigation has been based on a detailed deposit model that identifies zones of archaeological potential across the Site as a whole. Large areas are considered devoid of archaeological interest. The deposit model is provided at **Appendix E** and is considered to have relevance though all subsequent phases of development. It does not identify any areas that require preservation in situ, although an ES commitment was made to preserve two underground air raid shelters alongside the A38.

Built Heritage

15.3.5 There are two Grade II Listed Buildings (designated heritage assets) within the site boundary; these are identified on the deposit model provided at **Appendix E**. The northernmost, a former aircraft hangar, will be refurbished and re-used and will be the subject of a separate Listed Building Consent application. For the small WWII pill box adjacent to the southern boundary, there is a commitment in the extant planning consent to incorporate this within open space and as part of a heritage trail to offset loss of original setting (see fig. 8.1 of 2021 ES). After the incorporation of mitigation measures, the conclusions of assessment for the extant planning consent identified no significant residual effects on the heritage assets.

15.3.6 It was previously proposed that this heritage asset would be incorporated into an area of Public Open Space adjacent to the proposed railway station, with an adjacent information panel, and this would provide a suitable means of allowing the setting of this heritage asset to be maintained. This mitigation will be retained for the Proposed Development.

15.3.7 It is not considered that the proposed revision to massing in the vicinity of the pill box will result in any additional or greater adverse effects on the asset's setting, if the previous mitigation is retained for the Proposed Development.

Conclusion

15.3.8 A range of mitigation measures to retain the historic value of these heritage assets form part of the extant planning consent and will be incorporated into the design of the Proposed Development. These include retaining sight lines between the three hangars; marking the location of the runway with a corresponding area of open space (linear park); providing a visual link from hangar 16U toward the Brabazon hangar, allowing associations between different phases of the airfield to be understood and the marking of a heritage trail including information panels providing a history of the asset and the part it has played in the history and development of the airfield at an appropriate location.

15.3.9 Existing arrangements for archaeological and built heritage mitigation are in place and should not require amendment as a result of the proposed ES update, but will be carried forward for the Proposed Development. There are no additional significant effects arising from the proposals and historic environment should therefore be scoped out.

15.4 Ground Conditions and Contamination

15.4.1 The ground conditions at the Site were investigated by BAE Systems Environmental in a series of desk-based studies and intrusive ground investigations undertaken from 2012 to 2014 in support of the 2014 ES. This work was supplemented by a re-appraisal of the pre-existing ground conditions information prepared by Peter Brett Associates LLP (now Stantec)

in order to reflect the amended development proposals and respond to current policy and guidance which was included in the 2017 ES. The outcome of the re-appraisals resulted in minor changes to the pre-development earthworks strategy for the Site but did not alter the overarching assessment or identified framework of mitigation measures.

15.4.2 The 2021 ES Addendum identified that the residual effects defined in the 2014 ES remain unchanged. The residual effects are presented in full within that ES, but in general, on implementation of the remediation strategy under the Quality, Safety and Health and Environment (QHSE) Plan the residual effects are identified as being either 'Beneficial' (as a result of lowering the probability of effects from ground conditions by remediation) or 'Slight/Negligible Adverse'.

15.4.3 Therefore, ground conditions and contamination has been scoped out of this ES due to the limited changes to footprint of the Proposed Development. Previous assessment work and the mitigation strategy will be re-submitted with the planning application.

15.5 Daylight and Sunlight

15.5.1 Daylight and sunlight effects generally impact residential receptors rather than commercial. Consideration of residential receptors within Phase 1, which is currently being built, will be incorporated into masterplan considerations to development with the potential to affect receptors within Phase 1. There are no other existing residential dwellings on the Site that could be affected in terms of daylight and sunlight as a result of the Proposed Development. In addition, there are no existing residential dwellings within 30m of the northern Site boundary that could have their daylight or sunlight amenity adversely affected by build development on the Site.

15.5.2 Therefore, based on the Proposed Development and current conditions on Site and in the surrounding area, no significant daylight or sunlight effects are anticipated, and it is therefore proposed to scope daylight and sunlight out of the EIA.

15.5.3 It is noted that there is the potential for the daylight/sunlight amenity of new residential receptors within the Proposed Development to be affected, given that some taller buildings are being proposed. Initial daylight and sunlight analysis has been carried out for the proposed massing and as part of the design process consideration has been given to the potential for over-shadowing, along with daylight and sunlight effects on neighboring dwellings within the Proposed Development. The design will also seek to provide appropriate daylight and sunlight within the proposed dwellings.

15.5.4 Daylight, sunlight and overshadowing considerations will be incorporated into the detailed design for each Phase brought forward through Reserved Matters.

15.6 Risk of Accidents and Disasters

15.6.1 Schedule 4 to the EIA Regulations requires an ES to include *"a description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned".* Although only the resulting expected significant adverse environmental effects (together with any required prevention, preparedness, mitigation and response measures) need to be addressed within an ES, it is first necessary to identify a project's vulnerability (i.e. identification of relevant risks). The second stage is then to determine whether this would result in likely significant environmental effects.

15.6.2 The terms risk, vulnerabilities, major accidents and disasters are all undefined within the 2017 EIA Regulations. To remain proportionate, consideration of this topic should focus on the risks of major accidents and/or disasters which have the potential to result in serious damage, which for this EIA is considered to be the loss of life or permanent injury and/or permanent or long-

lasting damage to an environmental receptor which cannot be restored through minor clean up and restoration efforts.

15.6.3 Consideration has been given to IEMA Guidance (Major Accidents and Disasters in EIA: An IEMA Primer, September 2020). The guidance recognises that the UK already has a structured framework of risk management legislation in place. Moreover, it recognises that primary and tertiary mitigation of a development's vulnerability to major accidents and/or disasters, for infrastructure and other built environment developments, is covered by a wide range of other safety and non-safety related legislation. This mitigation is generally sufficient to manage vulnerabilities to major accidents and/or disasters without the need for secondary mitigation in most circumstances.

15.6.4 The IEMA guidance therefore suggests a 'sign-posting' approach to assessment, making efficient use of existing and available risk assessments rather than duplicating any risk quantification and management already undertaken on developments as part of the assessment approach.

15.6.5 In assessing whether an ES should 'scope in' Accidents and Disasters, the guidance provides a useful 'flowchart' as set out below in **Figure 15.1**.

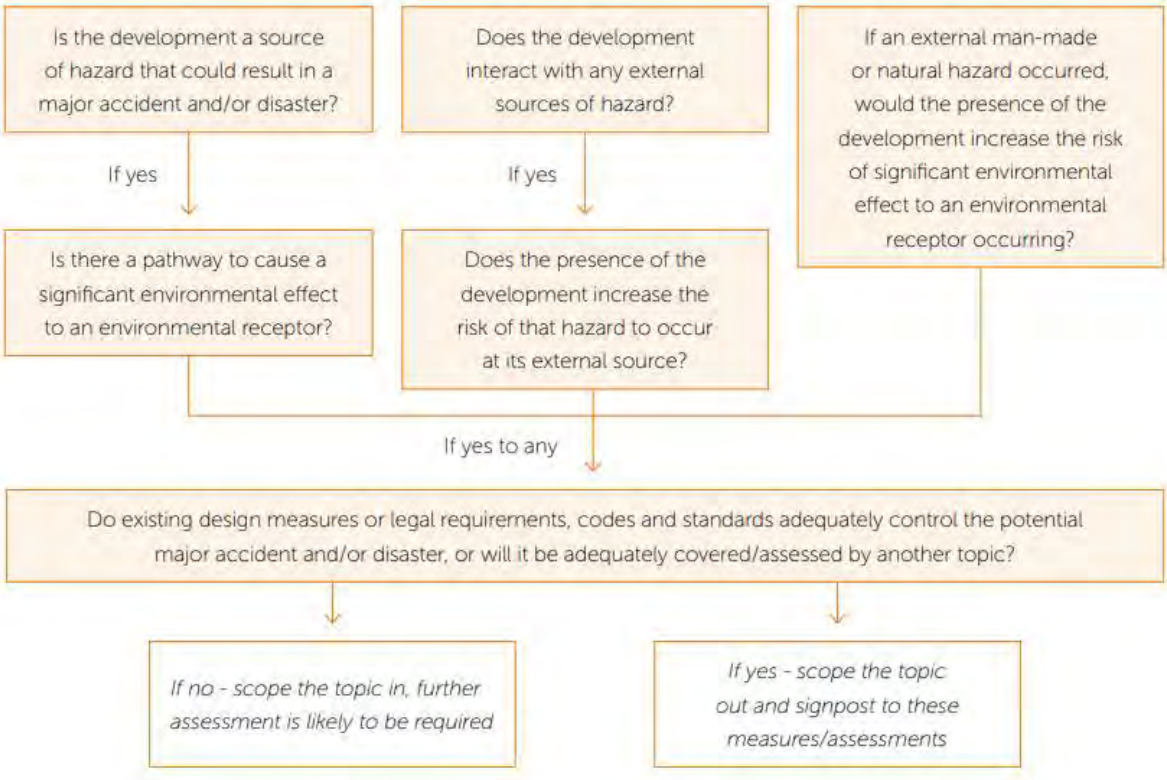


Figure 15.1: IEMA Guidance Flowchart[10]

15.6.6 Taking account of the location and characteristics of the Proposed Development, and the likelihood of significant environmental effects outlined in this scoping report, the major risks identified relate to:

- Interaction with the Arena and ensuring patron safety, factoring in issues around crowd congestion and terrorism;
- Potential accidents during the construction phase resulting in disturbance, injuries and/or

[10] IEMA (2020) Major Accidents and Disasters in EIA: A Primer

fatalities to construction workers or members of the public;

- A major flood event that could flood areas of built development or essential infrastructure;
- Road traffic accidents; and
- Pollution incidents to ground and watercourses during the construction phase, resulting in potential pollution migration and adverse effects on specific receptors including soils, habitats, and species.

15.6.7 As detailed within this Scoping Report, mitigation will be included within the Proposed Development to address these risks and manage potential environmental effects. Health and safety is a key consideration in the construction sector and will be managed in accordance with legal requirements and best practice.

15.6.8 Safety related to the development of the Arena which is adjacent to the southern boundary of the Site has been managed through the consented scheme which included the submission of a Crowd Modelling Report and consideration of security within the ES and Design and Access Statement (DAS) submitted with the Arena application. The Arena DAS sets out that the design of the Arena is informed by guidance from the following:

- 'Secure by Design' – owned by the Association of Chief Police Officers (ACPO) and has the support of the Home Office Crime Reduction and Community Safety Group and the Planning Section of The Office of the Deputy Prime Minister.
- Crowded Places Guidance – National Counter Terrorism Security Office.
- Centre for the Protection of National Infrastructure (CPNI) The UK Government authority which provides resources, guidance and expert advice to help protect and keep business secure from external threats.
- CONTEST – the UK's Strategy for Countering Terrorism.

15.6.9 Safety will also continue to be managed through the resultant condition discharge process. The conditions require strict adherence to the security strategy. Reserved matters submissions are required to be accompanied by a compliance statement, and an 'event management strategy'' must also adhere to those principles. Further crowd flow modelling data will be submitted with the Brabazon Park reserved matters submission in December 2021. Therefore, in response to the flow chart question 'do existing design measures or legal requirements, codes and standards adequately control the potential major accident and/or disaster', considering the above measures, the response is 'yes'.

15.6.10 As set out in **Section 15.2**, the Proposed Development will be sensitively designed to respond to local flood risk and will include a drainage strategy to mitigate the effects of the Proposed Development on the local drainage regime (as was already the case for the extant planning consent). As such the Proposed Development will be unlikely to experience significant effects in relation to flood risk.

15.6.11 The impacts of the Proposed Development on road traffic accidents will be assessed within the Transport Assessment and ES Transport and Access chapter as outlined in **Chapter 8**. This will include an analysis of personal injury collision from the local area which will be used to identify potential significant adverse effects and mitigation measures necessary to these effects to an acceptable level.

15.6.12 A Framework CEMP will be submitted with the ES and will outline methods to avoid, minimise and mitigate construction effects on the environment. This document will be updated as the project progresses to enable the plan to be effective and account for any changes that occur during construction works.

15.6.13 Potential major risks related to the Proposed Development are therefore considered to be addressed through the robust regime that is already in place. As a result, it is proposed that the risks from major accidents and/or disasters is scoped out of the EIA.

15.7 Human Health

15.7.1 The EIA Regulations require an ES to identify the likely significant effects of development on human health. This section of the EIA Scoping Report sets out the justification for the scoping out of the potential effects of the Proposed Development on human health.

15.7.2 Risks to human health may result principally from effects related to socio-economics, air quality, noise and contamination. Further to this, health and wellbeing may be affected where developments by the provision, or not, of adequate services, amenities and a sense of community that supports healthy lives.

15.7.3 The masterplan for the Proposed Development incorporates the following healthy community principles:

- Promote sustainable design practices and energy saving measures
- Encourage car-free means of reaching facilities with alternative networks and good connectivity
- A comprehensive water management network to manage flood risk
- Enhancement of biodiversity with a connected green and blue network

15.7.4 The provision of accessible, safe and attractive public open space and public realm underpins people's quality of life; being important to both an individual's health and wellbeing as well as to the success, value and sustainability of the community they live and work in. In establishing the Brabazon Park as the spine of the Proposed Development together with a network of quality spaces, this will ensure that all residents will have easy access to a wide variety of attractive, safe and accessible parks, gardens, streets, squares, play, woodland groves, meadows, greens, playing fields and wilder spaces. This promotes healthy living through comfortable pedestrian access and cycleways, sports and allotment provision.

15.7.5 The Proposed Development will incorporate a new railway station and MetroBus links. Provision will be configured to maximise the convenience and ease for the user and to prioritise pedestrian and cycle modes. The increased density will not increase the car trips from the Site as public transport will encouraged as the main mode of transport to and from the Site.

15.7.6 Likely significant effects related to socio-economics, air quality and noise will be addressed within the relevant ES chapters which will consider effects on local receptors and new residents of the Proposed Development. Where significant effects are anticipated, appropriate mitigation measures will be proposed to reduce effects to an acceptable level and meet the relevant national and local guidance and policy.

15.7.7 As a result of the above, along with the mix of uses proposed and the high-quality proposals committed to by the Applicant, it is considered appropriate for human health effects to be considered within socio-economics, transport and access, air quality and noise chapters of the ES, rather than an overarching health impact assessment.

15.8 Waste

15.8.1 The Proposed Development will require materials and generate waste during both construction and operation.

15.8.2 Given the nature of the Proposed Development, materials required for the construction of the Proposed Development are unlikely to be particularly scarce or environmentally sensitive, nor is the Proposed Development likely to result in materials becoming scarce. Consideration will be given throughout the design process to the specification of suitable materials, including their sustainability and environmental implications, to support an environmentally sensitive and high-quality development. As a result, the Proposed Development is not likely to have any significant effects in relation to materials.

15.8.3 Waste generation during the construction phase is likely to result from the construction of the new buildings. Waste management will be considered carefully throughout the design and construction of the Proposed Development to ensure compliance with legislation and to minimise costs associated with waste disposal. The volume of waste likely to be generated by the Proposed Development will not significantly affect the capacity of local waste infrastructure.

15.8.4 Given the topography of the Site, construction of the Proposed Development will not generate significant cut material or require the importation of significant fill material. The development has been designed to keep such cut or fill requirements to a minimum. Any Site-won material (i.e. the Filton Airfield Runway) will be re-used on-Site to avoid landfill where possible. A Framework CEMP will be submitted with the ES and will include information relating to waste management.

15.8.5 During the operation of the Proposed Development, waste (including recyclables) generated by dwellings will be managed by the local waste authority (SGC), while waste from commercial uses will be managed by commercial operators. None of the proposed users are anticipated to be major generators of waste and the wastes generated by the Proposed Development should not significantly affect the capacity of local waste infrastructure. Information relating to the approach the Proposed Development will take to managing waste will be included in the Design and Access Statement which will be submitted with the planning application.

15.8.6 Condition 18 of the extant planning consent sets out the requirements on a phase by phase basis for waste management. It is therefore anticipated that this will be replicated for the Proposed Development. A Waste Management Strategy was submitted in 2017 (PBA 2017) and it is proposed that this will be resubmitted with the Proposed Development.

15.9 Sustainability

15.9.1 Sustainability has been incorporated into the design process for the Proposed Development in accordance with local and national planning policy, and the Applicant's sustainability aspirations.

15.9.2 It is considered that sustainability, as an environmental topic, does not require specific assessment within the ES and is not proposed to form part of the scope of the EIA. However, information relating to the approach to sustainability will be included in the ES chapters as relating to that topic, and in the Design and Access Statement. Topics with relevance to creation of a sustainable development, such as socio-economic effects, sustainable transport and biodiversity impacts will be addressed as appropriate through technical assessments of other environmental topics.

15.9.3 In 2018, Hydrock prepared a Sustainable Energy Statement for the Proposed Development which proposed that the development will have photovoltaic arrays situated on the roofs to provide onsite renewable power. The Proposed Development has been designed with the ability to connect to the Cribbs and Patchway New Neighbourhood Heat Network in the future.

15.9.4 The Statement states that overall, the development will achieve a 10% improvement over the Building Regulations Part L minimum requirements, from energy efficient measures, before renewables (regulated emissions). This 10% is an average across the Site - in order to standardise construction methods.

15.9.5 SGC require a 10% reduction on the total residual carbon emissions, which will be achieved through passive measures and on-site roof mounted solar photovoltaics providing an offset of 115,000 kgCO2/yr, or a 10% reduction, on top of the passive measures.

15.9.6 An Energy Statement will be submitted with the planning application.

15.10 Utilities

15.10.1 Discussions with Wessex Water have confirmed that options are available to ensure there is sufficient foul drainage capacity and therefore foul drainage does not present a constraint to the Proposed Development

15.10.2 Discussions have also been held with Western Power Distribution (WPD) to discuss the existing electrical provision around the north of Bristol and the potential opportunities to support development within and around the Site. WPD has confirmed that there is sufficient existing capacity to serve the Proposed Development and that a site-specific substation will not be required.

15.10.3 The previously prepared FRA indicated the order of surface water balancing facilities required to mitigate the impact of the Proposed Development, with allowance for future climate change. These have been taken into account as both wet and seasonally dry facilities within the emerging masterplan. The wet, long-term facilities will provide ecological benefits to the overall proposal, while the typically dry areas, which would only flood during extreme rainfall events, will be used as part of the open green infrastructure for the Site providing enhanced amenity to occupants. The open water bodies included as part of Brabazon Park form part of the surface water drainage strategy.

16 Summary and Next Steps

16.1 Summary

16.1.1 This document has been prepared to provide an overview of the likely significant environmental effects that have been considered in scoping the EIA for the Proposed Development.

16.1.2 This Scoping Report has provided information regarding the Proposed Development, set out the intended EIA scope and methodologies for the assessment of likely significant environmental effects, and outlined the content of the ES (**Chapter 6**). The aim is to ensure that the Proposed Development has due regard for the environment, mitigates adverse environmental effects where possible, and takes advantage of opportunities for environmental enhancement.

16.2 The Environmental Statement

16.2.1 The outcome of the EIA process is the production of an ES to accompany the planning application. An ES, which will be prepared in compliance with the EIA Regulations, and that achieves the following:

- Describes the Proposed Development;
- Outlines the reasonable alternatives considered;
- Describes the baseline environment;
- Describes the likely significant effects;
- Describes the measures to mitigate adverse effects; and
- Includes a non-technical summary.

16.3 Next Steps

16.3.1 The Scoping Report has proposed that the following topics are scoped into the EIA:

- Socioeconomics;
- Transport and Access;
- Air Quality;
- Noise and Vibration;
- Landscape and Visual;
- Biodiversity;
- Wind Microclimate; and
- Climate Change;

16.3.2 The Scoping Report has proposed that the following topics are scoped out of the EIA:

- Flood Risk and Drainage;

- Archaeology and Cultural Heritage;
- Ground Conditions and Contamination;
- Daylight and Sunlight;
- Accidents and Disasters;
- Human Health;
- Waste;
- Sustainability; and
- Utilities.

16.3.3 The next steps in the EIA process are as follows:

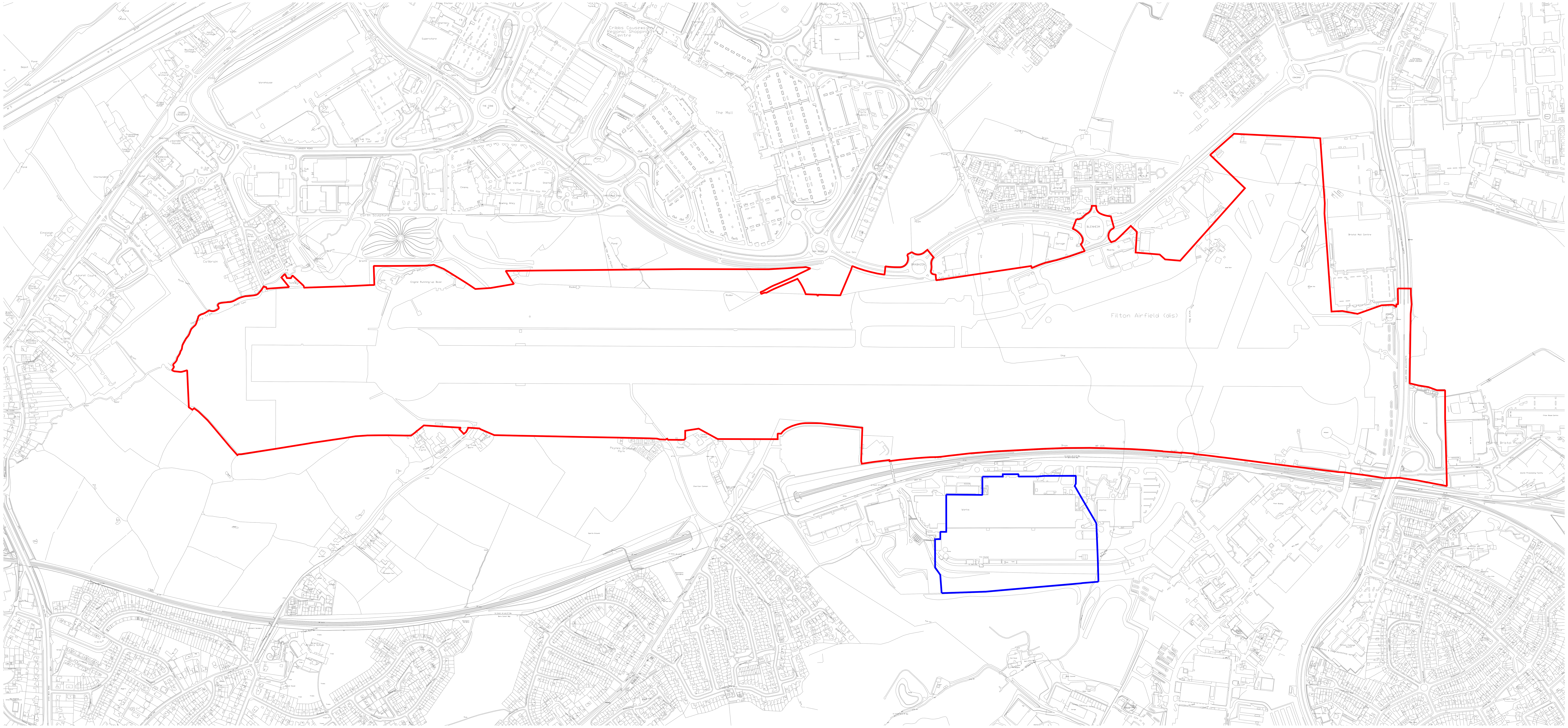
- Receipt of Scoping Opinion from SGC (January 2022); and
- Submission of the ES with the planning application (expected March 2022).

16.3.4 Comments on this report should be provided to:

South Gloucestershire Council
Department for Environment and Community Services
PO Box 1955
Bristol
BS37 0DE

Phone: 01454868003

Appendix A Site Location Plan



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KEY:

- Application site boundary (red line)
- Other land owned by YTL Land and Propert UK Ltd (blue line)

(1:5000) 10 50 100 200

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Year of Publication: 2017

REV	DATE	DESCRIPTION	CKD
00	09/05/2016	Issued for Information	
01	13/05/2016	Issued for Information - updated OS information, amended title	
02	18/05/2016	Issued for Information - application red/blue site boundaries	
03	23/05/2016	Issued for Information - application boundary revision	
04	25/05/2016	Issued for Information - application boundary revision	
P5	27/02/2017	Issued for Information - ownership boundary added	
P6	02/03/2017	Issued for Information - boundary for other land owned by YTL w.i.p.	
P7	14/03/2017	Issued for Information - boundary for other land owned by YTL w.i.p.	
P8	24/03/2017	Issued for Information	
P9	04/04/2017	Outline Planning Application	
P10	15/09/2017	Outline Planning Application Amendments	

For and on behalf of: YTL Developments (UK) Ltd

SINCE 1955

Architect: Allies and Morrison
85 Southwark Street
London SE1 0HX
telephone 020 7921 0100
facsimile 020 7921 0101
email info@alliesandmorrison.com

A&M JOB NO: 1074

FILTON AIRFIELD MASTERPLAN

SITE APPLICATION BOUNDARY
1074_00_07_001
OUTLINE PLANNING APPLICATION

SCALE: 1:5000 @ A1, 1:10000 @ A3

P10
Revision

Appendix B Regulation 18 and Schedule 4 of the EIA Regulations

Regulation 18

Environmental statements

18.—(1) Subject to regulation 9, an EIA application must be accompanied by an environmental statement for the purposes of these Regulations.

(2) A subsequent application is to be taken to be accompanied by an environmental statement for the purpose of paragraph (1) where the application for planning permission to which it relates was accompanied by a statement referred to by the applicant as an environmental statement for the purposes of these Regulations, but this is subject to regulation 9.

(3) An environmental statement is a statement which includes at least—

(a)a description of the proposed development comprising information on the site, design, size and other relevant features of the development;

(b)a description of the likely significant effects of the proposed development on the environment;

(c)a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d)a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;

(e)a non-technical summary of the information referred to in sub-paragraphs (a) to (d); and

(f)any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected.

(4) An environmental statement must—

(a)where a scoping opinion or direction has been issued in accordance with regulation 15 or 16, be based on the most recent scoping opinion or direction issued (so far as the proposed development remains materially the same as the proposed development which was subject to that opinion or direction);

(b)include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment; and

(c)be prepared, taking into account the results of any relevant UK environmental assessment, which are reasonably available to the person preparing the environmental statement, with a view to avoiding duplication of assessment.

(5) In order to ensure the completeness and quality of the environmental statement—

(a)the developer must ensure that the environmental statement is prepared by competent experts; and

(b)the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.

Schedule 4 of the EIA Regulations

1. A description of the development, including in particular:

(a)a description of the location of the development;

(b)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;

(c)a description of the main characteristics of the operational phase 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;

(d)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.

2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions,

impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the development on the environment resulting from, inter alia:

(a)the construction and existence of the development, including, where relevant, demolition works;

(b)the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

(c)the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

(d)the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

(e)the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f)the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

(g)the technologies and the substances used.

The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(**1**) and Directive 2009/147/EC(**2**).

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are

relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(**3**) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(**4**) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under paragraphs 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.

Appendix C Proposed Viewpoint Location Plan

LEGEND

Site boundary

VL1 View Location

VL1 View and Wireframe Location

VL1 VL16A VL16B VL2 VL3 VL4 VL5 VL6 VL7 VL8 VL10 VL17 VL18 VL19 VL20

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332510846 - Brabazon at the former Filton Airfield — View Location Plan - sheet 1/3

View 1 - Hayes Way, at Concorde Roundabout
View 2 - Hayes Way, at Brabazon Roundabout
View 3 - Earth Sculpture, land south of Cribbs Causeway
View 4 - Catbrain Hill, adjacent to new housing at Medlar Close
View 5 - Fishpool Hill (end of road, emergency access to airfield)
View 6 - Filton Golf Course (high point)
View 7 - Filton Golf Course, from PROW outside Golf Club House
View 8 - A38 Gloucester Road, eastern footpath on approach to Bristol
View 10 - PROW from golf course to Brentry
View 16A - Charlton Hayes: Charlton Boulevard / Borkley Street
View 16B - Charlton Hayes development, near Public Open Space
View 17 - A38 Gloucester Road, opposite Royal Mail Sorting Office
View 18 - The Mall at Cribbs Causeway - raised footway on car park
View 19 - The Mall at Cribbs Causeway - south of central entrance
View 20 - Okebourne Road Open Space

N

Stantec

Client	YTL Developments (UK) Ltd	**Drawn by**	IM
Drawing No	332510846_3000_01	**Checked by**	NJ
Date	02/12/21	**Scale**	As shown

Drawing Status FOR REVIEW

0 0.1 0.2 0.3 0.4 0.5km

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332510846 - Brabazon at the former Filton Airfield View Location Plan - sheet 2/3

View 9 - Haw Wood, Community Forest PROW on Berwick Drive
View 12 - Southmead Road
View 13 - Bishopthorpe Road, Horfield
View 15A - Blaise Castle Estate (western end)
View 15B - Blaise Castle Estate (PROW, north of Coombe Hill)

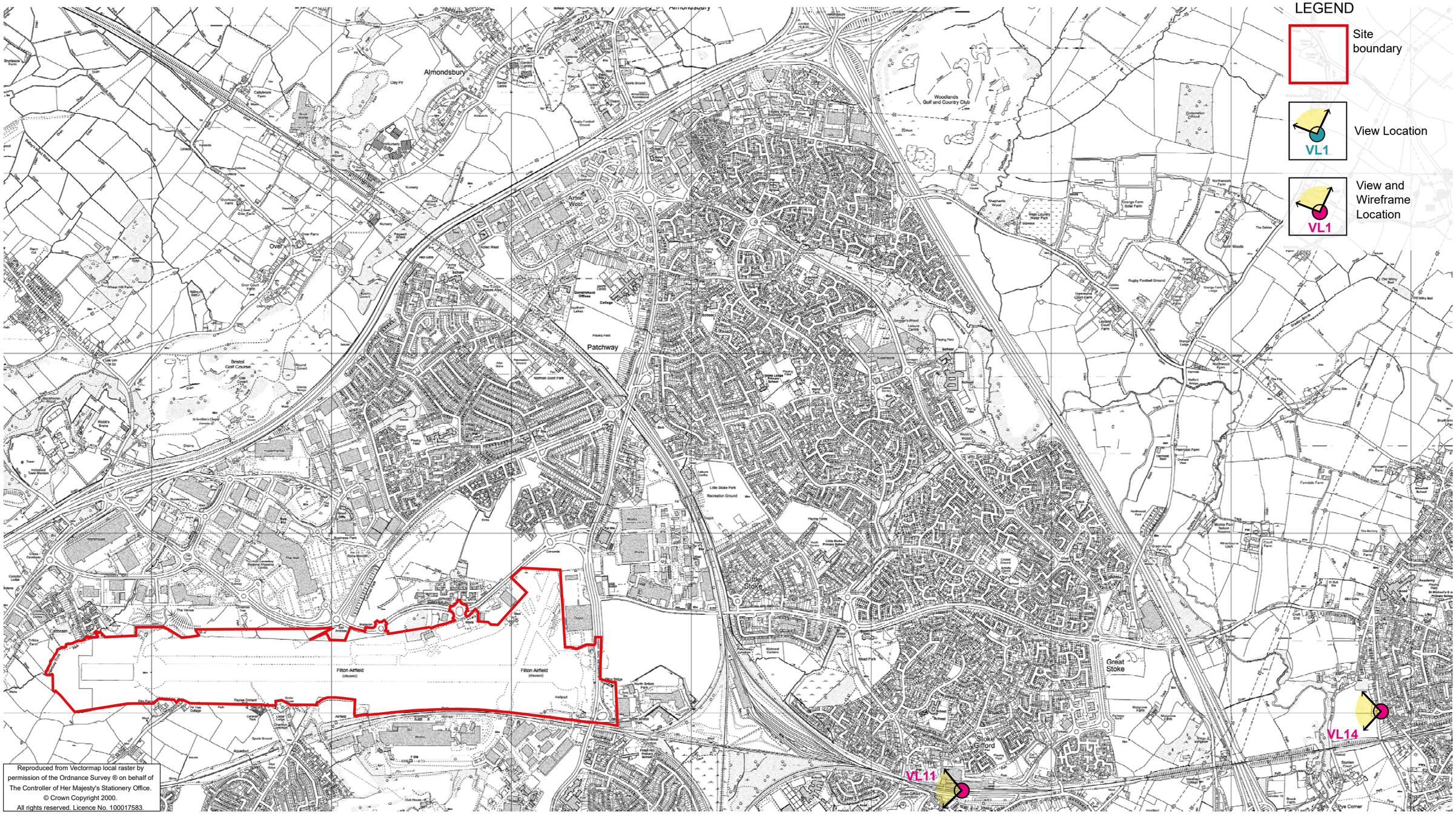
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Drawing No	332510846_3000_01	**Checked by**	NJ
Date	02/12/21	**Scale**	As shown

Drawing Status FOR REVIEW

N

0 1km

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332510846 - Brabazon at the former Filton Airfield — View Location Plan - sheet 3/3

View 11 - Bristol Parkway Station

View 14 - Dragon Road / Down Road corner with Harcombe Road, Winterbourne

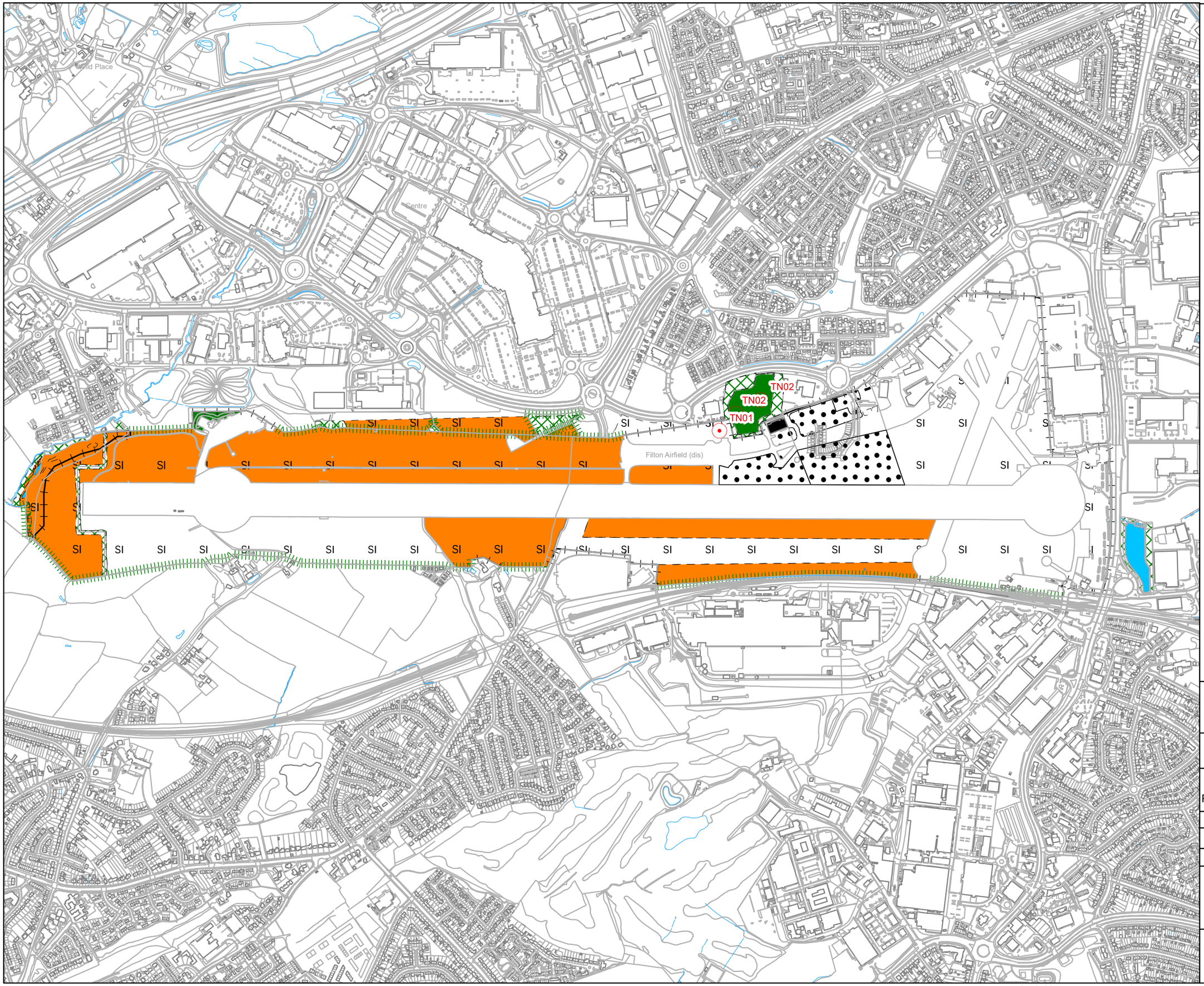
Client	YTL Developments (UK) Ltd	**Drawn by**	IM	**Drawing Status**	FOR REVIEW
Drawing No	332510846_3000_01	**Checked by**	NJ		
Date	02/12/21	**Scale**	As shown		

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0 — 1km

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Appendix D Phase 1 Habitat Plan



Legend

- Dense scrub
- Bare ground
- Planted broadleaved woodland
- Dense scrub
- Standing water
- Buildings/Structures
- Target Note
- Fence
- Hedge with trees species-poor
- Semi-natural broadleaved woodland
- Dense scrub
- Semi-improved neutral grassland
- Poor-semi-improved grassland
- Standing water
- Bare ground

Phase 1 Map [A3]

Grid Reference: ST 59023 80250	Date: 29/11/2021
Drawing Number: Phase 1 Habitat Map 2021	Scale: 1:9,500

N

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County Wildlife Sites :The County Wildlife Site Project is provided by the Environmental Records Centre. Further information on these sites are available from the relevant Records Centre.

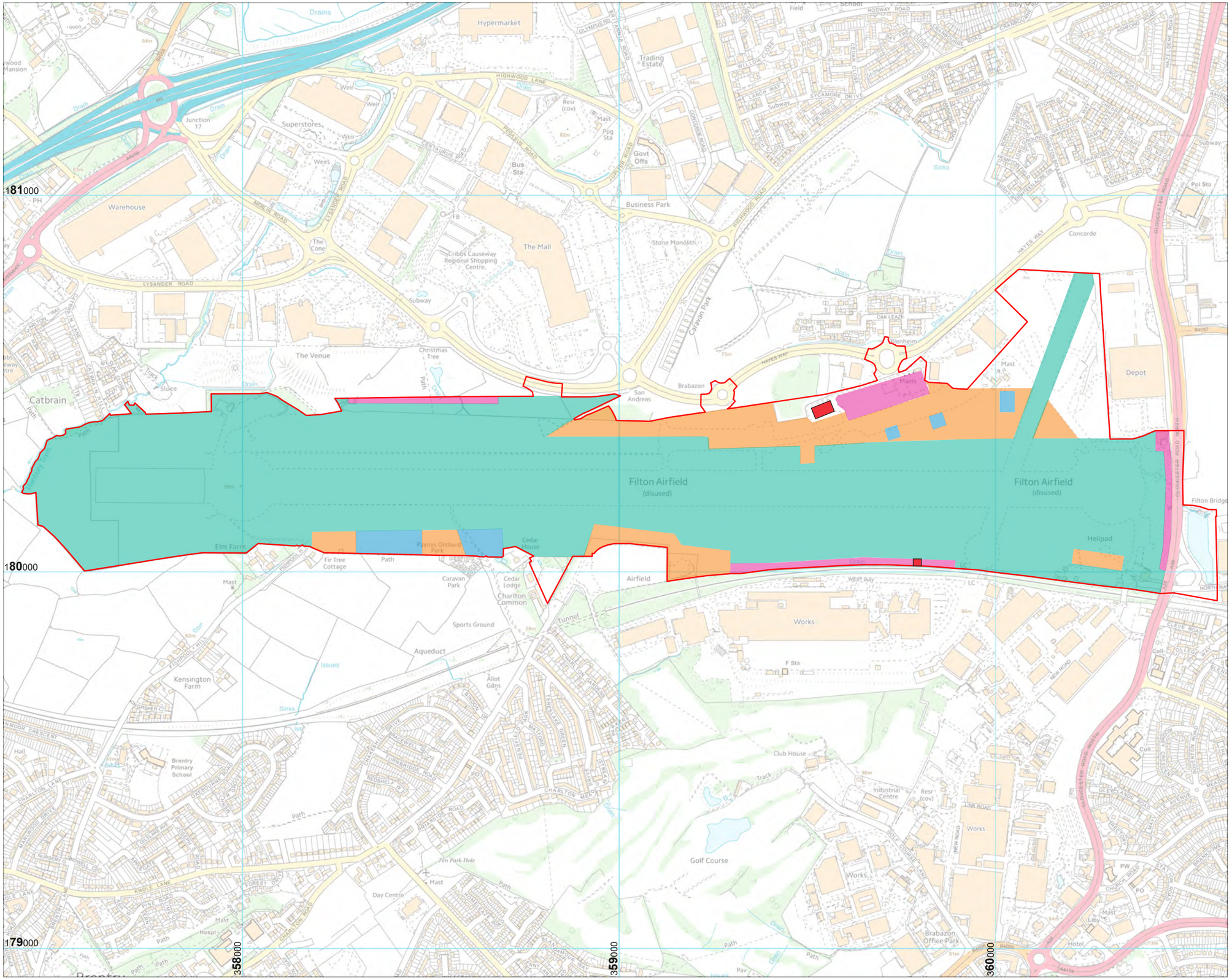
Information in this plan is provided for identification purposes only. No warranty as to accuracy is given or implied. The precise route of pipe work may not exactly match that shown. Wessex Water does not accept liability for inaccuracies. Sewers and lateral drains adopted by Wessex Water under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011 are to be plotted over time and may not yet be shown. In carrying out any works, you accept liability for the cost of any repairs to Wessex Water apparatus damaged as a result of your works. You are advised to commence excavations using hand tools only. Mechanical digging equipment should not be used until pipe work has been precisely located. If you are considering any form of building works and pipe work is shown within the boundary of your property or a property to be purchased (or very close by) a surveyor should plot its exact position prior to commencing works or purchase. Building over or near Wessex Water's apparatus is not normally permitted.

Wessex Water YTL GROUP **Environment and Planning Services**

Document Path: K:\E&Q\Environmental\FILTON\Phase 1 2021.mxd

Appendix E Archaeological Deposit Model

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PROJECT

Filton Airfield Mitigation

TITLE

Deposit model: 21 January 2019