Bristol Airport Limited

Development of Bristol Airport to Accommodate 12 Million Passengers Per Annum

Parking Strategy

Wood Environment & Infrastructure Solutions UK Limited – December 2018

Report for

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Document revisions

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1	Draft Parking Strategy	12.04.18
2	Final Parking Strategy	16.04.18
3	Revised Final Parking Strategy	30.11.18
4	Final Parking Strategy	05.12.18

Contents

1. Introduction

1.1 Overview

1.1.1 Wood Environment & Infrastructure Solutions UK Limited (Wood) has been appointed by Bristol Airport Limited (BAL) to prepare a Parking Strategy. Through an assessment of possible car parking options, both on-site and off-site, the Parking Strategy will inform BAL's proposals for the development of Bristol Airport to accommodate a passenger throughput of 12 million passengers per annum (mppa).

1.1.2 Bristol Airport is located on the A38, approximately 11km south-west of Bristol city centre and within the local authority administrative area of North Somerset Council (NSC). Operated by BAL, it is the principal airport and main international gateway for the South West of England and South Wales[1] and in 2017, Bristol Airport handled over 8.2 million passengers making it the ninth busiest UK airport and the third largest regional airport in England[2]. Leading low-cost, charter and full service airlines currently fly from Bristol Airport to over 120 destinations across 34 countries[3].

1.1.3 BAL was granted outline planning permission by NSC on 16 February 2011 for the expansion of Bristol Airport to handle 10 mppa[4]. Between 2010 and 2017, investment totalling over £160 million has been made in a significant upgrade of facilities and infrastructure at the airport and passenger numbers have grown by over 40 %, from 5.8 mppa to 8.2 mppa. BAL currently forecasts that passenger demand will reach 10 mppa by 2021, beyond which passenger traffic is projected to rise further to 15 mppa by the mid-2030s and 20 mppa by the mid-2040s.

1.1.4 To meet passenger demand both now and into the future, BAL is currently preparing a new Master Plan. The Master Plan will set out a strategy for phased growth to meet the forecast level of passenger demand by the mid-2040s; in doing so, it will ensure that Bristol Airport contributes fully to growing national airport capacity, delivers increased connectivity and supports economic prosperity in the South West and South Wales regions. As part of the approach set out in the emerging Master Plan to meeting future passenger demand beyond 2021, BAL is seeking planning consent for an initial phase of growth to 12 mppa. This will allow for growth in passenger numbers up to at least the mid-2020s.

1.1.5 An additional 2 mppa will increase the demand for passenger car parking and it is therefore essential that detailed consideration is given to the options for meeting this demand in light of economic trends and requirements of current and future passengers. For this reason, BAL has commissioned a Parking Demand study undertaken by Teneo Consulting. This study has assessed in detail the future passenger profile and the demand for parking provision required to meet growth to 12 mppa.

1.2 Scope of this Parking Strategy

1.2.1 This Parking Strategy report sets out the assessment undertaken to examine potential car parking options to accommodate the increased demand for parking associated with an additional 2 mppa

[1] York Aviation (2018) *Bristol Airport Limited, Part 1 (Strategic) Economic Impact Assessment of Bristol Airport. Final Report*.
[2] Civil Aviation Authority (2017) *Size of Reporting Airport January 2017 – December 2017. Comparison with previous year.* Available from: https://www.caa.co.uk/uploadedFiles/CAA/Content/Standard_Content/Data_and_analysis/Datasets/Airport_stats/Airport-data-2017-12/Table_01_Size_of_UK_Airports.pdf [Accessed March 2018]
[3] BAL (2017) *Your airport: your views. A world of opportunities. Preparing a new Master Plan: Public consultation*. Available from: https://www.bristolairportfuture.com/consultation [Accessed April 2018]
[4] Application reference 09/P/1020/OT2.

in light of the preliminary findings from the Parking Demand Study. This report therefore includes an assessment of potential on-site capacity improvements as well as of potential off-site parking locations to ensure that an appropriate car parking solution is adopted that responds well to airport growth, taking into account BAL's wider surface access strategy for the development including a target to enhance accessibility to the airport by public transport. Based on this assessment, the report identifies the preferred parking solution for a 12 mppa capacity airport. In tandem with the report, the final Parking Demand Study has then assessed this preferred parking solution in much more detail to ensure that it meets forecasted demand for the type of parking required and proposes a delivery sequence of the parking solution.

1.3 Structure of this Parking Strategy

1.3.1 This Parking Strategy is structured as follows:

- **Section 2** describes the context for the Parking Strategy including forecast passenger growth, relevant policy and associated issues and constraints;
- **Section 3** details the existing and approved car parking provision at Bristol Airport;
- **Section 4** summarises the forecast future parking requirement at Bristol Airport, based on the Parking Demand Study;
- **Section 5** presents the assessment of the options considered for increasing car parking capacity to accommodate an additional 2 mppa; and
- **Section 6** provides a summary of the preferred car parking solution to meet demand associated with the development of Bristol Airport to accommodate 12 mppa.

2. Context for the Parking Strategy

2.1 Introduction

2.1.1 This section describes the context for the Parking Strategy. It summarises:

- The Bristol Airport site and its immediate surroundings;
- The historic growth of Bristol Airport and development to 10 mppa;
- Forecast passenger growth beyond 10 mppa;
- Forecast car parking demand;
- Relevant national, sub-regional and local policy in respect of airport growth and car parking provision; and
- Based on the above, the key constraints and issues relevant to the Parking Strategy.

2.2 The Bristol Airport Site and Surrounding Area

2.2.1 Bristol Airport is located approximately 11km south-west of Bristol city centre (national grid reference 350440, 165195), within the local authority administrative area of NSC. It is situated on a ridge of high ground called Broadfield Down, with the A370 Bristol to Weston-super-Mare 4km to the north and the M5 motorway 11km to the west. The A38 carriageway is directly adjacent to Bristol Airport, on its eastern extent.

2.2.2 The area surrounding Bristol Airport is predominately open, undulating countryside. Located within National Character Area (NCA) 118: The Bristol, Avon Valleys and Ridges, the area is characterised by alternating ridges and broad valleys, with steep wooded slopes and open farmland. Extensive wooded areas are located to the west of the airport site and form a key feature of the wider landscape. These wooded areas are partially designated as ancient and semi natural woodland or ancient re-planted woodland. Goblin Combe, north of Cleeve Hill road, is designated as a Site of Special Scientific Interest (SSSI) and nature reserve. King's Wood, directly south of Cleeve Hill road, is also designated as a SSSI. Beyond the woodland lie the villages of Claverham, Yatton and Congresbury, approximately 5km west of Bristol Airport.

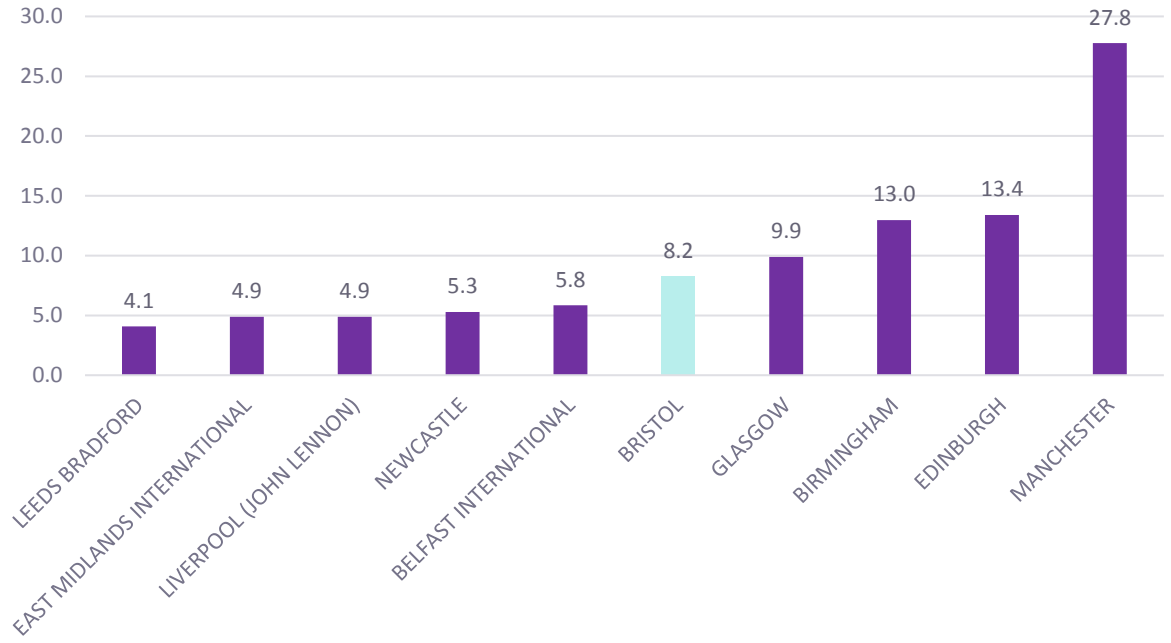
2.2.3 Elsewhere, the landscape is characterised by arable farmland and moderately sized villages or smaller clusters of residential properties. To the north-east, the most prominent settlements are Felton, Pottershill and Lulsgate bottom, while to the south, the closest village is Redhill.

2.3 Growth of Bristol Airport to 10 mppa

2.3.1 BAL published its first Master Plan in 2006. The Master Plan outlined specific plans to cater for up to 9 mppa by 2015 as well as setting out early ideas for a 12.5 million capacity airport by 2030. In 2011, BAL subsequently obtained planning permission from NSC for the major expansion of Bristol Airport to accommodate 10 mppa. BAL is continuing to implement the extant 2011 consent as the airport grows towards 10 mppa and between 2010 and 2017, investment totalling over £160 million has been made in a significant upgrade of facilities and infrastructure at Bristol Airport.

2.3.2 Today, Bristol Airport handles more than 8 mppa, making it the fifth largest regional airport in the UK and the third largest regional airport in England (see **Figure 2.1**).

Figure 2.1 Top 10 UK regional airports by passengers in 2017 (millions)

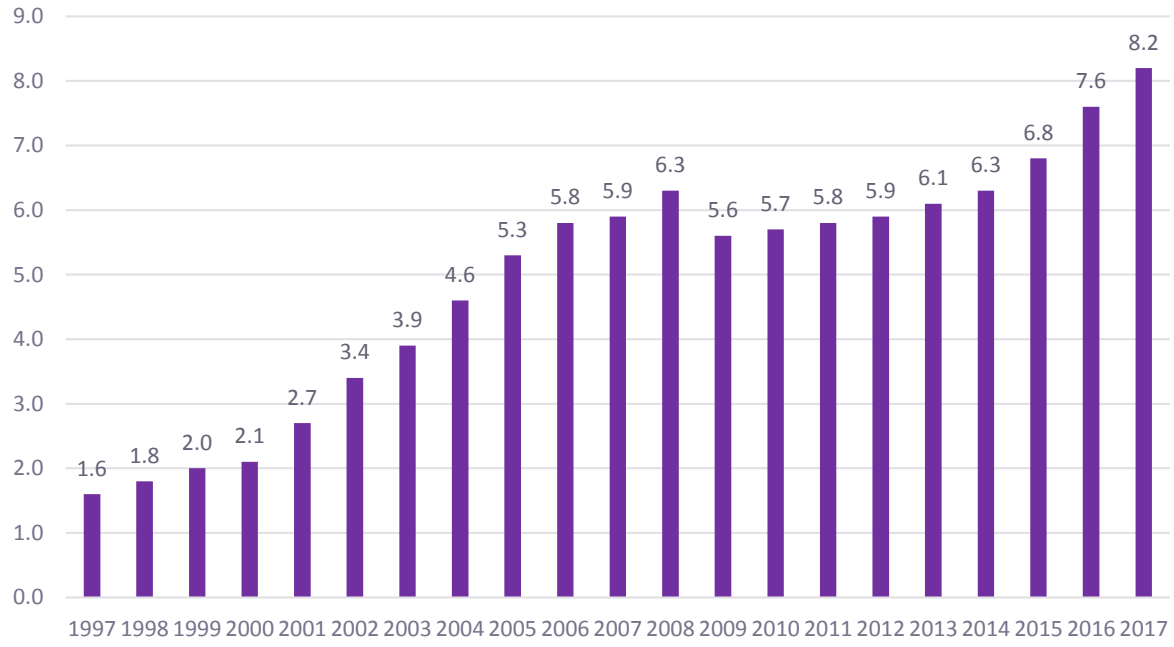


Source: Civil Aviation Authority (CAA) Statistics

Passenger Demand

2.3.3 Bristol Airport has grown every year except one since 1989 and following a small dip in 2008/09 (reflecting the global financial crisis) is now in its eighth successive year of growth, with passenger numbers increasing by 40% (from 5.8 mppa to 8.2 mppa) between 2011 and 2017 (refer to **Figure 2.2**). This reflects growth in demand within the South West region as well as the UK as a whole supported by the continued development of the airport.

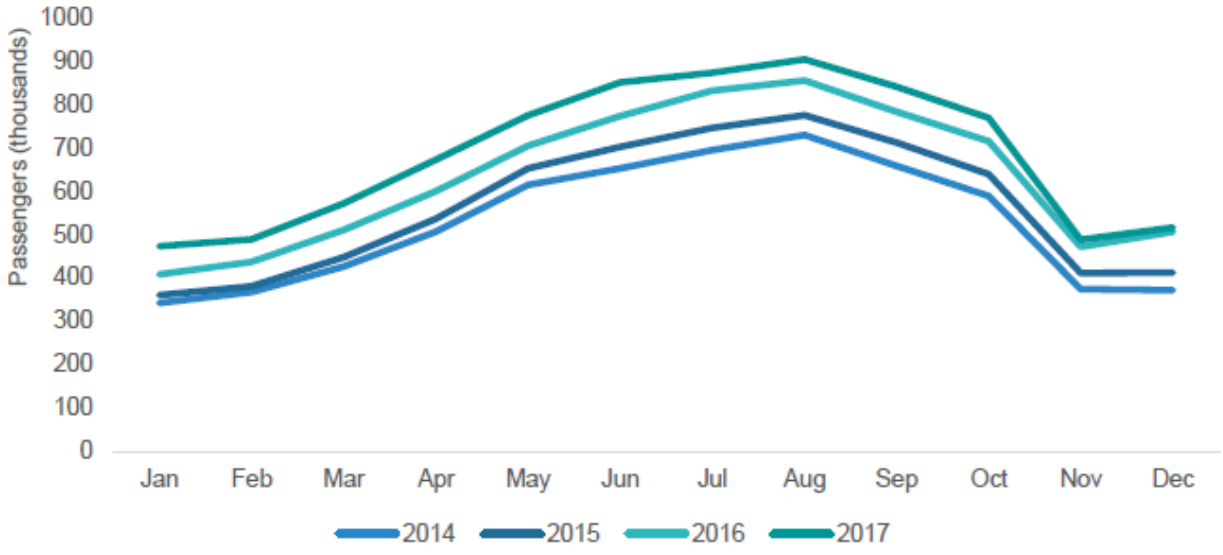
Figure 2.2 Bristol Airport passenger traffic 1997-2017



Source: CAA Statistics

2.3.4 Bristol Airport experiences higher passenger demand during the summer season (April-October), as illustrated by **Figure 2.3**. Over the previous four years (2013-2017), approximately 70% of passenger throughput has occurred between these months; however, this share has dropped marginally over the last three years (70.3% in 2015 to 69.1% in 2017) and in the future, BAL is likely to continue exploring ways in which traffic can be grown in the shoulder seasons to make best use of its facilities.

Figure 2.3 Bristol Airport passenger throughput by month 2014-2017



Source: CAA Statistics

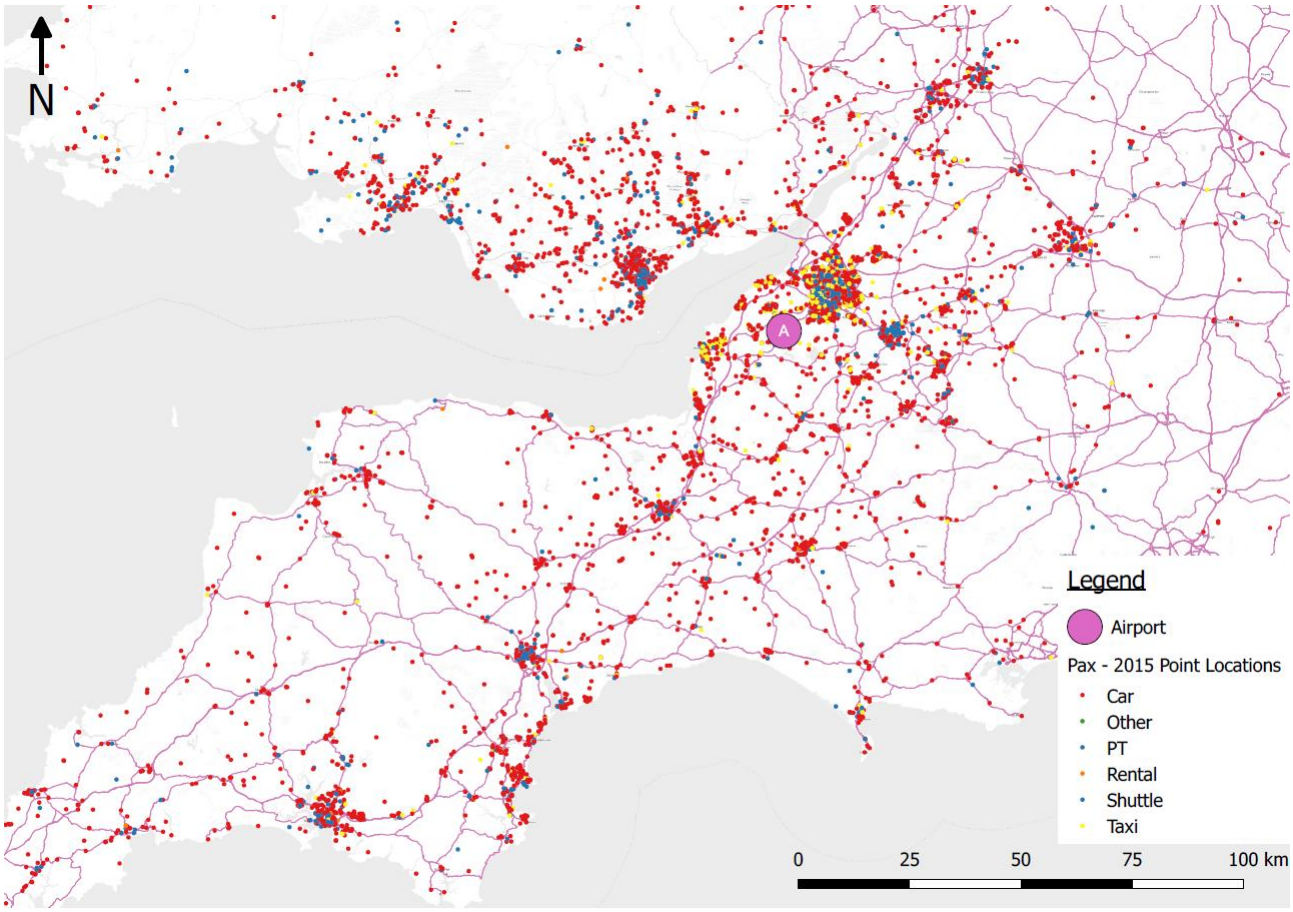
Catchment

2.3.5 Bristol Airport is a regional airport, serving a regional catchment including urban and rural areas across the South West. The airport's main catchment area comprises North Somerset, the West of England (which includes North Somerset, City of Bristol, Bath & North East Somerset, and South Gloucestershire), as well as the wider South West region and South Wales.

2.3.6 Data obtained from the 2015 CAA Passenger survey[5] show that 43.5% of passengers had origins and destinations in Bristol and Somerset, with a total of 76.4% of passengers being from the wider South West region. 19.5% came from South Wales, with the remainder spread sparsely across the UK.

2.3.7 Passenger origin data from the survey is illustrated in **Figure 2.4**.

Figure 2.4 Origins of departing passengers by mode



Source: CAA Statistics

Passenger Profile

2.3.8 In common with all UK airports, Bristol Airport serves UK originating and overseas originating passengers and those travelling for both business and leisure. Leisure passengers make up the largest of proportion of travellers at the airport (83.5%), with UK passengers the greater part of this (71% of total passengers). Around 16.5% of passengers were travelling on business in 2015, with

[5] CAA (undated) *CAA Passenger Survey Report 2015*. Available from https://www.caa.co.uk/uploadedFiles/CAA/Content/Standard_Content/Data_and_analysis/Datasets/Passenger_survey/CAA%20Passenger%20survey%20report%202015.pdf [Accessed April 2018].

the largest numbers travelling to international short haul destinations. Circa 16% of passengers passing through the airport were foreign residents visiting the UK. Whilst business and foreign passengers make up a lower proportion of total passengers, year-round certainty of connectivity is an important requirement to service these passengers and grow the proportions.

Destinations

2.3.9 Bristol Airport is the principal airport and main international gateway for the South West of England and South Wales. Leading low-cost, charter and full-service airlines currently fly from Bristol Airport to over 120 destinations across 34 countries. Most of the airport's route network is to western European destinations (Spain, France, Italy and Ireland being the top four countries) and the airport offers connections to European hubs such as Amsterdam, Brussels and Frankfurt which provide business passengers with onward connections to a wide range of global destinations. Domestic services are predominantly to airports in Scotland, Northern Ireland and the Channel Islands. Other destinations served by the airport include eastern Europe (e.g. Poland, Hungary, Czech Republic), and Turkey alongside long haul destinations including Cape Verde, Mexico, Caribbean and Orlando-Sanford.

2.3.10 In the last two years, Bristol Airport has grown markedly as low-cost carriers and charter operators have launched new routes and based additional aircraft at the airport.

2.4 Growth Beyond 10 mppa

International, UK and Regional Perspective

2.4.1 Over the past three decades, the aviation sector has undergone significant expansion providing much greater levels of national and global connectivity. Since the early 1990s, the dominant trend has been one of global growth, with the UK being a significant contributor through its network of national (intercontinental) and regional airports. In 2015, there were 3.3 billion passengers worldwide, an increase of over 2 billion passengers since 1990, with the global demand for seats growing on average by 5.5% annually[6].

2.4.2 In 2017, more than 284 million passengers travelled through UK airports compared to 102 million in 1990; since 2011, the average rate of growth has been circa 4.4% per annum. This increase in demand for air transport is forecast to continue in the period up to 2030 and beyond. With growth constrained by terminal and runway capacities, the DfT forecasts[7] that national demand will rise up to 410 million passengers in 2050. With no such constraints, the DfT forecasts indicate that demand will rise up to 495 million passengers in 2050.

2.4.3 Like the UK as a whole, regional airports (and particularly larger regional airports such as Bristol Airport) outside of London have grown strongly. Between 2011 and 2017, regional airports in the UK grew by around a third, from circa 85 million to over 113 million passengers with the rate of this growth being greater than that experienced by the six London airports in recent years (collectively, regional airports experienced a growth of 7.8% in the period 2016-2017, compared to the London airports which grew by 4.8%).

[6] Parliament UK (2017) *Aviation Sector Report*. Available from: https://www.parliament.uk/documents/commons-committees/Exiting-the-European-Union/17-19/Sectoral%20Analyses/5-Sectoral-Analyses-Aviation-Report.pdf [Accessed April 2018].
[7] DfT (2017) *UK Aviation Forecasts: Moving Britain Ahead*. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/674749/uk-aviation-forecasts-2017.pdf [Accessed April 2018].

2.4.4 In this context, the Government has supported the recommendation of the Airports Commission stating in 'Beyond the horizon: The future of UK aviation'[8] that, if the UK is to continue to grow its domestic and international connectivity, and before a new runway is built at Heathrow, then there is a need for existing runways throughout the UK to be used more intensively, making best use of existing capacity. Even with a third runway constructed at Heathrow, DfT forecasts indicate that additional regional airport capacity will be required to meet passenger demand and support economic development.

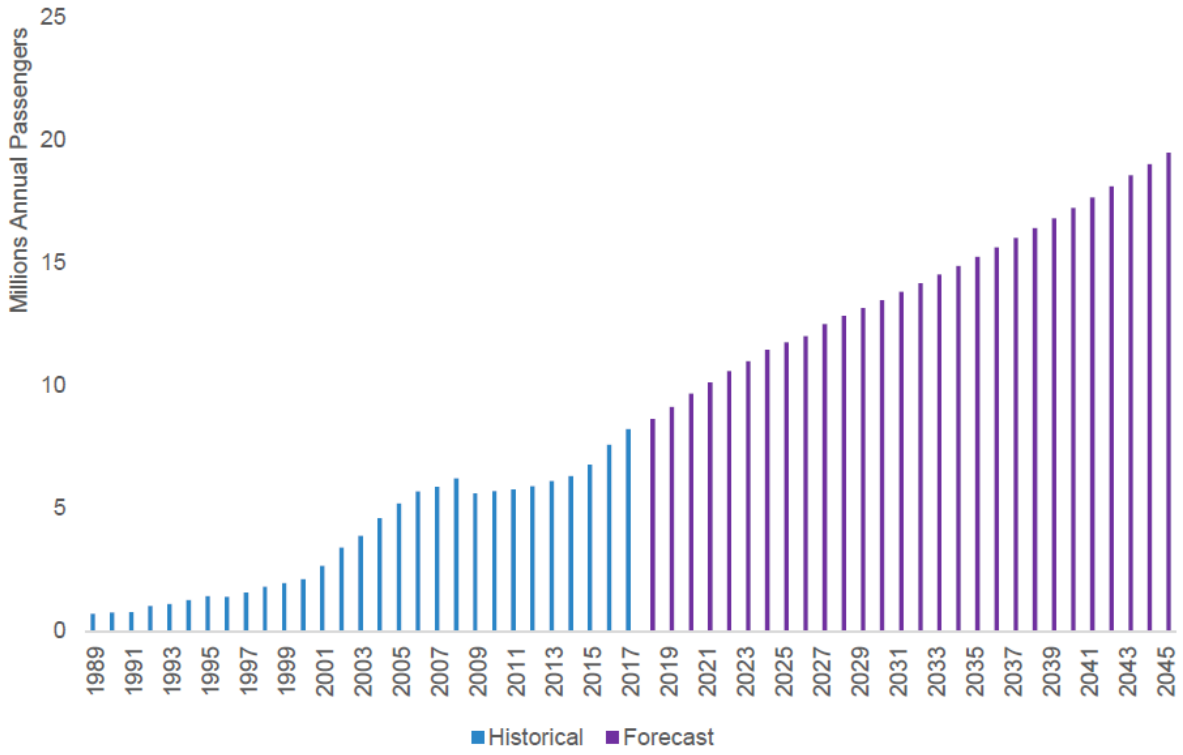
Bristol Airport

2.4.5 BAL has undertaken a forecast study (independently verified by Mott MacDonald) of expected passenger traffic growth for the period 2018 to 2045, blending a top-down econometric model with a bottom-up, airline by airline approach[9]. The forecast indicates that passenger demand will reach 10 mppa by 2021 and beyond 2021, passenger traffic is projected to rise further to 12 mppa by 2026, 15 mppa by the mid-2030s and circa 20 mppa by 2045 (see **Figure 2.5**). The drivers of this forecast increase in passenger demand are wide-ranging and include:

- Population and economic growth;
- Growth in airline activity, traffic and the introduction of new routes;
- Accommodation of leaked demand from other regions;
- Growth in the number of aircraft based at Bristol Airport;
- The introduction of larger aircraft with the possibility for more long-haul routes;
- Increased tourism; and
- Growth in passenger throughput outside of the summer peak.

[8] DfT (2017) *Beyond the horizon: The future of UK aviation*. Available from: https://www.gov.uk/government/consultations/a-new-aviation-strategy-for-the-uk-call-for-evidence [Accessed April 2018].
[9] For the period until 2027, BAL has forecast the supply of seat capacity, load factors and based aircraft. This bottom-up approach makes informed assumptions regarding the level of air service that can be expected over the planning period.

Figure 2.5 Bristol Airport passenger forecast



Source: BAL Forecast

2.5 Policy Context

National Aviation Policy

2.5.1 National aviation policy, as set out in the Aviation Policy Framework (APF) and the Government's emerging strategy for aviation, provide support for the growth of regional airports and making the best use of existing airport capacity including at Bristol Airport.

2.5.2 The APF establishes the Government's high-level objectives and policy on aviation. The APF recognises that "*airports in Northern Ireland, Scotland, Wales and English airports outside of London play an important role in UK connectivity*" and there is general support for the growth of regional airports, with the APF highlighting that "*new or more frequent international connections attract business activity, boosting the economy of the region and providing new opportunities and better access to new markets for existing businesses*".

2.5.3 It is identified that, beyond their regional importance, airports outside of the South East of England also have an important role in helping to accommodate wider forecast growth in demand for aviation in the UK and that the availability of direct air services locally from these airports can reduce the need for air passengers and freight to travel long distances to reach larger UK airports. The APF also states that the "*Government wants to see the best use of existing airport capacity*" and that in the short-term, a key priority for Government is to continue to work with the aviation industry and other stakeholders to make better use of existing runways at all UK airports to improve performance, resilience and the passenger experience.

2.5.4 The Government is currently preparing an Aviation Strategy that will set out the long-term direction for aviation policy to 2050 and beyond. The call for evidence[10] published in July 2017 affirms the Government's support for the growth of airports outside the South East of England and for making the best use of existing infrastructure. In this regard, the Government states that they:

> "*are aware that a number of airports have plans to invest further, allowing them to accommodate passenger growth over the next decade using their existing runways, which may need to be accompanied by applications to increase existing caps. The government agrees with the Airports Commission's recommendation that there is a requirement for more intensive use of existing airport capacity and is minded to be supportive of all airports who wish to make best use of their existing runways".*

2.5.5 This Government commitment to the growth of regional airports was recently reaffirmed in the Secretary of State for Transport's June 2018 statement concerning the proposed expansion of Heathrow[11]. Recognising that a new operational runway at Heathrow is still a number of years away, and consistent with the Airports Commission's recommendations, he states that *"the government is supportive of airports beyond Heathrow making best use of their existing runways".*

2.5.6 With specific regard to Bristol Airport, the APF recognises the vital role the airport plays in the economic success of the South West region, forecasting that the ongoing development of the airport will contribute between £1.9 and £2 billion to the national economy. In this regard, there is also strong sub-regional and local policy support for expansion including through the emerging West of England Joint Spatial Plan (JSP) and North Somerset Local Plan.

National Planning Policy Framework

2.5.7 On 24th July 2018, the Ministry of Housing, Communities and Local Government (MHCLG) published the revised National Planning Policy Framework (NPPF). This document sets out the Government's planning policies for England and is a material consideration in determining planning applications.

2.5.8 **Section 9: Promoting sustainable transport** (paragraph 104) of the NPPF states that planning policies should:

> "*provide for any large scale transport facilities that need to be located in the area, and the infrastructure and wider development required to support their operation, expansion and contribution to the wider economy. In doing so they should take into account whether such development is likely to be a nationally significant infrastructure project and any relevant national policy statements*".

2.5.9 Paragraph 104 presents a strengthened policy position in respect of aviation and states that planning policies should:

> "*recognise the importance of maintaining a national network of general aviation airfields, and their need to adapt and change over time - taking into account their economic value in serving business, leisure, training and emergency service needs, and the Government's General Aviation Strategy*".

2.5.10 At paragraph 108, the NPPF stipulates that proposals should ensure that sustainable transport modes are promoted, that safe and suitable access can be achieved for all users and that significant

[10] DfT (2017) *Beyond the Horizon – the Future of UK Aviation: a Call for Evidence on a New Aviation Strategy*. Available from https://www.gov.uk/government/consultations/a-new-aviation-strategy-for-the-uk-call-for-evidence [Accessed March 2018]
[11] Secretary of State for Transport (2018) *Statement by the Secretary of State for Transport about the proposed expansion of Heathrow airport. Oral statement to Parliament*. Available from: https://www.gov.uk/government/speeches/proposed-heathrow-expansion [Accessed June 2018].

impacts on the transport network, or on highway safety, can be cost effectively mitigated to an acceptable degree.

Sub-regional Policy Context

Emerging West of England Joint Spatial Plan

2.5.11 The unitary authorities of Bath & North East Somerset, Bristol, North Somerset and South Gloucestershire are currently preparing the West of England JSP. The JSP will, once adopted, form part of the Development Plan, providing the strategic overarching development framework for the West of England to 2036 and guiding the review and future preparation of local plans in the sub-region.

2.5.12 The November 2017 JSP Publication Document identifies Bristol Airport as a key strategic infrastructure employment location (Policy 4). It recognises the employment growth potential of Bristol Airport and in this regard, the supporting text to Policy 4 states: "*Growth at Bristol Airport has the potential to create a range of new employment opportunities*".

2.5.13 Consultation on the Publication Document closed in January 2018 and responses will be considered by the appointed inspector as part of the forthcoming Examination in Public and prior to adoption of the JSP.

West of England Joint Local Transport Plan 3 2011-2026

2.5.14 The Joint Local Transport Plan (JLTP) covers a 15 year period between 2011 and 2026 and sets out the transport strategy for the sub-region. The plan aims to deliver an affordable, low carbon, accessible, integrated, efficient and reliable transport network to achieve a more competitive economy and better connected, more active and healthy communities.

2.5.15 The JLTP recognises the significant positive impact that Bristol Airport has on the region's economy as one of the fastest growing regional airports in the UK and aims to support its growth. In this context, the JLTP seeks to achieve improved access to Bristol Airport by public transport and through the delivery of the South Bristol Link (completed in January 2017).

West of England Joint Transport Study

2.5.16 A West of England Joint Transport Study (JTS) has been prepared by the four West of England authorities. The JTS is intended to provide a clear direction for the long-term development of the transport system in the sub-region to 2036 and beyond and will form the basis for the next JLTP and transport investment programme.

2.5.17 The JTS sets out that there is a strong case to significantly improve surface connectivity to Bristol Airport, both by public transport and road, and identifies two major investment proposals.

The Development Plan

2.5.18 Section 70(2) of the Town and Country Planning Act 1990 requires local planning authorities in determining planning applications to have regard to the development plan, so far as is material to the applications, and to any other material considerations. Section 38(6) of the Planning and Compulsory Purchase Act 2004 (as amended) requires planning decisions to be made in accordance with the development plan, unless material considerations indicate otherwise.

2.5.19 The adopted Development Plan for Bristol Airport comprises:

- North Somerset Core Strategy (adopted 2017);

- Sites and Policies Plan Part 1: Development Management Policies (adopted July 2016); and
- Sites and Policies Development Plan Part 2: Site Allocations Plan (adopted April 2018).

2.5.20 Policy CS23 is the principal Core Strategy policy relating to development proposals at Bristol Airport. It states:

> "*Proposals for the development of Bristol Airport will be required to demonstrate the satisfactory resolution of environmental issues, including the impact of growth on surrounding communities and surface access infrastructure*."

2.5.21 The Development Plan proposals map defines an inset that excludes the northern side of Bristol Airport's operational area from the Green Belt. Core Strategy Policy CS6 sets out that amendments to the Green Belt boundary at Bristol Airport will only be considered once long-term development needs have been identified and exceptional circumstances demonstrated.

2.5.22 The Sites and Policies Plan Part 1 brings forward the detailed development management policies which complement the strategic context set out in the Core Strategy. Policy DM50 refers specifically to proposals for development within the Green Belt inset at Bristol Airport and aims to ensure that, if further development of Bristol Airport is required, proposals demonstrate the satisfactory resolution of environmental issues, including the impact of growth on surrounding communities and surface access infrastructure. It states:

> "*Development within the Green Belt inset at Lulsgate as shown on the Proposals Map will be permitted provided that:*
>
> - *it is required in connection with the movement or maintenance of aircraft, or with the embarking, disembarking, loading, discharge or transport of passengers, livestock or goods;*
> - *environmental impacts such as emissions are minimised, and there is no unacceptable noise impact;*
> - *it is suitably sited, designed and landscaped so as not to harm the surrounding landscape; and*
> - *appropriate provision is made for surface access to the airport, including highway improvements and/or traffic management schemes to mitigate the adverse impact of airport traffic on local communities, together with improvements to public transport services.*"

2.5.23 Core Strategy Policy CS11 relates specifically to parking and sets out that adequate parking must be provided and managed to meet the needs of anticipated users in usable spaces. Policy DM28 of the Sites and Policies Plan Part 1, meanwhile, states that development will not be permitted if car parking arrangements would unacceptably harm the character of the area or the safe and effective operation of the local transport network. The policy stipulates that planning applications must demonstrate that the functional parking needs of a development can be accommodated on or close to the site without prejudicing highway safety or resulting in an unacceptable impact on on-street parking in the surrounding area.

2.5.24 Regarding airport-related car parking, Policy DM30 states that, outside of the Green Belt, airport-related car parking additional to that approved at Bristol Airport or acceptable under Policy DM50 will only be permitted in association with existing overnight accommodation located on the same site, provided that the number of car parking spaces does not exceed three times the number of bedrooms.

Emerging North Somerset Local Plan 2036

2.5.25 NSC is currently preparing a new Local Plan that will, once adopted and alongside the JSP, replace the current Development Plan. On 3 September 2018, NSC published for consultation the Local Plan 2036 Issues and Options Document. The purpose of the Issues and Options document is to identify the issues which need to be addressed and to receive initial feedback on a range of proposed alternatives. It highlights the importance of Bristol Airport as a major employment location and for national and international connectivity and sets out that Development Plan policy relating to the airport needs to be reviewed in light of BAL's growth ambitions.

2.5.26 The document identifies that an improved transport system will be key to unlocking the growth of Bristol Airport as an international and regional gateway which is closely linked with the economic growth of the region. Four potential options are put forward for a new policy for Bristol Airport and include retaining the existing policy and Green Belt inset or removing the airport area (2011 permission plus additional land sought for expansion to 12 mppa) from the Green Belt with two options to either allocate or safeguard additional Green Belt land for future expansion. The document sets out the advantages and disadvantages of each option and requests feedback on the proposed alternatives.

Emerging Bristol Airport Master Plan

2.5.27 In response to forecast passenger growth, BAL is currently preparing a new Master Plan for Bristol Airport, with the early stages having been subject to very extensive public consultation.

2.5.28 The new Master Plan will provide a strategy for the long-term growth of Bristol Airport to meet the forecast level of passenger demand by the mid-2040s, which is expected to be circa 20 mppa. BAL's broad approach to long-term growth was set out in an initial discussion document, Your Airport, Your Views, which was subject to public consultation between November 2017 and January 2018. As part of the phased approach to the continuing development of Bristol Airport set out in the emerging Master Plan, BAL is to seek planning permission to enable the airport to grow beyond 10 mppa to 12 mppa by making the best use of the existing airport site. This will accommodate forecasted passenger demand up to around 2026 and will ensure that Bristol Airport continues and enhances its role as the principal international gateway for the South West region and a significant economic driver.

2.6 Key Constraints and Issues

2.6.1 Based on the review of the policy context outlined above and consideration of the characteristics of Bristol Airport and its surrounding area, a number of key constraints and issues have been identified that are considered to be particularly pertinent to any car parking solution to accommodate an additional 2 mppa. These constraints and issues relate to: the Green Belt; environmental impact; surface access; current seasonal restrictions on car parking; and unofficial[12] off-site car parking sites, many of which are unauthorised[13] sites.

Green Belt

2.6.2 As highlighted in **Section 2.5** above, the Development Plan defines an inset that excludes land on the northern side of the airfield at Bristol Airport from the Green Belt; land to the south of the

[12] "Unofficial refers" to off-airport car parks which are not operated, regulated, or sanctioned by BAL.

[13] The term "unauthorised" refers to those unofficial off-site car parking sites which BAL has evidence operate without express or implied planning consent or lawful development certificates. In BAL's experience, the vast majority of unofficial off-site car parking sites operate without the necessary planning certification.

existing terminal building, including (inter alia) the runway and the existing Silver Zone long stay car parking area, is within the Green Belt.

2.6.3 The NPPF (Protecting Green Belt land) establishes that the fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open; the essential characteristics of Green Belts are their openness and their permanence. The NPPF and Policy DM12 of the Sites and Policies Plan Part 1 establish that inappropriate development in the Green Belt is, by definition, harmful to the Green Belt and should not be approved except in 'very special circumstances'. Paragraph 144 of the NPPF sets out that 'very special circumstances' will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations; any inappropriate development outside of the Green Belt inset at Bristol Airport must therefore demonstrate 'very special circumstances' to justify it.

2.6.4 One of the key considerations in relation to car parking associated with the development of Bristol Airport to accommodate 12 mppa is therefore the impact on the Green Belt. Development of car parking in the Green Belt, particularly remote from the airport, would be inappropriate, unless there are very special circumstances to justify it.

Environmental Impact

2.6.5 The airport site is located within the Broadfield Down Settled Limestone Plateau Landscape Character Area (LCA) as defined in the recently revised North Somerset Landscape Character Assessment and the airport is noted as being a key characteristic in this LCA. The airport and the immediate surrounding area are not subject to any landscape designations with the closest boundary of the Mendip Hills Area of Outstanding Natural Beauty (AONB), a national landscape designation, being located 3.3 km to the south. There are a number of residential receptors surrounding the airport site and particularly to the north alongside Downside Road.

2.6.6 Reflecting national planning policy and the Development Plan, it is important that any car parking solution minimises impacts on the character of the local landscape, the AONB and the visual amenity of local residents, as well as visual impacts on other receptors such as the setting of cultural heritage assets.

2.6.7 Alongside landscape character and visual amenity, the construction and operation of car parking development can have adverse impacts on the natural environment, particularly in respect of biodiversity (for example, due to associated land take), flood risk (particularly where sites are located in Flood Zones 2 and 3), land quality and amenity. These factors are therefore also important considerations in developing the Parking Strategy.

Surface Access

2.6.8 The consideration of public transport provision, which influences the level car parking demand, is a critical factor in determining overall car parking requirements. The car parking solution itself should also ensure that it minimises vehicle movements and impacts on the highway network.

Seasonal Restrictions

2.6.9 Seasonal restrictions on use of the Silver Zone car park extension delivers an inefficient use of space and resource. There is a need to allow a period of several weeks at the start and end of the usage period to set up the facility in terms of temporary lighting, security checks and to ensure there is adequate time before the closure of the area for it to empty of vehicles (if the area does not empty of its own accord, cars need to be moved earlier than needed, occupying self-parking bays and reducing the overall capacity of the car park). Temporary facilities are required to manage the area, including diesel powered, mobile lighting rigs.

2.6.10 Year-round use of the area will be determined by demand. Restriction of lower priced capacity in winter months limits the ability of BAL to reduce the impact of unauthorised off-site parking; there are occasions, especially around school holidays, where demand may need to be suppressed through price to ensure the capacity is not exceeded. It should also be noted that seasonal restrictions for car parking are not commonplace for UK airports.

Unauthorised Parking

2.6.11 In recent years, a number of off-site car parking operators in the vicinity of Bristol Airport have provided unauthorised car parking for passengers often within the Green Belt. A survey conducted in 2017 suggests that unofficial parking accounts for approximately 4,700 spaces at peak times or between 20% and 25% of the airport's total parking need (as reported in the Parking Demand Study).

2.6.12 The operation of unauthorised car parking sites can result in harm to local amenity and affect local landscape character and visual amenity. Without proper planning and the provision of associated facilities and services, such car parks can also result in increased traffic.

2.6.13 A key objective of the parking strategy for the development of Bristol Airport to accommodate 12 mppa is to provide a low-cost alternative to unauthorised off-site providers.

3. Existing and Approved Car Parking Provision

3.1 Introduction

3.1.1 This section provides a summary of the current on-site and off-site parking provision at Bristol Airport, in addition to capacity that has already been consented but which has yet to be delivered. This provides the basis for the forecast of parking demand associated with an additional 2 mppa (**Section 4**).

3.2 Existing Car Parking Provision

On-site Provision

3.2.1 Bristol Airport currently has four main on-site car parks, with long stay provision broadly split into three classes (premium, standard, economy):

A. **Silver Zone**: The Silver Zone car park is located in the southern area of the airport site and provides the lowest cost parking product. Cars are valet (blocked) parked with a free shuttle bus service transferring passengers to the terminal. The Silver Zone includes a seasonal extension which is currently utilised in the peak summer months and provides 3,650 spaces;

B. **Long Stay**: A mid-range parking option that is a short walk or bus ride to the terminal, but substantially closer than Silver Zone;

C. **Premier and Short Stay**: A more expensive parking option that is located within close proximity to the terminal and includes multi-storey provision;

D. **Meet and Greet at the Express Parking Site**: The most convenient option that allows for passenger cars to picked up and dropped off next to the terminal.

3.2.2 The four car parking areas are shown in **Figure 3.1**.

Figure 3.1 Location of on-site car parks

Table 3.1 On-site parking provision at Bristol Airport (start of summer peak 2017)

Figure 3.1 Ref	Car Park	Capacity (summer peak 2017)
A	Silver Zone	11,770
B	Long Stay	3,508
C	Premier	522
D	Meet & Greet	900
	Total	**16,700**

3.2.3 In total, as at the summer 2017 peak, there were 16,700 on-site passenger car parking spaces at the airport.

Staff Parking

3.2.4 Staff car parking is provided in a designated area adjacent to the Silver Zone car park (staff car parking adjacent to the current airport administration building has been recently relocated to this area). This provides approximately 1,000 spaces.

Off-site Parking

3.2.5 Bristol Airport does not currently operate any off-site car parking locations.

3.2.6 There is a large number of unofficial off-site car parks in the vicinity of Bristol Airport. Unofficial off-site car parks have increased their capacity in recent years and the Parking Demand Study estimates (based on aerial photographs) that in Summer 2017, capacity was circa 4,800 spaces. Most unofficial off-site parking is believed to be provided at unauthorised car parking sites that are set up in fields and semi-brownfield and greenfield sites around the airport and generally do not have formal planning permission (whilst BAL has evidence that many unofficial off-site parking sites are unauthorised there is no precise data available on the exact proportion of off-site parking which is unauthorised and the pattern is subject to change annually).

3.2.7 Any future off-site parking options proposed by BAL would need to take into account the proliferation of unauthorised sites and whether an investment in an off-site, properly authorised and regulated park and ride solution would be able to compete favourably with cheaper unauthorised sites.

3.3 Approved Capacity Increases

3.3.1 BAL has consent to increase current car parking capacity by circa 1,700 spaces between 2018 and 2021. BAL has recently completed the construction of Phase 1a of its first Multi-Storey Car Park (MSCP) whilst Phase 1b is due for delivery by the summer peak of 2019. In total, MSCP Phase 1 will add 1,900 parking spaces to the current capacity of the airport. A second MSCP (Phase 2) is expected to be completed by 2021, adding a further 1,800 spaces. Several smaller additions to capacity are planned, mostly through the conversion of unused areas of the airport to parking spaces that are to be taken forward under BAL's permitted development rights pursuant to Part 8 (Class F) of the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) (GPDO).

3.3.2 Taking this additional, planned capacity into account, BAL expects car parking capacity to increase from circa 16,700 spaces in 2018 to approximately 18,400 spaces in 2021. A baseline provision of 18,400 spaces has therefore been used for the forecasts contained in the Parking Demand Study.

4. Future Car Parking Demand

4.1 Introduction

4.1.1 An additional 2 mppa will increase the demand for passenger car parking. Building on the emerging Parking Demand Study, this section highlights some of its provisional findings which are considered important factors to be taken into account in developing a Parking Strategy.

4.2 Forecast Passenger Demand

4.2.1 The provisional findings of the Parking Demand Study identified that the expansion of Bristol Airport to 12 mppa will (assuming a stable 12.5% public transport mode share) result in a circa 39% increase in the number of passengers parking at the airport between 2017 and 2026, equivalent to over 22,600 spaces to service peak demand in 2026. The principle drivers of the forecast increase in demand are:

- **Growth in underlying passenger demand at Bristol Airport associated with expansion to 12 mppa**: An additional 2 mppa will increase passenger movements to and from the airport site. Despite continued investment in public transport by BAL, it is expected that a large proportion of these passengers will travel by car resulting in an increase in demand for car parking.
- **Forecast changes in Bristol Airport's UK catchment area**: The *likelihood* to park at Bristol Airport varies by different passenger geographies, with those passengers originating from beyond the immediate Bristol area being considerably more likely to drive to the airport due a lack of direct and attractive public transport links generally.

  There has been an emerging trend in the geographic split of UK outbound demand with a decrease in the proportion of passengers who come from the Bristol and surrounding areas balanced by increases in the proportion of passengers originating from South Wales and outer South West catchments. Despite significant investment by BAL, accessibility from these outer catchment areas to the airport by public transport is relatively low which has led to an increasing propensity for passengers originating from these catchments to access Bristol Airport by car.

  The provisional findings of the Parking Demand Study highlighted that, as the airport continues to develop, this trend is expected to continue, increasing the levels of proportional demand from regions further from Bristol, specifically those South West of the airport. With increased penetration in parts of the airport's catchment area which are relatively poorly served by public transport, there is expected to be a consequential increase in the demand for car parking.
- **Lack of regional and sub-regional public transport options:** The West of England JTS provides evidence that transport investment in the sub-region and across the South West is less than half the expenditure that could be expected in other parts of the country. This results in fewer public transport choices for passengers across the region such that Bristol Airport experiences a higher proportion of car borne passengers compared to airports in other regions. It is not reasonable to expect BAL to remedy widespread regional underinvestment in public transport and in this regard, the emerging JSP and the JTS envisage major public investment in the transport network including strategic public transport infrastructure that will be funded through a variety of possible mechanisms including, for example, DfT major schemes funding.

4.2.2 As set out in **Section 3.3**, BAL expects to increase car parking capacity from circa 16,700 spaces in 2018 to approximately 18,400 spaces in 2021 through the completion of MSCP Phase 1b and the construction of MSCP Phase 2 (including public transport interchange). Despite these planned increases in parking provision, the provisional findings of the Parking Demand Study indicated that a total of 4,600 additional spaces will be required to meet forecast demand at 12 mppa (assuming public transport modal share remains at 12.5%).

4.3 Reducing the Demand for Car Parking

4.3.1 In order to address the requirement for car parking associated with an additional 2 mppa, an important first step is the consideration of public transport, which influences the level car parking demand.

4.3.2 BAL is proposing a public transport modal share target of at least 15% that will be secured through a Section 106 Agreement and delivered via a new Airport Surface Access Strategy (ASAS). This target has been carefully calculated taking into account the current modal share of 12.5% and the limited period of time for investment in public transport before 12 mppa is reached and is considered to be realistic and achievable given BAL's ability to influence passenger travel choice. This modal share target provides the starting point for calculating car parking demand associated with an additional 2 mppa.

4.3.3 Taking into account public transport usage of 15% for passengers, the emerging Parking Demand Study estimated that a total of 3,900 additional spaces will be required to meet the residual demand for parking. This requirement forms the basis for this Parking Strategy.

4.3.4 It should be noted that as part of the Parking Demand Study, Teneo has undertaken a sensitivity test in order to assess the level of public transport required in order to negate the need for additional car parking provision to accommodate 12 mppa. The Study estimates this level to be in the region of 35%, which is considered to be an unrealistic target when compared to other regional airports comparable to Bristol Airport.

4.4 The Nature of Car Parking Demand

4.4.1 In developing the preferred parking solution to accommodate an additional 2mppa, it is important to consider the *nature* of the demand for car parking as this influences the type of car parking required, its phasing and location. In this regard, the emerging Parking Demand Study noted a preliminary finding that there has been an increase in demand for low-cost car parking at the airport site and that a low-cost parking option is likely to better meet customer needs and benefit from greater levels of underlying demand, while also being better positioned to reduce the market share of unauthorised off-site providers. This is due to a number of factors, including:

- Historic customer preference and underlying demand for low-cost car parking;
- Increasing propensity for leisure passengers to use low-cost car parking; and
- Growth in the number of aircraft based at the airport.

Historic customer preference and underlying demand for low-cost car parking

4.4.2 The Parking Demand Study highlights that there is an existing preference for low-cost parking amongst Bristol Airport customers. Silver Zone (the low-cost official parking) is more likely to be booked further in advance than the Long Stay or Premium Parking, based on data collected by BAL. As such, circa 54% of customer who book Silver Zone do so at least two weeks in advance, as

opposed to only around 36% of customers for other airport car parks. The Study states that this potentially indicates a greater underlying demand for Silver Zone compared to other forms of parking.

Increasing propensity for leisure passengers to use low-cost car parking

4.4.3 The emerging Parking Demand Study set out that a large and growing proportion of customers have a preference for low-cost parking due to a lower ability and willingness to pay, their reason for travel, and their trip duration. The largest increase in demand for Bristol Airport from 2015 to 2026 is forecast to be in North Devon and Cornwall and South Wales regions. The Parking Demand Study highlights, based on Office for National Statistics (ONS) data, that residents of North Devon and Cornwall and Wales are on average in the lower quartile of household income in the UK such that customers from these areas are more likely to have a lower ability / willingness to pay for car parking, and are more price-sensitive. This is compounded by the fact that passengers from these regions also travel further on average to reach the airport, and therefore have a higher incremental cost of travelling to the airport than other corridors and are more likely to have time to park slightly further away from the main terminal. Given the forecast growth in passengers from the North Devon, Cornwall and South Wales corridors, the has Parking Demand Study concluded that lower cost car parking provision is likely to be increasingly attractive to the average customer in the future.

4.4.4 The reason for air travel is also likely to influence a passenger's willingness to pay for parking. During the peak periods, leisure travellers including those visiting friends and family make up a higher proportion of total passengers; the additional capacity is most likely to be used during peak periods, and therefore will be predominantly catering for leisure travellers during those times. The Parking Demand Study has highlighted that leisure customers are likely to be more price-sensitive, as they will incur the total cost of their travel, while business travellers often have a higher budget or do not incur the total cost of travel themselves. In the summer where demand is greatest, and the additional capacity is required, the highest proportion of passengers are leisure customers, and therefore prioritising low-cost parking would be most likely to satisfy the preferences of these customers.

4.4.5 Trip length may also affect parking preference. Leisure customers have an average trip length of circa 11 days, compared to business travellers who travel on average around seven days, based on 2017 CAA data. Therefore, leisure travellers will require longer parking durations than business customers which is likely to in incur greater cost for parking. The Parking Demand Study sets out that this may contribute to leisure customers opting to utilise lower-cost parking options.

Growth in based aircraft

4.4.6 Bristol Airport currently hosts a large number of based aircraft (aircraft which are parked in the airport overnight and leave early in the morning with a first full load of passengers). In the peak months of 2018, 27.8% of all flights outbound from Bristol Airport were in this 'first wave' and were serviced by based aircraft.

4.4.7 As these flights are early in the morning, passengers on the first wave-based aircrafts are more likely to drive and park than at other points during the day, due to a lack of alternative travel options to the airport, increasing the total demand for airport parking. Further to this, a large proportion of passengers on first wave flights are leisure travellers that, as demonstrated above, are more likely to prefer low-cost parking. Moreover, a majority of based aircraft are of a low-cost or package holiday airline, which indicates that customers on these flights may consider price more strongly when making travel plans and choose a lower-cost parking option.

4.4.8 Bristol Airport forecasts a growth in the number of based aircraft until 2026. The Parking Demand Study concludes that this will correlate with a growth in demand for low-cost parking.

4.5 Summary

4.5.1 The provisional findings of the Parking Demand Study have indicated that growth to 12 mppa will generate a capacity requirement of 3,900 additional spaces; this forms the basis for this Parking Strategy.

4.5.2 In combination, the factors outlined above (historic customer preference and underlying demand for low-cost car parking, the increasing propensity for leisure passengers to use low-cost car parking capacity and growth in the number of aircraft based at the airport) will drive greater demand for the provision of low-cost parking capacity and this is an important factor that needs to be taken into account in developing a Parking Strategy.

5. Review of Potential Car Parking Locations

5.1 Introduction

5.1.1 This section describes the approach to, and outcomes of, the assessment of potential car parking options to meet the forecast capacity requirement of 3,900 additional spaces based on a 15% public transport modal share.

5.2 Overarching Approach

5.2.1 Taking into account the context review presented in **Section 3**, and in particular Green Belt policy, a sequential approach has been adopted to the identification of possible siting options for car parking which has in-turn informed BAL's preferred parking solution. The sequential approach is as follows:

1. Sites within the Green Belt inset;
2. Strategic park and ride locations remote from the airport including land outside the Green Belt;
3. Sites within the airport site but outside the Green Belt inset;
4. Sites in Green Belt locations contiguous to the airport site.

5.2.2 The aim of the sequential approach outlined above is to ensure that all potential development options are appraised before moving onto the next area of search in the sequence. The approach ensures that BAL's operational land within the Green Belt inset is maximised (within operational requirements).

5.3 Sites within the Green Belt Inset

5.3.1 Reflecting Green Belt policy, the starting point for the sequential assessment of parking locations has been to consider land within the Green Belt inset, subject to normal development constraints. In this context, two options have been identified; a single multi-storey car park (**Option A**) and further additional multi-storey and/or decked car parking (**Option B**).

5.3.2 The options have been appraised using a multi-criteria assessment and a summary red, amber and green scoring. This colour coding is used to indicate the relative differences in effects, with green signifying a neutral effect; amber, a minor negative effect; and red, a significant negative effect.

5.3.3 The opportunities and constraints relating to Options A and B are shown in **Table 5.1**.

Table 5.1 Appraisal of Green Belt inset options

Constraint/opportunity	Option A	Option B (including Option A)
No. of spaces	2,150	950
Distance to Bristol Airport	Within airport site	Within airport site.
Access to terminal	Direct access.	Direct access.
Access to main road/motorway	Adjacent to A38.	Adjacent to A38.
Green Belt	Within the Green Belt inset.	Within the Green Belt inset.
Landscape and visual impact	Potential for minor negative impact on the visual amenity of residential receptors along Downside Road.	Potentially significant impact on visual amenity of nearby residential receptors (particularly along Downside Road). Would likely constitute over development of the northside of the airport site.
Flood risk	Flood Zone 1.	Flood Zone 1.
Statutory and non-statutory designations / constraints	None.	None.
Loss of amenity	No.	No.
Cost	Locating multi-storey parking adjacent to the terminal allows premium parking services to offset initial and ongoing costs. Would be expected to meet demand for premium parking associated with an additional 2 mppa.	Highest construction cost. Long walk for passengers if parking in decking furthest from terminal. Longer to offset initial and ongoing costs and, due to the level of charging required, would not address demand for low-cost car parking.
Summary	Overall neutral effect.	Overall potential significant negative effect.

5.3.4 Under Option A, a new MSCP would provide circa 2,150 spaces, resulting in a more land-efficient and high-density form of parking in the Green Belt inset. The capacity of the MSCP takes into account existing and consented multi-storey car parking provision at Bristol Airport and a careful analysis of the demand for premium long stay car parking. However, the MSCP would not meet the total car parking requirement of 3,900 spaces, and there would be a residual unmet need of 1,750 spaces. In consequence, further additional multi-storey/decked car parking on the northside of the airport and within the inset has been considered; this forms Option B.

5.3.5 Consented and proposed multi-storey car parking already covers a substantial proportion of the inset area and landscape analysis of this option indicates that additional multi-storey/decked car parking beyond that associated with Option A would result in the overdevelopment of the northside of the airport. This would have likely significant visual impacts on residential receptors along Downside Road.

5.3.6 Further multi-storey or decked car parking to the north of the airport site would also result in an overprovision of premium spaces (the final Parking Demand Study provides more detail on demographics, economic context and customer preferences to assess the demand for premium and low-cost spaces). In these circumstances, the business case for such an investment based on the level of charging required wouldn't be commercially acceptable. UK airports operate in a highly competitive environment across all facets of their business. Building infrastructure that is not required by customers has a negative impact on the overall business and ultimately on current and future passengers since the airport would not have the financial resources to invest in facilities necessary to maintain a modern, efficient airport nor the ability to compete with other airports to attract airlines and expand connectivity. Further, a parking solution that does not accurately reflect

passenger demand is likely to encourage further unauthorised off-site provision to meet the demand for low-cost parking that cannot be met on the airport site, as well as on-street parking.

5.3.7 In consequence, Option A has been taken forward as part of the preferred car parking solution. However, a residual requirement of 1,750 spaces remains.

5.4 Strategic Park and Ride Locations

5.4.1 The next option in the sequential hierarchy in order to accommodate the residual requirement for 1,750 spaces is to assess potential locations for off-site car parking (park and ride) at strategic locations remote to Bristol Airport including brownfield land and sites outside of the Green Belt.

5.4.2 A two-step process has been developed to identify and assess potential off-site parking locations. This process has consisted of:

- Assessment of an initial longlist of identified sites which could potentially fulfil demand requirements using pre-defined selection criteria to identify a shortlist of potential sites; and
- More detailed review of the strengths and weaknesses of shortlisted sites in order to identify any possible preferred options.

Longlist

5.4.3 To devise a longlist of potential sites, three factors were initially taken into consideration:

1. Key catchment areas were identified based on passenger origins obtained from the 2015 CAA terminating passenger survey (see **Section 2.3**). This enabled an estimate on the quantity of spaces required to serve passengers coming from the north (South Wales and the West Midlands) and from the south (Devon, Cornwall and parts of Somerset).
2. Within these broad catchment areas, available land that is easily accessible from the major strategic highways were identified, as these sites would offer the greatest convenience and have the lowest interchange penalty for passengers changing to the shuttle services.
3. Potential parking sites located next to existing airport services such as the Flyer and Falcon would mean that passengers could use existing services without the need to introduce a completely new bus service.

5.4.4 In addition to these initial criteria, further sites were identified through discussion with BAL and brownfield sites were also suggested by both Bristol City Council and NSC.

Assessment Criteria

5.4.5 **Table 5.2** details the criteria used during the initial sifting process. These criteria were used to eliminate sites that were judged to be not suitable.

Table 5.2 Off-site site assessment criteria

Criterion	Description
Size	
Site (hectares)	Area of the site.
No. of spaces (self-parking)	The number of spaces where cars are self-parked.
Transport	
Distance (km)	Distance via highways and roads.
Distance to nearest public transport (km)	Distance to nearest bus stop or train station.
Public Transport frequency (for services less than 500m away)	Frequency of nearby services close to the site.
Accessibility from Motorway / Main Road	How easily accessible the site is to the strategic road network.
Demand and Catchment Areas	Describing which regions are best serve by that site.
Likelihood of use	Low, Medium or High likeliness, as a product of the location and the size/characteristics of the catchment area it will serve.
Journey time reliability (mins)	Measured using Google journey time planner. Times taken during peak show the max time/min time.
Planning and Environmental Constraints	
Green Belt	Whether the site is within the designated Green Belt.
Visual impact	The level of potential visual impact the site could have on the surrounding area.
Flood risk	Whether the site is at a risk of flooding.
Statutory and non-statutory designations / constraints	Any planning constraints on the site.
Loss of amenity	Whether the site is a car park or at present another land use.

Shortlisting

5.4.6 A list of sites identified in the first phase are given in **Table 5.3**. These were assessed quantitatively against the criteria given in **Table 5.2** to derive a feasibility score of each between 0 and 2. Each factor carried a different weighting, as shown in **Appendix A**.

5.4.7 The initial sift and collaborative discussions with BAL determined that certain locations could not be progressed further for reasons including:

- Proximity to dense residential development;
- Poor quality interchanges required to access the airport, for example having to catch a bus/train to then catch another bus would be simply not viable for passengers with large suitcases/heavy bags;
- Existing or proposed planning applications for the area;
- Detrimental impacts to the local community if current land use was changed to parking;

- Sites located far from the airport - being too far from the airport would result in construction expenditure and operating costs being too high and unattractive to passengers;
- Sites that could only support a low number of spaces.

5.4.8 A Red/Amber/Green score for quantifiable factors was assigned to each location, as shown in **Table 5.3**. The threshold for each criterion are given in **Appendix A**.

5.4.9 A map showing the locations of these sites is presented in **Appendix B.**

Table 5.3 Assessment of 'longlist' sites against selection criteria

	Description	No of spaces	Distance from airport	PT accessibility	Accessibility to SRN	Liklihood of use	JT Reliability	Green Belt	Readiness to implement	Loss of Amenity	Summary
1	Severn Beach (M49 Avonmouth Junction improvements)	✓	!	!	✓	✓	✓	✓	✓	✓	✓
2	Avonmouth North W	✓	!	!	✓	✓	✓	✓	!	✓	✓
3	Cheddar Carboot	✓	!	✓	✗	✗	✓	✓	!	✗	!
4	Quarry at Hyatts Wood Road	✓	✓	✓	✓	✓	✓	✗	!	✓	!
5	MoD Abbey Wood Car Park	✓	✓	!	!	!	!	✗	!	✗	!
6	Avonmouth North E	✓	!	!	✓	✓	!	✓	!	✓	!
7	SW Karting	!	!	!	✗	✗	✓	✓	!	✗	!
8	Avonmouth South	✓	!	!	✓	✓	✓	✓	!	✓	✓
9	Worle Parkway Station	!	!	✓	✓	!	✓	✓	!	✓	!
10	Liberty Freight Yard	!	✓	!	✓	!	✓	✓	✗	!	!
11	Auction House (Bridgwater)	!	!	✓	✓	!	✓	✓	✓	✗	!
12	Hinckley Yard	!	!	✓	✓	!	✓	✓	!	✗	!
13	Bristol Water Bedminster Depot	✗	✓	!	✓	!	✓	✓	✓	✓	!
14	Bath Road	✗	!	!	✓	✗	✗	✓	!	✓	!
15	Severn Paper Mill (North)	!	!	!	!	!	✓	✓	!	✗	!
16	Cleeve Court	!	✓	✓	✓	!	✓	✗	!	✓	!
17	Severn Paper Mill (South)	!	!	!	!	!	✓	✓	!	✗	!
18	Davan Caravans - M5 J21	✗	!	!	✓	✓	✓	✓	!	!	!
19	Western Trade Centre - Banwell	✗	!	!	!	!	!	✓	✗	✗	!
20	Pub at West Town Road - Backwell	✗	✓	✓	✓	!	✓	✗	✓	✓	!
21	M5 Junction 21	!	!	✓	✓	✓	✓	✓	✓	!	✓
22	Ashton Vale South	!	✓	✓	!	!	✓	✗	!	!	!
23	Yew Tree Farm	!	✓	✓	✓	!	✓	✗	✓	✓	!
24	Whitchurch	!	!	✓	✗	✗	✓	✗	!	!	✗
25	Lye Cross Farm	!	✓	✓	✓	!	✓	✗	✓	✓	!

Review of Shortlisted Sites

5.4.10 By discounting the sites that the initial sifting stage highlighted as not being suitable, a refined shortlist of 12 sites was developed. The relative strengths and weaknesses of each shortlisted site are summarised in in **Table 5.4**.

Table 5.4 Assessment of shortlisted sites

Site	Description	Strengths	Weaknesses
Severn Beach (by M49 Avonmouth Junction Improvements)	• Former industrial site North of Avonmouth. • Junction improvements scheduled to be complete by 2019.	• Space to solve parking requirements for foreseeable future. • Convenient for passengers coming from Wales and West Midlands. • Good links to M49.	• Site may be expensive to prepare in terms of ground remediation, capital expenditure etc. • 20km from airport.
Avonmouth North West	• Empty former industrial parcel of land in Avonmouth.	• Large plot of land able to hold large number of parking spaces, could solve parking requirements for foreseeable future.	• Site may be expensive to prepare in terms of ground remediation, capital expenditure etc. • Distance from airport.
Quarry at Hyatts Wood Road	• Former quarry near airport.	• Close to airport. • Large amount of potential spaces.	• High capital costs required due to ground remediation and levelling • Within the Green Belt.
Avonmouth North East	• Empty former industrial parcel of land in Avonmouth.	• Large plot of land able to hold plenty of parking spaces, could solve parking requirements for next 10-15 years.	• Site may be expensive to prepare in terms of ground remediation, capital expenditure etc. • Distance from airport.
Worle Parkway Station	• Existing Parkway Rail station with 320 existing parking provision that can be expanded to create additional spaces.	• Passengers can get to site by rail.	• May only cater for passengers from Weston-super-Mare, already served by Flyer. • Distance from airport.
Liberty Freight Yard	• Current freight yard, near Parson St rail station, South Bristol.	• Very good links to A38 leading to airport.	• Potential bottleneck issues due to narrow access into site for cars.
Bristol Water Bedminster Depot	• Former depot site in South Bristol.	• Next to A38 which leads to airport.	• High capital cost required for demolition of current structure and lining for car park.
M5 Junction 21	• Greenfield site just off M5 J21.	• Developable site just off major motorway M5.	• Possibly a limited catchment area as it is located near Weston-super-Mare.
Yew Tree Farm	• Farmland site just off A38.	• Good transport links to airport and can use existing public transport services.	• Greenfield site within the Green Belt.
Lye Cross Farm	• Farmland site just off A38, south of airport.	• Good transport links to airport and can use existing public transport services.	• Greenfield site within the Green Belt.

Site	Description	Strengths	Weaknesses
Davan Caravans – M5 J21	• Current caravan and motorhome dealer just off M5 J21. • Brownfield site.	• Developable site just off major motorway M5.	• Existing and alternative uses likely not to make site cost effective.
Pub at West Town Road - Backwell	Disused pub in nearby village of Backwell.	• Close to airport.	• Smaller site compared to others.

5.4.11 The analysis of the 12 shortlisted sites above has identified a number of constraints that affect their deliverability including (inter alia) distance from the airport (which would affect passenger experience and may undermine uptake), the rural nature of the local road transport network (which means that the operational viability of these locations is marginal), high land prices, availability and the need for remediation. Further, the anticipated nature of off-site car parks assumes that cars would be self-parked; this would require more land than an operation involving block parking such as that currently provided in the Silver Zone.

5.4.12 As a result of the factors described above, it is concluded that a remote, off-site option is unlikely to be achievable at 12 mppa (it should also be noted that three of the shortlisted 12 sites are within the Green Belt in any case).

5.4.13 As there are presently no realistic off-site park and ride sites outside of the Green Belt that can effectively serve a 12 mppa capacity airport, off-site options have not been taken forward as part of the preferred car parking solution.

5.4.14 It is recommended that BAL continues to review and monitor the availability and suitability of strategic off-site locations in considering car parking options for the growth of Bristol Airport beyond 12 mppa.

5.5 Sites within the Airport Site, Outside of the Green Belt Inset

5.5.1 As no suitable, remote off-site car parking options have been identified, there remains a need to provide additional land for car parking. Land within the current airport site, but also within the Green Belt, has therefore been examined.

5.5.2 It should be noted that options within the existing airport site are limited due to land already being in use for essential airport operations or possible sites materially lacking sufficient capacity. Two options have, however, been identified by BAL; decked car parking southside (**Option C**) and year-round use of the existing seasonal Silver Zone car park (Phase 1) extension (**Option D**). These options have been assessed using the same criteria and scoring mechanism as for sites within the Green Belt inset (see **Section 5.3**). The results are presented in **Table 5.5**.

Table 5.5 Appraisal of options within the airport site, outside of the Green Belt inset

Constraint/opportunity	Option C	Option D
No. of spaces	2,800- will not fully address car parking capacity requirement (on its own).	3,650 – will not fully address car parking capacity requirement (on its own).
Distance to Bristol Airport	Within airport site.	Within airport site.
Access to terminal	Will require use of a shuttle bus, although site benefits from existing services and facilities associated with the Silver Zone car park.	Will require use of a shuttle bus, although site benefits from existing services and facilities associated with the Silver Zone car park.
Access to main road/motorway	Adjacent to A38.	Adjacent to A38.
Green Belt	Within Green Belt. It is an existing site although decked car parking in this location could result in harm to the Green Belt.	Within Green Bely; however, it is an existing, developed site.
Landscape and visual impact	Potentially moderate or significant impact on landscape and visual amenity due to decked parking.	Minor impact; this option would involve the year-round use of an existing operational car park.
Flood risk	Zone 1.	Zone 1.
Statutory and non-statutory designations / constraints	None.	None, though year-round use of the car park will need to consider ecological impacts associated with lighting.
Loss of amenity	No.	No.
Cost	Highest construction cost. Longer to offset initial and ongoing costs and, due to the level of charging required, would not address demand for low-cost car parking.	Existing car park therefore minimal cost. Would respond well to passenger demand for low-cost parking.
Summary	Overall potential significant negative effect.	Overall neutral effect.

5.5.3 Under Option C, decked car parking in the southside of the airport would be located over the existing Silver Zone car park and be within the Green Belt. Due to the nature and scale of development in this location, landscape impacts and harm to the openness of the Green Belt would be greater than a solution involving surface level car parking. Further, the construction costs involved would require the car park to be charged at a premium; BAL's experience, and that of other airports, suggests that premium parking is only acceptable if customers can then walk to the terminal, something that is not possible from the Silver Zone.

5.5.4 As an alternative to decked car parking, Option D would involve the year-round use of the existing seasonal Silver Zone car park extension. The use of this car park is currently restricted by condition to between May and October each year in order to meet seasonal demand. As highlighted in **Section 2.6**, seasonal restrictions on use of the car park delivers an inefficient use of space and resource and limits the ability of BAL to reduce the impact of unauthorised off-site parking; there are occasions, especially around school holidays, where demand may need to be suppressed through price to ensure the capacity is not exceeded.

5.5.5 In this context, the year-round use of the car park would help cater for the increased year-round demand for low-cost parking associated with an additional 2 mppa whilst making best use of the existing airport facilities in accordance with national aviation policy. It is important to note that, as this is an existing facility that already caters for peak car parking demand during the summer months, it would not affect the residual requirement for spaces identified in the Parking Demand Study (3,900 spaces). Instead, it would ensure that BAL is able to better serve demand outside the

summer peaks and, further, will also help to ensure that the airport is better positioned to offer an attractive alternative low-cost product to unauthorised off-site providers.

5.5.6 Overall, Option D has been taken forward as part of the preferred car parking solution. However, a residual demand for car parking remains.

5.6 Sites Contiguous to the Airport Site, within the Green Belt

5.6.1 As it is not possible to accommodate all of the required car parking spaces within the Green Belt inset, at sites remote to Bristol Airport or within the existing airport site outside of the inset, in accordance with the sequential approach it is necessary to consider land contiguous to the existing airport site within BAL's ownership. This land is in the Green Belt and therefore car parking development is likely to be considered to be inappropriate requiring very special circumstances to justify it, in accordance with national and local planning policy.

5.6.2 Four potential sites in this area of search were initially identified by BAL:

1. Land to the east of the A38;
2. Land to the west of the A38;
3. Land to the south of the existing Silver Zone car park (known as 'Gruffy Field'); and
4. Land to the south of the existing seasonal Silver Zone car park extension (on land known as 'Cogloop 2').

5.6.3 Land to the east and west of the A38 would be highly visible and screening would be unlikely to fully remove potential landscape and visual effects due to the local topography. Additionally, these sites would require the creation of a new access on to the A38 and would not link/integrate well with the existing passenger facilities provided in the Silver Zone car park (including the reception facility) meaning that additional facilities and infrastructure would be required. Land to the east of the A38 is also within a Public Safety Zone and the instrument landing system in this area would need to be safeguarded.

5.6.4 Land to the east of the A38 is adjacent to Felton Common Local Nature Reserve (LNR), Oval barrow on Felton Hill 100m east of The Round House Scheduled Monument and Windmill House Grade II Listed Building such that development of car parking in this location could affect these designated assets. It is also important to note that land to the east of the A38, as well as Gruffy Field, are existing nature conservation areas that have formed the basis for ecological mitigation and enhancement in connection with the expansion of Bristol Airport to accommodate 10 mppa.

5.6.5 On the basis of the constraints outlined above, sites 1 to 3 above were discounted from further consideration.

5.6.6 The remaining site, land to the south of the existing seasonal Silver Zone car park extension, has been taken forward for assessment. The qualitative assessment of this site, which has used the same criteria and scoring mechanism as for sites within the Green Belt inset (see **Section 5.3**), is presented in **Table 5.6**.

Table 5.6 Appraisal of options contiguous within the airport site, within the Green Belt

Constraint/opportunity	Site 4: Land to the south of the existing seasonal Silver Zone car park extension
No. of spaces	Capacity of circa 2,700 - will not fully address car parking capacity requirement (on its own).
Distance to Bristol Airport	Adjacent to the airport site.
Access to terminal	Will require use of a shuttle bus, although site benefits from existing services and facilities associated with the Silver Zone car park.
Access to main road/motorway	Adjacent to A38 (via Silver Zone car park).
Green Belt	Within the Green Belt.
Landscape and visual impact	Potential for adverse landscape and visual impacts but can be mitigated/reduced.
Flood risk	Zone 1.
Statutory and non-statutory designations / constraints	None present, although potential for adverse ecological impacts that will require further consideration.
Loss of amenity	No.
Cost	Relatively low construction costs and land already in BAL ownership. Good potential to provide a car parking product that, with the year-round use of the existing seasonal Silver Zone car park extension, would meet assessed demand. .
Summary	Overall neutral effect.

5.6.7 Site 4 has the capacity to provide circa 2,700 spaces. Forming a further extension to the existing Silver Zone car park, this site:

- Is well-located from an operational perspective, allowing car parking to the south of the airport site to be consolidated in one location;
- Benefits from existing services and facilities associated with the Silver Zone car park including the Silver Zone car park reception building and associated shuttle bus services that transfer passengers to/from the terminal;
- Is well-suited to block parking, where public access is not required and car parking spaces can be maximised thereby making the best use of the land without the need for significant additional built development;
- Has good access to the A38 and terminal via the existing southern access road;
- Can be readily integrated with wider surface access proposals and improvements associated with development of the airport to 12 mppa; and
- Is not within/adjacent to national or local designated sites.

5.6.8 Importantly, the nature of the car parking that could be provided in this location (i.e. long-stay, block parking) could help to meet the assessed demand.

5.6.9 Expansion of the Silver Zone car park in this location will inevitably result in some encroachment into the countryside with the potential for landscape and visual impacts as well as effects on ecology (due to, for example, land take and lighting). However, landscape and visual impacts, as well as ecological effects, can be mitigated through careful design and sensitive landscape and boundary treatments similar to those already successfully adopted in respect of the existing seasonal Silver Zone car park extension. These impacts, and associated mitigation, would need to

be considered further as part of the planning application and Environmental Impact Assessment (EIA).

5.6.10 Overall, Site 4 has been taken forward as part of the preferred parking solution.

6. Conclusion: The Preferred Parking Strategy

6.1.1 As part of a phased approach to the growth of Bristol Airport beyond 2021, BAL is seeking planning consent for an initial phase of development to 12 mppa; this will allow for growth in passenger numbers up to at least the mid-2020s. An additional 2 mppa will increase the demand for passenger car parking; the Parking Demand Study estimates that a total of 4,600 additional spaces will be required to meet forecast demand.

6.1.2 As a first step to addressing this demand, BAL is proposing a 15% public transport modal share target. Taking into account public transport usage of 15% for passengers, the Parking Demand Study estimates that a total of 3,900 additional spaces will be required to meet the residual demand for parking.

6.1.3 This report has reviewed the potential options to meet the identified demand for car parking associated with the development of Bristol Airport to 12 mppa. A sequential approach has been adopted to the identification of possible siting options which has in-turn informed BAL's preferred parking solution. The approach is as follows:

- Sites within the Green Belt inset;
- Strategic park and ride locations remote from the airport including land outside the Green Belt;
- Sites within the airport site but outside the Green Belt inset;
- Sites in Green Belt locations contiguous to the airport site.

6.1.4 Following the application of this sequential approach and assessment of potential options, the preferred parking strategy has been determined as comprising:

- Further MSCP provision to the northside of the airport, in the Green Belt inset providing circa 2,150 spaces;
- The year-round use of the existing seasonal Silver Zone car park extension which has an existing capacity of 3,650 spaces;
- A further extension to the Silver Zone car park located to the south of the existing seasonal Silver Zone car park extension, providing circa 2,700 spaces.

6.1.5 This solution maximises development in the Green Belt inset and makes the best use of existing facilities whilst ensuring that passenger demand is met as part of a holistic approach to sustainable travel.

6.1.6 Reflecting the nature of the demand for car parking, the Parking Demand Study has indicated that the development of low-cost car, on-site parking is a more practical first step to develop further parking capacity at Bristol Airport and that there is an immediate need for this provision. In this context, the preferred parking strategy will provide parking capacity that helps to meet this demand on-site and in-turn will help reduce the market share and adverse impacts of unauthorised off-site providers.

6.1.7 Whilst the proposed car parking solution provides a total of circa 4,850 spaces against a requirement for 3,900 spaces, this additional capacity will provide the flexibility required to respond to the displacement of spaces during ongoing construction activity associated with the Proposed Development. Importantly, it will also help to ensure that the airport is better positioned to reduce the market share of unauthorised off-site providers.

Appendix A
Off-site Assessment Criteria

	Weighting	High	Medium	Low
Number of spaces (self parking)	1	More than **1000** potential self parking spaces	Between **250-1000** self parking spaces	Less than **250** potential self parking spaces
Distance from airport	1	Less than **10km**	Between **10-50km**	Over **50km**
Public Transport accessibility	1	Less than **600m** to high frequency public transport	between **600m-2km** to public transport	Over **2km** to public tranport
Accessibility to Strategic Road Network	2	Directly accessible to Strategic Road Network (SRN)	Between 2km-5km to SRN	Over 5km to SRN
Liklihood of use (catchment)	3	Large catchment area with accessible driving route to airport	Large catchment area but with potential access constraints	Low potential demand and/or poor access
Peak journey time reliability	2	High end of journey time range **less than 50%** greater than low end	High end of journey time range **between 50-100%** greater than low end	High end of journey time range **more than 100%** greater than low end
Green Belt	3	Site not located within the Bristol Greenbelt	n/a	Site located within the Bristol Greenbelt
Readiness to implement	2	No existing structures, brownfield site	Minor ground remediation/levelling required	Existing structures would need to be removed plus ground remediation where necessary
Loss of Amenity	2	No loss to businesses/ services/ amenities	Small scale amenities to be relocated, greenspace lost	Services/businesses would need to be relocated, major greenspace lost

Appendix B
Off-site Car Parking Options