Gatwick Airport Northern Runway Project

Environmental Statement
Chapter 3: Alternatives Considered

Book 5

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3 Alternatives Considered

3.1. Introduction

3.1.1 This chapter of the Environmental Statement (ES) provides a summary of the reasonable alternatives considered by Gatwick Airport Limited (GAL) during the optioneering and Project design process. It includes a summary of the reasons for the design evolution with a description of the main alternative design and layout options that have been considered, which are relevant to the Project and its specific characteristics. The need for the Project is set out in the **Needs Case** (Doc Ref. 7.2) prepared for the **Draft Development Consent Order** (DCO) application (Doc Ref. 2.1).

3.2. Consultation

3.2.1 Pre-application consultation and engagement have been key features of the development of the Project, enabling continuous improvements to the Applicant's proposals and related assessments that form the basis of this DCO application.

3.2.2 The PEIR was issued to inform the statutory consultation carried out on the Project in Autumn 2021. It presented the preliminary findings of the EIA process for the Project at that time. A further period of hybrid statutory/ non-statutory consultation was undertaken in Summer 2022. The 2022 statutory consultation considered options for the highway improvement works and significant consultation was undertaken with National Highways and transport authorities. The non-statutory consultation related to other aspects, including car parking, the airfield, hotels and offices, and the strategies relating to water management, carbon and noise.

3.2.3 Further detail about the consultation process for the Project and way the consultation responses have been taken into account is provided in the separate **Consultation Report Annex B – Autumn 2021 Consultation: Consultee Response Summaries** (Doc Ref. 6.1) and **Consultation Report Annex D – Summer 2022 Consultation: Consultee Response Summaries** (Doc Ref. 6.1).

3.3. Legislative and Policy Context

Legislative Context

3.3.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017, as amended (hereafter referred to as 'the EIA Regulations'), require that an Environmental Statement (ES) should include:

'(d) a description of the reasonable alternatives studied by the applicant, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking in to account the effects of the development on the environment;…' (Regulation 14(2)(d)).

3.3.2 In addition, Schedule 4 of the EIA Regulations states:

'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.'

3.3.3 This chapter of the ES describes the work undertaken to date on alternative options considered by GAL and the key reasons for the selection of the Project elements, taking into account environmental effects.

Policy and Planning Context

3.3.4 The work of the Airports Commission informed the development of aviation planning policy, the details of which are examined in **ES Chapter 2: Planning Policy Context** (Doc Ref. 5.1). In particular, the Government designated the Airports National Policy Statement (NPS) in 2018 (Department for Transport, 2018). The ANPS identifies a requirement to comply with other legislation including the EIA Regulations.

3.3.5 Highways improvements are proposed in order to facilitate the increased passenger throughput (specifically improvements to the North Terminal and South Terminal roundabouts). Therefore, the NPS for National Networks (Department for Transport, 2014) (NNNPS) has effect in relation to those distinct components of the Project [1]. Paragraph 4.27 states:

'All projects should be subject to an options appraisal […] Where projects have been subject to full options appraisal in achieving their status within Road or Rail Investment Strategies or other appropriate policies or investment plans, option testing need not be considered by the examining authority or the decision maker. For national road and rail schemes, proportionate option consideration of alternatives will have been undertaken as part of the investment decision making process. It is not necessary for the Examining Authority and the decision maker to reconsider this process, but they should be satisfied that this assessment has been undertaken'.

3.3.6 National transport-related guidance such as that in the Design Manual for Roads and Bridges (DMRB) (National Highways, 2019), Transport Analysis Guidance (TAG) (Department for Transport, 2022) and station capacity planning guidance (Network Rail, 2021) has informed the design and modelling work which has been undertaken.

3.4. Gatwick Airport Master Plan Alternatives Considered

3.4.1 As part of the airport planning process, GAL regularly publishes a master plan, setting out long term plans for airport growth and development.

3.4.2 As a result of increasing demand, the 2019 Master Plan (GAL, 2019) considered the following scenarios:

- Scenario 1: where London Gatwick Airport (hereafter Gatwick) remains a single-runway operation using the existing main runway. This scenario would use technology to increase the capacity of the main runway, leading to incremental growth through more efficient operations;

[1] The Department for Transport published a revised draft National Policy Statement for National Networks ("NNNPS") for consultation on 14 March 2023. The draft NNNPS confirms in paragraph 1.16 that the existing NNNPS remains the relevant government policy and has full force and effect in relation to any applicable applications for development consent accepted for examination before designation of the updated NPSNN. The draft NNNPS further notes in paragraph 1.17 that the emerging draft NNNPS is capable of being an important and relevant consideration in the Secretary of State's decision making process. As such, the Applicant will continue to monitor the progress of the NNNPS review process and incorporate any updates to the Project's application documentation where considered appropriate/helpful in due course.

- Scenario 2: where the existing northern runway is routinely used together with the main runway; and
- Scenario 3: where GAL continues to safeguard for an additional runway to the south.

Scenario 1

3.4.3 Scenario 1 looked at options to make best use of the existing main runway. The master plan predicted that this scenario would see passenger throughput increase to approximately 57 to 61 million passengers per annum (mppa) in 2032/2033 through investments in terminal facilities, operational efficiency and resilience, improvements to surface access and car parking and provision of additional commercial facilities.

3.4.4 Within this scenario, year on year growth rates would decline as the runway constraints become increasingly binding. Most of the growth would be outside the current peak times and therefore the requirement for additional infrastructure would be relatively modest.

3.4.5 Although the airport could grow to provide for up to approximately 61 mppa by 2032/2033 with the existing single-runway operation, this growth would be constrained at that level by the limits on available runway capacity. The master plan stated that:

'Even with a third runway at Heathrow, the DfT [Department for Transport] is forecasting a shortfall in UK airport capacity in 2030 and this shortfall is predicted to increase over the following 20 years. Therefore, it is highly likely that by 2032, capacity constraints across the London airport system will mean that some travel demand is unmet, and as a result the UK will lose valuable connectivity to international destinations and markets.'

3.4.6 This option has been further developed as the future baseline. Details of the future baseline are provided in **ES Chapter 4: Existing Site and Operation**, Section 4.4 (Doc Ref. 5.1) and in the different topic chapters. As set out in ES Chapter 4, with the future baseline, passenger throughput would increase to approximately 67.2 mppa by 2047.

Scenario 2

3.4.7 The existing northern runway at Gatwick was consented in 1979 and is located 198 metres to the north of the main runway. Its use has historically been constrained by a planning condition and an agreement with West Sussex County Council that prevents its use simultaneously with the main runway. The agreement expired in August 2019.

3.4.8 Scenario 2 proposed that a strip of additional pavement is laid to the northern edge of the existing northern runway, so as to allow the corresponding adjustment of its centreline 12m north of its current position. This would allow the dual operation of the main runway and northern runway together to increase the number of aircraft movements and achieve higher passenger throughput. This is in accordance with Government policy of making best use of existing runways.

3.4.9 At the time of publishing the masterplan, this option was estimated to enable passenger throughput to increase to approximately 68 to 70 mppa by 2032/20332.

[2] As set out in Chapter 5: Project Description, with the Project, it is anticipated that by 2047 (the long term forecast year) this could increase Gatwick's passenger throughput to approximately 80.2 mppa.

3.4.10 Within this scenario the airport would remain a two terminal operation (with some requirement for reconfiguration of airfield and other facilities and for new supporting facilities).

Scenario 3

3.4.11 Scenario 3 would continue to safeguard land for an additional runway to the south of the existing main runway for development at some point in the future. The additional runway scenario was predicted to accommodate a throughput of approximately 95 mppa and would require development of the safeguarded land as well as significantly more changes to the existing airport and surrounding roads.

Conclusion

3.4.12 Scenario 1, which has developed into the future baseline, was considered to restrict future growth and Gatwick's ability to contribute to meeting future demand for increased aviation capacity. In the busy summer months (July, August and September), Gatwick is often already operating at, or close to, its peak capacity. Scenario 1 would not allow Gatwick to make best use of its existing runways, as only one runway would be operational at any time.

3.4.13 Scenario 1 (including the future baseline commitments set out in **ES Chapter 4: Existing Site and Operation** (Doc Ref. 5.1)), when compared to Scenario 2, would involve effects (either adverse or beneficial) of a smaller magnitude, as demonstrated by the judgments on impacts resulting from the Project in the different topic chapters.

3.4.14 GAL is not actively pursuing Scenario 3 in light of the Government's support for the third runway at Heathrow but considers that it is in the national interest for the land to continue to be safeguarded to allow for a new runway to be constructed to the south of the airport, to allow for the possibility that it is required in the future.

3.4.15 Scenario 3 is likely to have the largest environmental impact of the three options on account of greater passenger numbers requiring additional airport infrastructure. Compared to Scenarios 1 and 2, there would be additional construction impacts from the new runway and associated buildings (including piers and stands) on areas of greenspace and highway infrastructure. As a result, there would likely be adverse effects of a greater magnitude on ecology, landscape, agriculture, recreation, ground conditions, the water environment and historic environment, traffic and transport, noise, air quality and greenhouse gases compared to Scenarios 1 and 2.

3.4.16 GAL confirmed it would pursue a dual runway option Scenario 2 (use of the northern runway alongside the main runway), which would deliver the following operational, economic, social and environmental benefits:

- aligns with Government policy of making best use of existing runways at all UK airports;
- in comparison to the existing situation and Scenario 1, provides greater UK point-to-point airport capacity to assist in delivering unmet Department for Transport-forecasted aviation demand to 2050, whilst complementing the existing UK hub capacity provided at Heathrow (and in view of any additional capacity potentially introduced by the proposed third runway);
- provides an increase in flights and improved global connectivity;

- would have a reduced scale of environmental impact compared to that arising from an additional new runway (Scenario 3)[3];
- provides additional operational resilience for the airport with the flexibility to routinely use two runways;
- minimises growth outside of the airport boundary;
- does not prejudice the long-term safeguarding of the land to the south of the airport for a future additional runway; and
- delivers significant local economic benefits, including further employment and training opportunities for local people, supply chain opportunities for local businesses, increased local retail and leisure expenditure, and other economic stimuli to the local area.

3.4.17 Overall, it was considered that Scenario 2 offered the optimum approach to making best use of existing runways and increasing UK airport capacity.

3.5. Alternative Design and Technology Options Considered

3.5.1 Making best use of the two existing runways at Gatwick requires alterations to the northern runway to provide a minimum separation distance of 210 metres from the main runway. In turn, this requires relocation of a number of other airfield facilities. In addition, the Project would require amendments to be made to both airside and landside elements of Gatwick, in order to accommodate the increase in aircraft and passenger throughput.

3.5.2 The development of the design for the Project is iterative has formed a key part of the EIA process. The design has been informed by a number of existing constraints, including:

- the location and layout of existing airport facilities;
- operational airport constraints, such as height restrictions for buildings on or close to the runway and operational areas of the airfield;
- the availability of land within the existing airport and the desire to minimise land take outside the existing airport boundary, as far as practicable;
- the location of existing infrastructure, including the highway network and junctions; and
- the location of existing environmental receptors, including watercourses.

3.5.3 In order to secure an aerodrome license and certification, airports need to demonstrate they comply with Civil Aviation Authority (CAA) and European Aviation Safety Agency (EASA) regulations and specifications as well as International Civil Aviation Organization (ICAO) design recommendations or seek exceptions in the form of deviations from the standard. The main documents that influence design through physical/technical requirements or recommendations for design of aerodromes, runways, taxiways, aprons, aeronautical equipment and other airfield infrastructure are set out below:

- Aerodrome Design Manual - Document 9157 (various dates);
- Annex 14 to the Convention on International Civil Aviation: Aerodromes (ICAO, 2018); and
- CAP 168: Licensing of Aerodromes (CAA, 2019).

[3] Refer to topic specific Chapters 7-19 for further information on environmental effects in relation to Scenario 2.

Assessment Process

3.5.4 An options appraisal for the design and layout of the Project components has been undertaken by specialists to consider the feasibility and potential impacts of each of the component options. The process assesses each option for suitability, operational viability, cost and environmental effects. The following criteria have been used to identify appropriate options to be considered in the appraisal:

- each option must be an option that is genuinely possible to deliver (ie they must be a reasonable alternative);
- each option must be identified bearing in mind potential implications for other Project components; and
- each option must be identified bearing in mind potential implications for the remainder of the airport that is not proposed to be affected by the Project.

3.5.5 Using these criteria, a number of design and layout options were identified. The following components were considered within the options appraisal and are described throughout this chapter.

A. Runways
B. End around and exit/entrance taxiways
C. Aircraft holding areas
D. Terminals (including International Departure Lounge (IDL))
E. Piers and stands
F. Hangars
G. Hotels, offices and car parks
H. Foul water
I. Surface water drainage
J. Fluvial flood risk mitigation
K. Displaced Facilities: Waste Management, Engine Running Areas and Rendezvous Point
L. Longbridge roundabout
M. North Terminal roundabout
N. South Terminal roundabout
O. Rail access
P. Inter Terminal Transit System (ITTS)
Q. Surface access: forecourts
R. Active travel (travel routes for pedestrians and cyclists)
S. Airfield construction compounds
T. Highways construction compounds

3.5.6 Table 3.4.1 summarises the criteria used to assess each option.

Table 3.4.1: Assessment Criteria

Category	Sub-criteria
Operations	Safety: Would the option allow for continuous safe operation of the component and the airport as a whole?
	Security: Would the option have any implications on airport security?

Category	Sub-criteria
	Resilience: Would the option be future proof?
	Airfield operations and performance: Would the option allow for continuous effective and efficient operation of the airport?
	Terminal operations: Would the option have any implications on how the terminals operate?
	Passenger experience: What impact will the option have on passenger experience?
Business Case	Capacity: Would the option be able to accommodate passenger growth of at least 75.6 mppa?
	Capital costs: is it considered to be cost-efficient based on the nature of the works?
	Operating cost: is this a cost-efficient option over the lifespan of the component?
	Airline cost: Would the option impact upon airline revenue, eg servicing aircrafts and / or passengers?
	Value for Money: Does the option represent value for money?
Deliverability	Programme implications: Can the option be delivered within the Project programme (ie can it be operational by the year it is anticipated to be required)?
	Buildability: Are there any engineering constraints and can the component physically be constructed?
	Construction logistics: Are there any complexities or constraints around construction, for example parallel works on another component?
	Safe working: Are there any implications for safety during construction and if so, can these be mitigated?
Planning	Consenting requirements: What consents, licenses or permits are required to deliver the option?
	Consenting risk: Does the component comply with national and local policy and regulatory requirements?
	Design: does the option promote good design?
Surface Access	Performance: Would the option allow for the efficient operation of the (altered) surface access network?
	Current network: Would the option have any impacts on the efficient operation of the current surface access network?
	Sustainable Travel: would the option impact upon the existing and future travel opportunities?
Water	Flood risk: Would the option result in any increase or decrease in flood risk and if so, to what extent?
	Water environment: Would the option result in any impacts on the water environment including ground water?
Environment (ecology, heritage, soils, visual)	Designations: Would the option result in any harm to designated or non-designated heritage assets?

Category	Sub-criteria
	Land and soils: Would the option result in the loss of best and most versatile soils or geodiversity?
	Ecology: Would the option result in any impacts on designated or non-designated habitats? Would the option provide opportunities for habitat provision or enhancement?
	Landscape and visual: Would the option result in any impacts on landscape character or harm to views?
Community (noise, air quality, health, socio-economic)	Emissions: Would the option have the potential to result in emissions that could have an impact on communities (noise, dust or odour)?
	Employment: Would the option impact upon local businesses and/or employment?
Land and Property	Loss of land and/or buildings: Would the option result in a loss of land currently used for other land uses, or existing buildings, in particular where they are not within GAL's ownership?

3.5.7 For each category a 'scoring' system was used to qualitatively assess each design and /or layout option using professional judgement and experience of the site and surrounding area. The scoring system allowed for a consistent approach to be applied to each category. The full appraisal, based on a five-scale red, amber, green (RAG) approach is set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3).

3.5.8 Further details on the highway improvements options, specifically related to the North Terminal Roundabout is provided within **ES Appendix 3.5.2: North Terminal Roundabout Options Development** (Doc Ref 5.3). The assessment methodology for highways is consistent with Transport Analysis Guidance (TAG) and has been developed in consultation with National Highways and local highway authorities (Department for Transport, 2022).

3.5.9 A description of each category is provided in Table 3.4.2.

Table 3.4.2: Scoring Criteria for Alternative Options

A '**good'** option: Appears likely to be acceptable in terms of the relevant appraisal attributes. Meets land availability, deliverability, cost and business case criteria. Environmental effects and/or consenting risks may arise but on balance appear likely to be acceptable with mitigation.
A '**relatively good**' option: Land agreements, deliverability, cost and business case requirements appear achievable, although not as ideal as a good option. Environmental effects and / or consenting risks may arise but on balance appear likely to be acceptable with mitigation.
A '**feasible**' option: Land agreements, deliverability, cost and business case requirements appear to be achievable but may require compromise. Environmental effects and / or consenting risks may arise but appear likely to be acceptable on balance with mitigation.
A '**less feasible**' option: Where the achievement of land agreements, deliverability, cost and business case requirements may be problematical. Environmental effects and / or consenting risks are likely to arise and it is not certain that all such effects could be successfully mitigated.

A '**high-risk**' option: Effects, policy conflicts and / or consenting risks that are likely to remain after mitigation are likely to carry such weight that the site is unlikely to be granted consent. Deliverability and/or cost and business case criteria are unlikely to be achievable.
An '**unworkable**' option: Does not meet critical requirements and cannot be mitigated.

3.6. Summary of the Alternatives Considered

3.6.1 A summary of the reasonable alternatives studied by the Applicant and the rationale for selecting the Project layout is provided in the following sections. Key construction or operational requirements which have influenced the identification of the options are presented before the appraisal of each project component within **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3).

3.6.2 The RAG assessment, described in Section 3.5, forms the basis of the 'initial appraisal' presented within this chapter and was completed prior to consultation. After completion of the initial appraisal, one or more options were identified by specialists as scoring high enough to warrant consideration as a 'preferred option'. Following submission of the PEIR and the Autumn 2021 consultation and Summer 2022 consultation (with respect to off-site highways), some options were refined or new alternatives proposed. Confirmation of any such changes following consultation has been stated under each component assessed, within the section entitled 'preferred option'.

3.6.3 A summary of the highway options presented relating to the North Terminal Roundabout following both periods of consultation are provided in **ES Appendix 3.5.2: North Terminal Roundabout Options Development** (Doc Ref 5.3). It provides further detail to the three main options presented in this chapter (Component M).

3.6.4 The options taken forward as part of the Project are summarised in Table 3.4.3.

A. Runways

3.6.5 Gatwick's existing main runway (08R/26L) has a usable length of 3,311 metres in the 08R (easterly) direction and 3,399 metres in the 26L (westerly) direction[4]. Gatwick's parallel northern runway (08L/26R), is located 198 metres to the north of the main runway. The northern runway is currently not used as a runway at the same time as the main runway. The northern runway is shorter with a length of 3,040 metres in the 08L direction and 2,703 metres in the 26R direction and is non-instrumental.

3.6.6 In order to operate as a dual runway airport there must be a separation distance of 210 metres between the northern runway and the main runway. This distance is required to meet EASA standards for closely spaced parallel runways.

3.6.7 The airfield safety case for a dual-runway operation has been the subject of detailed work with the Regulator who will provide a 'Letter of No Impediment' to attest that any risks associated with the safety of the proposed operation can in their view be effectively mitigated.

[4] 26L and 08R relate to the direction of use of the runway depending on the wind direction. A description of this is provided in Chapter 4: Existing Site and Operation.

3.6.8 Four options have been identified based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3) to ensure the separation distance between runways is maintained. The options considered are presented below.

- Option A1 - moving the existing northern runway centreline north by 12 metres to achieve a separation distance of 210 metres between the Northern and Main Runways' centrelines in line with ICAO/EASA standards for closely spaced, non-instrumented, parallel runways. This enables the main and northern runway to operate simultaneously, in a dependent dual runway configuration. This option would also require moving Taxiway Juliet northwards, alterations to Taxiway Lima, provision of end around taxiways and provision of a runway holding area for the northern runway.
- Option A2 - challenge the EASA 210 metre separation distances. This option would involve CAA approval of a safety case to permit the airport to operate both runways simultaneously in a dependent dual runway configuration, whilst separated by 198 metres. The northern runway would remain as is today, 198 metres away from the main runway rather than the 210m IACO/EASA standard, however other enabling airfield works would still be required. This would include moving Taxiway Juliet northwards, alterations to Taxiway Lima, provision of end around taxiways and provision of a runway holding area for the northern runway. This option would necessitate a detailed, robust safety case to validate that a dependent operation of two closely spaced parallel runways would be safe as the EASA regulations currently stipulate minimum separation of 210 metres for non-instrumented runways.
- Option A3 - moving the main runway centreline south by 12 metres. This option would involve widening the main runway such that the centreline is moved 12 metres to the south. This option would also require the reconfiguration of navigational aids and equipment servicing the main runway. Other airfield enabling works, such as the re-alignment of Taxiway Juliet, Taxiway Lima, provision of end around taxiways and a runway holding area for northern runway would still be required to avoid conflicts with northern runway operations and facilitate increased air traffic movements. The northern runway would remain in its current position.
- Option A4 - re-purpose the northern runway for smaller aircraft only. This option would involve re-sizing the northern runway to restrict operations to Code C aircraft only. This would result in the runway centreline being moved and the runway strip narrowed to accommodate Code C aircraft or smaller only (aircraft categories are described in **ES Chapter 4: Existing Site and Operation** (Doc Ref. 5.1)). This would provide a 206 metre separation between the main runway and Taxiway Juliet, which is insufficient for simultaneous, closely spaced runway operations. Other enabling airfield works, such as moving Taxiway Juliet northwards, alterations to Taxiway Lima, provision of end around taxiways and provision of a runway holding area for the northern runway would still be required.

3.6.9 Options A1 to A4 are shown on **ES Figure 3.3.1** (Doc Ref. 5.2).

Initial Appraisal

3.6.10 Option A1 required construction works to be undertaken on or near to both the northern and main runways and therefore required careful phasing and coordination to ensure continual safe operations. As a result, the option scored 'less feasible' in terms of the operations criteria compared to some other options, however it was still deemed deliverable. Capital costs were considered relatively low compared to other options and the option scored as 'feasible' against the business case. As the extent of the works was contained within the current operational zone,

away from many sensitive receptors, the option scored well against the environmental, community and surface access criteria. The option was largely within GAL owned land and made use of existing runways, as set out in Government policy so scored well against the planning and land criteria. Part of the work was located within the 1:20 fluvial floodplain and required mitigation. Having regard to **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), this realignment was not considered to result in increased noise, vibration or reduced air quality levels at nearby receptors.

3.6.11 Option A2 achieved the highest score against the business case (a 'good' option), surface access, environment and land on account of there being no requirement for capital expenditure/physical works on the runway. It also scored well against deliverability and community impact as a result. However, this option necessitated development of a new, unprecedented dependent runway model. Consequently, there was a high risk that it would not gain regulatory consent.

3.6.12 Option A3 required less capital investment compared with Option A1, due to fewer construction works required to deliver the solution. However, this option necessitated the main runway being out of operation for the full period of construction. This required the northern runway to be used for aircraft operations during construction, which would have significantly impacted traffic movement volumes and provide no low visibility runway operations (as the northern runway is a non-instrument runway). As a result, this option scored as 'high risk' against the business case criteria and as only 'feasible' against the operations criteria. Some use of third party land was required to change navigational aids servicing the main runway, meaning the option performed worse than others against the land criteria. Environmentally this option required the removal of a strip of amenity grassland, albeit of low ecological value. Part of the work was located within flood zone 2 and required mitigation. As with Option A1, the extent of the works was contained within the current operational zone, away from sensitive receptors. The option was therefore deemed to perform well against the environmental, community and surface access criteria.

3.6.13 Option A4 scored well against the environmental, business case and deliverability criteria. However, it scored as 'high risk' in terms of operations due to lost resilience for long haul arriving and departing aircraft and impacts on existing infrastructure after the runways are operational. The option also scored as 'high risk' in terms of the planning criteria, since securing regulatory consent would be challenging due to the resulting separation distance being below the regulatory minimum of 210 metres.

Preferred Option

3.6.14 Following review of the initial options, Option A1 was taken forward as the preferred option for runways. Option A1, whilst presenting challenges to operations during construction, in its end state can deliver a dependent runway model, which is safe, resilient and generates the requisite capability to meet the business case requirements. As the only option with no 'high risk' ratings, Option A1 also scores 'good'/'relatively good' against the environmental, community, planning, land, business case and deliverability criteria, and effects on flood risk can be mitigated (see **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3)). No changes have been made to the preferred option following consultation.

B. Taxiways

Taxiway Juliet and other Airfield Taxiways

3.6.15 Gatwick's existing Taxiway Juliet provides a parallel taxiway to the north of the northern runway. In addition, the airfield includes:

- a network of taxiways to the north of Taxiway Juliet, providing the ability for aircraft to move around the airfield and access the existing piers, stands, Taxiway Juliet and the runways;
- exit taxiways between the main runway and the existing northern runway; and
- exit/entrance taxiways between Taxiway Juliet and the existing northern runway.

3.6.16 To accommodate the 12 metre strip on the northern edge of the northern runway (preferred Option A1) and increased capacity, a number of alterations to the existing taxiways would be required. Taxiway Juliet would need to repositioned northwards to enable aircraft to use the taxiway independently of northern runway. A new spur (known as the Taxiway Juliet West Spur) would be required to the north west of Taxiway Juliet in order to provide a passing lane and allow air traffic control to effectively sequence aircraft for departure on the main and northern runways during easterly operations. In addition, alternations to Taxiways Lima, Tango, Whiskey, Victor and Zulu would be required to ensure smooth operation of the airfield. Further detail on the proposed changes to taxiways as part of the Project are presented in **ES Chapter 5: Project Description** (Doc Ref. 5.1) and shown on **ES Figure 5.2.1** (Doc Ref. 5.2).

3.6.17 The alterations to these individual taxiways have not been subject to the options appraisal process due to complex safety and operational constraints. The smooth operation of aircraft movement around the airfield relies on a suitable configuration of taxiways, holding areas and piers which are subject to safety standards. The changes to Taxiway Juliet and other taxiways detailed as part of the Project are considered necessary to deliver the realigned Northern Runway as there are no other feasible alternative options and a 'Do Nothing 'scenario would not be compatible with the relocation of the Northern Runway. Therefore, the taxiways have been identified as a 'single option' solution that would assist with aircraft flow and easing congestion on Taxiway Juliet. The changes to the Taxiways Lima and Tango would provide the opportunity to construct additional stands and a pier within the areas adjacent to them. The pier and stand options are considered further in Section E: Piers and Stands.

End Around and Exit/Entrance Taxiways

3.6.18 Gatwick currently has seven taxiways between the main runway and the northern runway. Gatwick currently does not employ end around taxiways in its operation. However, GAL recognise that provision of end around taxiways is an effective method of deconflicting flow between closely spaced parallel runways.

3.6.19 Based on the requirements outlined in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref 5.3), the following options were identified:

- Option B1 – vacate onto a new end around taxiway inside the airport boundary;
- Option B2 – taxi the full length of the runway and wait to vacate at the end;
- Option B3 – arriving aircraft to taxi across the northern runway behind a departing aircraft, operations would be further optimised by holding smaller aircraft on exit taxiways between the two runways;

- Option B4 – vacate onto a new dependent end around taxiway at the western end of the airfield but outside the boundary;
- Option B5 – vacate onto a new rapid exit taxiway to join a new independent end around taxiway outside the boundary; and
- Option B6 – a new southern taxiway with rapid exit taxiway connections from the main runway in combination with Option B2, B3 or B4 and within the boundary if possible.

3.6.20 Options B1 to B6 are presented on **ES Figure 3.3.2** (Doc Ref. 5.2).

Initial Appraisal

3.6.21 Option B1 impacted upon runway length, due to the reduced runway end safety area. However, from a business case perspective, this option met capacity requirements conditional on traffic and flow mix. The option resulted in loss of some trees and vegetation and required the acquisition of at least part of the Purple Parking estate. It scored well in deliverability, for planning, surface access and community. The works were contained within the existing airport boundary and the solution was estimated to generate negligible noise impact and could be delivered well within the required timeline. As set out within **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), this option was located within Flood Zone 3 and required mitigation.

3.6.22 Options B2 and B3 scored well against the environmental, planning and property criteria as they required no new built development and no additional hardstanding. However, the options did not deliver the required capacity, so scored poorly against the business case criteria.

3.6.23 Options B4 and B5 scored poorly against planning, environment, community and property criteria as they involved development of new infrastructure on greenfield land beyond the western extent of the airport boundary. These were not feasible options when the main runway is operating in an easterly direction (08R) due to the proximity of the main London-Brighton train line, and the works also required acquisition of third-party land. However, Option B5 scored a good rating against the operational criteria allowing the operation to fully deconflict runway operations.

3.6.24 Option B6 scored less well on the business case criterion, being the most expansive and expensive option in terms of build, along with the added requirement to acquire multiple third party sites to the south of the main runway. However, it was considered ‘feasible’ in terms of delivering the base flow and resilience. In terms of deliverability, the option scored below Options B1 to B4 due to the requirement for works in close vicinity to the runway. The option scored poorly against surface access due to the additional construction vehicle movements associated with the scale of construction. Finally, the option scored less well for the environmental criteria due to the location within the flood zone and considerable loss of trees, planting, hedgerows and soil.

Preferred Options

3.6.25 Option B1 is the most favourable individual option. In terms of the business case, the option performs best, meeting much of the capacity requirement whilst remaining within Gatwick’s existing western boundary. Once constructed, the operational complexities are anticipated to be lower than several other options and delivery within the required timescales is achievable. It is recognised that the location of the option is within the Flood Zone 3 and would require mitigation, and that the option would result in some tree loss and would require the acquisition of part of the Purple Parking estate, but this is unlikely to result in adverse effects.

3.6.26 Option B1 alone would not be capable of delivering the necessary capacity and resilience required to handle up to 75.6 mppa by 2039 (80mppa by 2047) estimated volume demand. The options considered most compatible with Option B1 to meet future capacity requirements were Options B2 and B3. Options B2 and B3 receive 'good' or 'relatively good' ratings against all criteria, bar operational and business case criteria. Whilst the options are considered 'high risk' against the business case criteria, this score was based on their inability to deliver the necessary capacity in isolation. A 'hybrid' solution was deemed to deliver the best overall performance, where Option B1 scores better for the operational and business case and Options B2 and B3 score better for environment, water and land. No significant changes were made following consultation on the preferred options for end around taxiways and exit/entrance taxiways. Therefore, this combination of Options B1, B2 and B3 was taken forward for further design development.

C. Aircraft Holding Areas

3.6.27 Currently, a holding area known as 'Alpha Box' is located east of the northern runway, west of Pier 1 and north east of the main runway. This area serves as a holding and sequencing zone for the main runway, when operating in a westerly direction (26L). When operating in easterly direction on the main runway (08R), aircraft hold on the northern runway and along Taxiway Juliet.

3.6.28 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options were identified:

- Option C1 – Beta Box sited predominantly on the existing 140s stands, central to the airfield operation, at the north eastern end of the northern runway. The Beta Box would principally provide eight parking stands adjacent to the northern runway, with the seven 130s stands to the north remaining available as remote serviced stands, as they are today. A Code C taxiway, between 130s and 140s stands would be provided to serve as access and egress route for aircraft utilising the Beta Box.
- Option C2 – Juliet Box sited on the existing Taxiway Juliet, central to the airfield operation, north of the northern runway. The Juliet Box would consist of two Code C centrelines and a single code F centreline, facilitating interdependent flow and holding operation on Taxiway Juliet.
- Option C3 – Charlie Box sited on the existing 130 and 140 stands, central to the airfield operation, northeast of the northern runway. The new configuration would provide aircraft stands and operational aircraft hold points which allow aircraft to be held just prior to accessing the northern runway to optimise runway occupancy efficiency and remove aircraft from busy taxiways.

3.6.29 Options C1 to C3 are presented on **ES Figure 3.3.3** (Doc Ref. 5.2).

Initial Appraisal

3.6.30 All options were located in areas of existing hardstanding within the airport. None of the options resulted in any additional greenfield land take or required any land outside of the existing airport. As shown in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), in terms of environmental effects, all scored similarly and were not likely to result in adverse effects as all construction was on a fully pavemented area.

3.6.31 All three of the options scored 'good' or 'relatively good' against the planning, surface access, environment, community, water and land criteria. In terms of deliverability, Option C3 scored 'feasible' for deliverability, which is less favourable than Options C1 and C2. All three options scored 'less feasible' against the business case criteria; all options show different constraints in terms of operation and the mitigation required. Option C1 scored 'high risk' for operability criterion because it failed to provide a through route for Code F traffic, meaning that the northern runway would need to be utilised. Option C2 scored 'high risk' because it necessitated complex aircraft coordination which could present risks.

Preferred Option

3.6.32 As set out within the initial appraisal, no option is likely to result in adverse environmental effects. Option C3 (Charlie Box) would deliver against all stated requirements, apart from business case, where this was assessed as 'less feasible', as its construction is larger and more disruptive, it is anticipated that these impacts can be successfully mitigated without compromising the other requirements. This is not possible with Options C1 and C2 which would continue to score 'high risk' for other standards. No changes were made to the preferred option following consultation for holding areas. Option C3 is therefore the preferred option and has been taken forward in the proposals.

D. Terminals (including International Departure Lounge (IDL))

3.6.33 Gatwick's existing passenger terminals are the North Terminal and South Terminal. They are directly served by the M23 motorway spur off the M23, which runs approximately 1.7 km to the east of the airport. The airport sits on the Brighton-London mainline railway. Gatwick's railway station is located at the South Terminal, and there is a direct transit link to the North Terminal. The North Terminal opened in 1988, and the South Terminal opened in 1958. The existing terminals have gross floor areas of approximately 98,100 m^2 and 119,300 m^2 respectively (not including the piers or those parts of the baggage operation that are outside of the terminal buildings).

3.6.34 A number of options have been identified to address the increase in passenger numbers associated with dual runway operations of up to 75.6 mppa by 2038 (80mppa by 2047). The options include new terminal buildings as well as extensions to the existing terminals. Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref 5.3), the following options were identified.

- Option D1 – 'do nothing' scenario, ie no changes would be made to the existing North and South Terminals;
- Option D2 – a new terminal in the north western part of the site on current airport car parking land. New surface transport modes (eg additional ITTS links) to provide access to the new terminal would be required;
- Option D3 – a new terminal to the south of the existing main runway. New surface transport modes (eg additional ITTS links) to provide access to the new terminal would be required. The new terminal and a new pier (which would also be required for this option) would be constructed on land currently safeguarded for another runway, which is outside of the site boundary;
- Option D4 – expand the existing South Terminal only. Additional pier infrastructure would be required under this option. Works would include expansion of the terminal building over three

floors providing a total Gross Internal Floor Area (GIFA) of circa 70,000 m^2, connection to a new autonomous vehicle facility and re-provision of two office buildings;

- Option D5 – expand the existing North Terminal only. Additional pier infrastructure would be required and expansion of the terminal building over three floors providing a total Gross Internal Floor Area (GIFA) of circa 60,000 m^2 and connection to a new autonomous vehicle facility; and
- Option D6 – expand both existing South and North Terminals. The forecourts and approaches to both existing terminals would be enhanced, with routes providing access to the terminal frontage, multi-storey and long stay car parks, hotels and pick-up and drop-off areas for different transport modes.

3.6.35 Options D1 to D6 are presented on **ES Figure 3.3.4** (Doc Ref. 5.2).

Initial Appraisal

3.6.36 Although Option D1 resulted in the lowest capital costs (at least initially) and lowest environmental impacts as no changes would occur, it was not capable of accommodating the proposed increase in passenger throughput. This is due to space and capacity limitations within the terminal buildings to accommodate the increase in passenger numbers. Therefore, this option was discounted.

3.6.37 As a result of being located within the airport on land already occupied by hardstanding, none of the other options were likely to result in significant issues relating to water/flooding, environment (ecology, heritage, soils, visual) or community (noise, air quality, health, socio-economic) impacts, with the exception of Option D3. Option D3 was located on the southern edge of the operational airport and was likely to be visible from receptors outside of the airport. In relation to operational, business, planning and land-related matters, some options scored significantly better than others, as shown in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3).

3.6.38 A new terminal, as outlined in Options D2 and D3, would provide the required capacity but would be expensive to deliver and operate. Extensive landside infrastructure would be required to get the passengers to and from the terminal (especially to / from the train station). In addition, Option D3 required the considerable acquisition of land and prejudiced long term development in an area currently safeguarded for a new runway (in the event that it is required) outside of the airport boundary.

3.6.39 Options D4 and D5 were both deliverable. However, the terminals do not currently have sufficient pier infrastructure to accommodate the anticipated passenger numbers and therefore infrastructure would need to be increased significantly. The extensions to each terminal would occur on airport land, however the facilities which would need to be displaced to create room for the terminal expansion would have resulted in third party land take. Extending only one terminal would have also created surface access issues.

3.6.40 Option D6 created the smallest expansion requirement in each terminal with the fewest consequential requirements in terms of additional pier infrastructure or displaced areas requiring relocation. The option also scored well in relation to the environment and community as the extensions would occur within the airfield and would not require any additional greenfield land take, minimising any environmental impact.

Preferred Option

3.6.41 Option D6 performs best overall as it maintains a balanced split of demand that makes the best use of the combined residual capacity in both terminals, thereby limiting the scale of expansion required in each. This option would not require the acquisition of additional land outside of the airport boundaries, and balance of growth would avoid placing too much pressure on any particular element of surface access infrastructure, eg North or South Terminal roundabouts. As shown in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), Option D6 also scores well against the environment criteria, where there would be minimal effects as a result of construction works (compared to Options D2 and D3). In addition, it scores well against planning, water and community criteria. No changes were made to the preferred option following consultation, and the modest expansion to the North and South Terminals has been progressed as part of the design development.

E. Piers and Stands

Piers

3.6.42 Gatwick currently supports six piers from which passengers embark and disembark aircraft (Piers 1, 2 and 3 at the South Terminal and Piers 4, 5 and 6 at the North Terminal). The number of aircraft stands serviced by each pier is dependent on the type and size of aircraft. Additional pier capacity would be required to support the additional number of aircraft movements and maintain current standards for pier service for passengers.

3.6.43 Based on the requirements set out in **ES Appendix 3.5.1; Options Appraisal Tables** (Doc Ref. 5.3), the following 12 options have been identified:

- Option E1 – Pier 6 extension full service[5] proposal;
- Option E2 – current tower stands location, remote, mixed-use pier proposal;
- Option E3 – current tower stands (Code C only);
- Option E4 – new Pier 7 in the location of the existing cargo facility (single loaded[6]);
- Option E5 – new Pier 7 in the location of the existing cargo facility (double loaded[7]);
- Option E6 – Pier 6 southern single pier;
- Option E7 – Pier 6 southern double pier;
- Option E8 – Pier 4 and 5 reconfiguration;
- Option E9 – Pier 5 west extension;
- Option E10 – new Pier 7 immediately south and west of the existing cargo facility (single loaded);
- Option E11 – Pier 3 western extension; and
- Option E12 – other Pier 3 alternative options (enhancement and reconfiguration).

3.6.44 Options E1 to E12 are shown on **ES Figure 3.3.5** (Doc Ref. 5.2).

Initial Appraisal

3.6.45 None of the options required any greenfield land take or land take outside of the current airport boundary. Options E2, E3, E4, E5 and E10 all involved the construction of new piers located in the existing location of the cargo facility (E4 and E5), to the south and west of the cargo facility in

[6] A single loaded pier only allows aircraft to access one side of the pier.
[6] A single loaded pier only allows aircraft to access one side of the pier.
[7] A double loaded pier allows aircraft to access both sides of the pier.

an area of storage/manoeuvring land (E10), or in the location of existing remote stands to the north of Taxiway Juliet (E2 and E3).

3.6.46 Options E1, E6 and E7 involved the extension and/or reconfiguration of Pier 6, while Options E8, E9, E11 and E2 included the extension and/or reconfiguration of other piers. The deliverability of Options E1, E2, E3, E8, E9 and E11 involved complex airfield reconfiguration which would have resulted in major disruption to the airport during construction. Similarly, due to the location of Options E6, E7 and E12, the flow of aircraft within the airfield would have been severely disrupted (both during construction and operation) meaning these options were discounted. Options E4 and E5 would be located in the area of the existing cargo centre, meaning displacement of the cargo functionality would have resulted in these options being cost prohibitive.

3.6.47 All options, except Option E5, were unlikely to have significant environmental effects as they were located on areas of hardstanding. Options E1 and E4-E12 affected the available floodplain to different degrees, and all options would require mitigation.

Preferred Option

3.6.48 Following review of the initial options, Option E10 was taken forward as the preferred option for piers. This option (Pier 7 south of cargo) performed best overall in the criteria considered, as shown in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3). It was the only option with no score lower than 'feasible' against any of the criteria, including the environmental criteria) and its location, adjacent to the proposed Taxiway Lima extension, provides the greatest free-flow of aircraft on the taxiway system, avoiding the risk of delays caused by congestion associated with the vast majority of the other options. No changes have been made to the preferred option for an additional pier following the statutory consultation on the Project. Therefore Option E10 was taken forward for further design development.

3.6.49 Option E10 would support passenger growth associated with the dual runway operations and would serve both North and South Terminals. It is proposed that passengers would reach the pier using autonomous vehicles with stations for boarding and disembarkation from these vehicles being provided at each Terminal. The vehicles would operate on a shuttle basis, allowing passengers to make their own way to the Pier and from there to their gate.

3.6.50 The pier would consist of a ground floor plus two levels (arrivals and departures), including departure gate areas, together with some commercial facilities at the first floor level.

Stands

3.6.51 The airport currently operates 136 stands or centrelines. This number is based on full Code C[8] centrelines for consistency. Many stands are configured and used flexibly to accommodate Code C and E aircraft.

3.6.52 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref.5.3), the following 10 options have been identified:

- Option E13 north west zone (phase 2) – new stands, mirroring the existing '230 stands', on the west side of Taxiway Uniform, south of the Boeing hangar;

[8] Details of aircraft categories are provided in **ES Chapter 4: Existing Site and Operation** (Doc Ref. 5.1)

- Option E14 (60s (Sixties) expansion) –additional stands to the south of the existing 60s, opposite Pier 5;
- Option E15 (Oscar stands) – new Oscar stands in the area to the south of Hangar 7, currently a landside area but directly bordering the airfield;
- Option E16 (Hangar 7 stands) – new stands on the site of Hangar 7 north of the 'Oscar' area outlined in Option 3. This is currently an operational area, providing for aircraft maintenance;
- Option E17 (40s (Forties) stands) – convert the existing 'push-and-hold', unserviced stands 40s directly to the east of Pier 6, to be serviced stands;
- Option E18 (Taxiway Yankee – MA 1 stands) – new stands to the east of Hangar 6 on the south side of the airport. The existing area is currently occupied by long stay car parking and industrial tenants;
- Option E19 (South Terminal 'edge' stands) – new stands on the edge of Pier 4/ Pier 4 apron area;
- Option E20 (Taxiway Lima extension stands) – new stands bordering the northern edge of Taxiway Lima extension, on an area currently occupied by long stay car parking;
- Option E21 (Hangar 7 stand) – a single new Code C stand north east of Hangar 7; and
- Option E22 (Stands 150-151) – reconfigure stands 150-151 and remove stand 152.

3.6.53 Options E13 to E22 are shown alongside the piers on **ES Figure 3.3.5** (Doc Ref. 5.2).

Initial Appraisal

3.6.54 Option E13 scored lower than other options against all criteria, including environmental as it involved the conversion of green space into impermeable area and created fluvial and pluvial flooding risk. Option E14 scored well in terms of environment and community given its location on the airfield on existing hardstanding, but poorly against operational criteria.

3.6.55 Option E15 scored well environmentally as there would be no greenfield land take and the area provides opportunity to improve drainage on older parts of the airfield. Option E16 was 'high risk' for the business case as it would require the demolition of the existing hangar and relocation to a new hangar facility. However, environmentally, this option scored well as there would be no greenfield land take. Option E17 scored well against all criteria but would require mitigation for fluvial flood effects. Option E18 was considered 'less feasible' due to operational issues but performed well for the environmental criteria and was the only option not located within a flood zone. Option E19 was the least preferable option overall. It involved loss of greenfield land, could affect the noise experience, and created fluvial and pluvial flooding risk.

3.6.56 Option E20 scored well overall as it could be delivered from a landside site. The area is existing hardstanding but may be affected by fluvial flooding and require mitigation. Options E21 and E22 scored well on all criteria.

Preferred options

3.6.57 An option appraisal of stands was not undertaken for the PEIR. However, this later assessment had no effect on the options appraisal undertaken previously for other components.

3.6.58 There is no single option capable of delivering the required amount of stand capacity. A 'hybrid' solution was deemed to deliver the best overall performance. Thus a combination of Option E15 (Oscar Stands), Option E17 (40s (Forties) Stands) to be utilised for overnight aircraft parking/remote stands and Option E20 (Taxiway Lima Extension Stands) offers the requisite capacity and compatibility with the Lima Taxiway extension proposals and the preferred pier

option (Option 10 Pier 7, south of cargo). Options E15, E17 and E20 would be built on existing hardstanding areas with no greenfield land take and no scores were lower than 'feasible' against any of the environmental, flood risk (although mitigation would be required), community and land criteria. All these options will be progressed.

3.6.59 Further design development resulted in the identification of additional opportunities to accommodate enhanced stand provision. Consequently, Option E21 (single Hangar 7 stand) and Option E22 (Stands 150-151) have been included within the Project. Both these options score well against the appraisal criteria (assessed between 'good' and 'relatively good'). This further design development did not affect the appropriateness of the options considered previously.

F. Hangars

3.6.60 There are currently four existing on-airport hangars which are operated by British Airways, Virgin Atlantic, easyJet and Boeing. It is currently anticipated that a further hangar would be required as part of the Project in a building up to 32 metres in height. The hangar would be required to accommodate larger aircraft.

3.6.61 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options have been identified:

- Option F1 - a site which is currently used for car parking (Long Stay Summer Special car park (Zone T));
- Option F2 - a site adjacent to Hangar 6 (British Airways Hangar) (south of the main runway) currently used for car parking;
- Option F3 - a site within an area of the airport known as Oscar, adjacent to the existing Virgin hangar;
- Option F4 - a site currently used for Long Stay Summer Special car parking (block park storage and front of house provision); and
- Option F5 - land adjacent to the Boeing Hangar.

3.6.62 Options F1 to F5 are presented on **ES Figure 3.3.6** (Doc Ref. 5.2).

Initial Appraisal

3.6.63 All options were located within the airport boundary and were located in areas of existing hardstanding.

3.6.64 Option F1 was a 'feasible' option in terms of operational requirements and business case, albeit it would result in the loss of some existing car parking. However, lost car parking spaces could be accommodated within the existing car park estate through the provision of decking, so the effects were considered minimal (see **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3)). No issues in terms of deliverability or planning were considered likely. This option could give rise to visual impacts.

3.6.65 Option F2 presented significant concerns in terms of operational requirements as it required aircraft to cross the runways. This option also reduced car parking which needed to be re-provided elsewhere. No issues were envisaged with deliverability or planning. Similarly to Option F1, this option could give rise to visual impacts.

3.6.66 Options F3 and F4 raised concerns in terms of operational and business case requirements as the useable areas proposed were insufficiently sized for larger aircraft (taking into account the

need to share the space with other airfield infrastructure). The location for F3 would also be required for new stands and therefore a hangar co-located in this location would interfere with the movement of larger aircraft using Taxiway Juliet. Option F4 was located in the preferred areas for the construction of a new pier (see paragraph 3.6.50) and Taxiway Lima. Therefore, the option required consideration of the deliverability of other necessary airport infrastructure. These options also required construction in a congested part of the airfield. Both options were partially located within flood zones 2 and 3 and therefore additional mitigation was required. No further issues were envisaged with deliverability, planning or environmental factors for these options.

3.6.67 Option F5 raised concerns in relation to operations and the business case, as the area was insufficiently sized to deliver the hangar, associated infrastructure and manoeuvring areas. Due to the location, Option F5 was more straightforward in terms of construction compared to F3 and F4. The location was adjacent to the River Mole corridor and Pond A and was located within flood zones 2 and 3. Therefore, appropriate drainage infrastructure and pollution control was required during construction and operation. In addition, areas of grass were needed to be removed to allow for the construction of this option. This option could potentially give rise to visual impacts.

Preferred Option

3.6.68 No changes have been made to this option following consultation.

3.6.69 Option F1 performs best overall, in particular against the operations criteria, given it provides a site of sufficient size and would be contiguous to an existing taxiway. Environmentally, it is a 'relatively good' option, with the other options varying between 'good' and 'relatively good'. Although this option could give rise to visual impacts, the effects could be mitigated. Its location is well placed in relation to the emerging preferred pier and stand options and Taxiway Lima extension works. Option F1 will therefore be taken forward as the preferred option for further design development.

G. Hotels, Offices and Car Parks

3.6.70 Gatwick is currently served by a number of on and off-site hotels with eight on airport hotels, providing approximately 3,000 rooms in total. Gatwick also has on-site car parking, providing approximately 46,700 passenger and staff spaces (as of summer 2019). In addition, there is approximately 34,590 m^2 of on-site office space in main office buildings. In the absence of the Project (in the future baseline scenario), additional capacity is currently planned to be implemented as follows:

- reconfiguration of the existing Hilton hotel to provide 50 additional bedrooms and 820 car parking spaces;
- Multi-storey car park (MSCP) 7 (North Terminal): 3,250 additional spaces; and
- use of robotics technology within existing long-stay car parking areas to increase capacity, resulting in an additional 2,500 spaces.

3.6.71 Since the statutory consultation, the BLOC hotel extension and MSCP 4 development will not be taken forward and have been removed from the future baseline.

3.6.72 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options have been identified:

- Hotels

- Option G1 - located within the existing car park H;
- Option G2 - located within the existing car park Y;
- Option G3 - located on the South Terminal car rental front of house site;
- Option G4 - located adjacent to and north of MSCP3; and
- Option G5 - comprises the conversion of Destinations Place from office to a hotel.

- Offices

  - Option G6 - provision of office space within the site of car park H; and
  - Option G7 - provision of office space within the site of car park Y.

- Car Parks

  - Option G8 - new surface car park in the location of Pentagon Field;
  - Option G9 - new decked car park in the location of Pentagon Field;
  - Option G10 - new MSCP in the location of existing car park H (1) (north);
  - Option G11 - new MSCP in the location of existing car park H (2) (south);
  - Option G12 - new MSCP in the location of existing car park Y;
  - Option G13 - new MSCP in the location of existing car park J (currently used for car rental);
  - Option G14 - new decked parking in the location of existing self-park north car park (one deck);
  - Option G15 - new decked parking in the location of existing self-park north car park (additional deck);
  - Option G16 - new car park in the location of Crawter's Field;
  - Option G17 - new decked car park in the location of existing car park X; and
  - Option G18 - new decked car park in location of existing valet MA-1 storage area.

3.6.73 Options G1 to G18 are presented on **ES Figure 3.3.7** (Doc Ref. 5.2).

Hotels

Initial Appraisal

3.6.74 A number of the options scored well and were taken forward as design solutions; however, no single option alone was capable of delivering the solution required.

3.6.75 Option G1 (car park H) scored well against all criteria as it proposed new development within close proximity to the South Terminal and the train station, with an existing access to the South Terminal roundabout. There were anticipated to be limited impacts upon the environment and community and the site was within the airport boundary. However, additional tall built infrastructure could be visible from receptors within and outside of the airport, although this was likely to be of similar scale to adjacent buildings (**ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3)).

3.6.76 Option G2 (car park Y) scored less than the other options in terms of business case and deliverability. The land could also be needed for flood storage. Option G2 required the consideration of adjacent land uses, including the potential for land to be used as a construction compound. G2 and G3 (in part) were located within Flood Zone 3 and required mitigation. G2 could be visible from Riverside Park Gardens and nearby residential properties, however this was not considered to warrant a low score.

3.6.77 Option G3 (South Terminal car rental) performed well against all criteria. As it did not impact upon existing car park spaces, affecting instead the car rental[9], it scored higher than Options G1 and G2 against the operations and business case criteria. It also outperformed Option G2 against environmental and community criteria, being outside the floodplain and was well screened from outside the airport perimeter.

3.6.78 Option G4 (North of MSCP3) scored well against all the criteria. The option was well located in terms of access from the railway station and the terminals. The site is currently in use as surface level car parking, which would be offset as part of the Project (see **ES Chapter 5: Project Description**, Table 5.2.3 (Doc Ref. 5.1)) and thus scored well environmentally.

3.6.79 Option G5 (Destinations Place) related to the conversion of the GAL offices located directly above the South Terminal to hotel use. This option allowed direct access to both terminals including the railway station. The existing office space would be re-provided. The option performed well against all assessment criteria.

Preferred Options

3.6.80 The Autumn 2021 consultation presented proposals for 1,000 additional bedrooms in three new hotels located on existing car park H, car park Y, and the former car rental site, as per the initial options appraisal (Options G1, G2 and G3). Following the consultation, further detailed design development took place which included refinement and updating the assessments for hotel demand that would be generated by the Project. The further detailed design development did not affect the appropriateness of Options G1-G3. Revised forecasts show an increased requirement for hotel beds because of the Project (see **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3)).

3.6.81 Following review of the initial options, a 'hybrid' solution was deemed to deliver the best overall performance and Options G1, G3, G4 and G5 were taken forward to design development. Based on the updated assessment, the preferred options for hotel development now comprise 1,250 additional bedrooms on-airport in four new hotels in the South Terminal:

- one new hotel on the existing car park H (up to 400 bedrooms) (Option G1);
- one new hotel on the former car rental site (up to 200 bedrooms) (Option G3);
- one new hotel adjacent to and north of Multi-storey car park 3 (MSCP3) at South Terminal (up to 400 bedrooms) (Option G4); and
- conversion of the Destinations Place office building to a hotel, above the South Terminal (approximately 250 bedrooms) (new Option G5).

3.6.82 Option G2 (car park Y) is no longer proposed for a hotel given competing demands for surface water storage capacity (Option I4), use as a contractor compound for highway works (Option T4) and for car parking purposes (Option G12).

3.6.83 GAL expects the balance in the future demand for additional hotel accommodation would continue to be met through hotels located both on and off the airport, with new hotels being developed to meet market demand in town centres such as Crawley and Horley.

[9] The car rental site has been temporarily relocated due to current station works and could remain in this new area permanently.

Offices

Initial Appraisal

3.6.84 In terms of the office provision, Option G6 scored well against all criteria on account of being located on existing hardstanding within proximity of the South Terminal, train station and the South Terminal roundabout. As set out within **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), there were not anticipated to be any large scale impacts upon the environment or community and the site is located within GAL ownership.

3.6.85 Option G7 scored less than Option G6 in terms of the business case and deliverability as a result of the requirement to provide underground tanks, and the potential interfaces with adjacent uses, including a potential construction compound. The site was located within Flood Zone 3 and might have been visible from Riverside Garden Park and adjacent properties.

Preferred Option

3.6.86 Option G6 performs well against all criteria. It is better located to support sustainable transport, would not give rise to impacts from flooding, and is less likely to give rise to potential environmental and community impacts compared to Option G7.

3.6.87 Since the initial options assessment was conducted in 2019, the occupation of existing on-airport office floorspace has reduced. This has largely resulted from the impact of the COVID-19 pandemic which has reduced demand for non-airport operations to be located on-airport and on-airport operators seeking greater efficiencies in space (largely through a shift to hybrid working and maximising on-airport operations via technological improvements).

3.6.88 Based on the existing vacancy levels and demand ratios, it is considered that the Project would not itself generate a demand for additional office floorspace until 2038 and by then, only for 350 m2.

3.6.89 Following further design development, car park H (Option G6) remains the preferred option to provide for both the additional 350 m2 of demand and to replace office space lost through the conversion of Destinations Place to a hotel (Option G5).

Car Parks

Initial Appraisal

3.6.90 A number of the options scored well and were taken forward as design solutions; however, no single option alone was capable of delivering the number of car parking spaces required.

3.6.91 Options G8 and G9 had links to existing bus routes and used current entrance/entry points, with no operational or safety issues envisaged. However, these options involved the development of a greenfield site and would therefore require drainage to be provided to ensure no increase in flood risk. Development of this greenfield site was visible from adjacent roads and public rights of way both within and outside the Project site boundary. Both options were adjacent to ancient woodland and a red Archaeological Notification Area (West Sussex) and therefore appropriate mitigation was required to avoid a potential impact.

3.6.92 Options G10 and G11 were proximal to the South Terminal, on GAL-owned land within the airport boundary and outside the floodplain. Options G12 and G13 were partially situated in a Flood Zone 3 and required appropriate drainage to be provided to ensure no increase in flood risk. Options G14 and G15 would have limited environmental constraints, due to the existing use of

the site as a long-term car park and outside the flood plain. All of these options (G10 to G15) involved the conversion of surface parking to decked or multi-storey parking. Options G10 and G11 were visible against an already built up view being located adjacent to the South Terminal. Options G12, G13, G14 and G15 were located close to the airport boundary and therefore had the potential to be visible from outside of the airport (depending on height). However, as for other options, these were seen in the context of existing airport infrastructure, some of which are tall in nature.

3.6.93 Options G16, G17 and G18 were all located on the southern boundary of the airport and relied on existing access. They were the three furthest options from both the North Terminal and South Terminal and therefore required additional internal transfer capabilities or were only used for staff parking. Option G16 was located in Flood Zone 3 and required extensive drainage works. The access and drainage work resulted in higher construction costs. Furthermore, Options G16 and G17 were situated adjacent to multiple watercourses, archaeological sites and listed buildings, which required appropriate mitigation measures to be developed. Option G16 was the only option to receive a 'high risk' grading against any criteria due to its location in the floodplain. Option G18 was also identified as a feasible location for a construction compound (see paragraph 3.6.217).

Preferred Options

3.6.94 The requirements for car parking have changed considerably since the initial options appraisal to accommodate additional and replacement car parking were assessed. These changes have occurred as a consequence of revised modelling, requirements for competing component and design development, and in direct response to comments received as part of the Autumn 2021 and Summer 2022 consultations. This has resulted in several changes to the preferred car parking options.

3.6.95 Based upon an original requirement to provide up to 18,500 additional parking spaces and on the basis that there may be several areas of existing parking lost to facilitate a number of other northern runway related works, it was proposed that all the options, with the exception of Options G16 and G18 (Deck MA1), were taken forward as preferred options for further design development. At the time it was not proposed to take option G18 forward given its suitability as an airfield construction logistics compound. Similarly, it was not proposed to take Option G16 (Crawter's Field) forward given its environmental impact. Options G10, G11, G14, G15 and G18 are 'relatively good' options and would have minimal impacts on the environment whereas G8, G9, G12, G13 are classed as 'feasible' and it is likely that effects could be mitigated (eg where the MSCP structure increases the potential for visual impacts).

3.6.96 The Summer 2022 consultation provided a net reduction of over 8,000 spaces on the previous approach with support for initiatives for sustainable travel. Although the basis of the assessment changed between the two periods of consultation, as the need for car parking had reduced, further consultation on the initial options was not required.

3.6.97 A 'hybrid' solution was deemed to deliver the best overall performance and in summary, the following preferred options for car parking were selected:

- MSCP H (South Terminal, walk to terminal) – 3,700 spaces (Options G10 & G11);
- MSCP Y (North Terminal, walk to terminal) – 3,035 spaces (Option G12);
- MSCP J (North Terminal, walk to terminal) – 890 spaces (Option G13);

- North Terminal Long Stay Decking (North Terminal, bus to terminal) – 1,680 spaces (Option G15); and
- at the existing Purple Parking site (surface level only) – 700 spaces– (revised Option G17).

3.6.98 The relocated Purple Parking is proposed at the eastern section of existing car park X. Car park X is currently used for staff car parking and the relocated Purple Parking would entail the loss of 1,125 car parking spaces, that would be accommodated on the existing Purple Parking site and the North Terminal Long Stay car park. The relocated Purple Parking would accommodate 3,280 car parking spaces (the same number as would be lost from the existing site).

H. Foul Water

3.6.99 Foul drainage from the South Terminal, which pre-dates the establishment of Crawley Sewage Treatment Works (STW), drains north to the Horley STW. This catchment includes the developments to the east of the railway, such as the Hilton Hotel. Flows are pumped where necessary but generally leave the airport under gravity. The North Terminal and the airfield drain south to the Crawley STW. Based on the requirements outlined in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following 11 options have been identified:

- Option H1 – South Terminal. Upgrade main pipeline to Horley STW which would improve flow from the South Terminal to Horley STW removing the pinch point.
- Option H2 – South Terminal. Re-route two existing pipelines (pumping station 19 and 23) to Crawley STW, new East Pumping Station to reduce future flow to Horley STW.
- Option H3 – South Terminal. Storage tanks provided with managed release to Horley STW which would reduce the peak flow to maintain current loads.
- Option H4 - South Terminal. Foul pumping station 40 and sewer line upgrade to solve localised pinch point.
- Option H5 – South Terminal. Connection to Crawley STW underneath the railway line to reduce future flow to Horley STW.
- Option H6 – new GAL owned waste water treatment works where all additional flows generated by growth could be handled on-site.
- Option H7 – airfield. Relocate pipelines and pumping station to accommodate relocation of Taxiway Juliet to an alternative location.
- Option H8 – airfield. Reinforce pipeline at pumping station 3 to allow the relocation of Taxiway Juliet and reduce ingress of storm water.
- Option H9 – airfield. Add a new pipeline to accommodate relocation of Taxiway Juliet and combine with flows from two existing pumping stations (pumping station 2 and 3) in to one new pumping station.
- Option H10 – North Terminal. Route to Horley STW to reduce all loads to Crawley STW making room for growth in the region.
- Option H11 – North Terminal. New pipeline and pumping station 7a to solve localised pinch point.

3.6.100 Options H 1 to H11 are presented on **ES Figure 3.3.8** (Doc Ref. 5.2).

Initial Appraisal

3.6.101 Options H1, H3, H5 and H8 scored poorly in terms of cost due to maintenance and additional facilities within GAL control. Option H1 scored poorly on deliverability as there was a high dependency on a third-party land, and it is believed that the STW in Horley is full and will not be

expanded. These options could also have impacts upon the existing highway network, creating congestion and delays because of temporary closures to deliver the improvements.

3.6.102 Option H4 involved the upgrade of an existing underground asset and would have no impact on the environment. Option H5 was considered a less suitable option in terms of business case and deliverability requirements, due to the complexity of delivery across/below water, roads and railway. The option also scored poorly in terms of planning, surface access and environment given the potential impacts upon the river and associated habitats and potential delays caused on the highway network.

3.6.103 Option H6 was a construction project involving additional vehicle movements which may have had a greater impact on the network over the short term than other options. In addition, the newly created structure may have had greater potential for visual and odour impacts on nearby receptors, and effects on the floodplain requiring mitigation.

3.6.104 Of the South Terminal options, Option H2 (to reroute PS19 and PS23 to Crawley STW) performed best overall. However, Option H2 (initially 'less feasible' for environmental considerations) would need to be diverted around an area known as Horleyland Wood, designated as ancient woodland and as a Local Wildlife Site, to avoid the loss of habitat. As such, the design was developed to avoid the ancient woodland.

3.6.105 Option H11 (new pumping station 7a) performed best out of the North Terminal options, whilst Option H9 (new pumping station 2a) was deemed the best solution for dealing with the airfield foul. Therefore, disruption to the foul network during operation would be limited.

Preferred Options

3.6.106 Several of the options scored well and could be taken forward as design solutions; however, no single option alone would be capable of delivering the solution required to manage the foul water demand arising from the airfield changes and North and South Terminal expansions. Option H4 involving the upgrade of PS40 is no longer required and has been removed from the Project.

3.6.107 Of the South Terminal options, Option H2 (reroute PS19 and PS23 to Crawley STW) performs best overall environmentally, compared to Options H3 and H4, as the pipelines can be diverted around the ancient woodland.

3.6.108 Option H11 (new pumping station 7a) performs best out of the North Terminal options compared to Option H10. Option H9 (new pumping station 2a) was deemed the best solution for dealing with the airfield foul, with all options scoring 'good' environmentally due to their location on areas of hardstanding. No changes to were made the preferred option post consultation, and therefore all these options were therefore taken forward for further design development.

I. Surface Water Drainage

3.6.109 The airfield has several catchments that are discharged into local water courses via balancing ponds: Ponds E and F drain to the Gatwick Stream, and Ponds A, M, Dog Kennel and Pond D drain directly to the River Mole in accordance with discharge consent. If the water quality in Ponds A, M and Dog Kennel does not meet the discharge consent standard it is routed through Pond D for treatment and quality control preventing pollution of the River Mole. If necessary polluted water can be pumped to Gatwick's long term storage lagoons for further treatment before being discharged to the river system.

3.6.110 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options have been identified to control the increase in surface water runoff which would occur as a result of the Project, and to mitigate the loss of existing ponds to Project features:

- Option I1 – re-provision of Pond A in a location known as Museum Field owned by GAL;
- Option I2 – reconfiguration of Pond A drainage catchment so it drains to Pond M instead;
- Option I3 – creation of an open storage pond for additional surface water storage prior to Pond D;
- Option I4 – creation of underground storage at car park Y for additional surface water storage prior to Pond D, maintaining development opportunities for the land;
- Option I5 – move Pond A north in line with Taxiway Juliet providing local storage, and reconfigure the River Mole; and
- Option I6 – provide a new water treatment works to draw from the long-term storage lagoons to allow discharge to the Gatwick Stream located on the site of former Rolls Farm.

3.6.111 Options I1 to I6 are presented on **ES Figure 3.3.9** (Doc Ref. 5.2).

Initial Appraisal

3.6.112 Option I1 was considered to be high risk against the business case criteria as the option would prevent this land being used for fluvial storage capacity. Flood modelling has shown this to be a very effective site for fluvial flood alleviation and alternative options would require the acquisition of land outside the airport boundary. The option scored poorly against water and environment criteria as it would affect existing watercourses, result in some tree loss and potentially impact soils and archaeology. As a result of these potential impacts, the option scored 'feasible' against the planning criteria as it is considered unlikely to be fully compliant with planning policy. Similarly, the option is considered 'feasible' against deliverability criteria, reflecting some concerns about Project construction periods.

3.6.113 Option I2 scored poorly with regard to business case criteria compared with a number of other options given the costs associated with establishing and operating a pumping station. The construction would require significant and close coordination given airfield interfaces, meaning the option scored 'feasible' against the deliverability criteria. As the option was located within the airport and would not result in any loss of planting or habitats, it scored positively in terms of planning, surface water, land, community and environment.

3.6.114 Option I3 scored poorly in business case terms as it resulted in the loss of existing car parking which would need to be replaced. Its location near to a number of existing and potential Project works meant it scored 'less feasible' given the potential interfaces and complexities. As there was potential for some tree loss depending on the exact location of the pond and impacts upon soils, the option scored lower than several others environmentally. In terms of surface access, it was considered that the displacement of the existing car parking spaces could give rise to impacts on the surrounding network. As a result of the potential environmental and surface access impacts, the option scored lower than several others against the planning criteria as these impacts may have resulted in some non-compliance with planning policy.

3.6.115 Option I4 underneath car park Y performed well against operations criteria and scored better than the other options in terms of business case, though it may have resulted in the loss of an area that could be employed for commercial uses. In terms of deliverability, the option was considered

'feasible', though sequencing of the works might have given rise to programme delays due to interfaces with other potential works. There were potential impacts on soils and archaeology.

3.6.116 Option I5 scored well operationally as it provided a source of buffering and reduced the requirement for car park Y storage (Option I4). There were some deliverability impacts associated with sequencing the works, to ensure there were no impacts on the existing infrastructure. The option scored positively against all other criteria.

3.6.117 Option I6, included following consultation with the Environment Agency and Lead Local Flood Authorities, comprised a new water treatment works which helped to improve water quality. Furthermore, it allowed the water level in Pond D to be kept low and prevent active discharges from Pond D to the River Mole.

Preferred Options

3.6.118 A 'hybrid' solution was deemed to deliver the best overall performance and Option I4 (car park Y underground storage), I5 (Pond A north and diversion of the River Mole) and I6 (new water treatment works) performed best in relation to the options criteria.

3.6.119 Whilst these options present some complexities in delivery scheduling, they are considered viable and perform positively against planning and water criteria. Environmentally, whilst Option I5 would result in the loss of some trees and potential impacts upon soils, the option is still considered to be 'feasible'. Options I4 and I5 have a medium risk of encountering archaeological finds and would therefore require mitigation. Option I6 would have no discernable environmental impacts. It is therefore proposed that these options be taken forward as the drainage solution for further design development.

J. Fluvial Flood Risk Mitigation

3.6.120 Due to the reconfiguration of the hardstanding and drainage features associated with the Project, additional fluvial flood risk mitigation would be required to ensure there is no increase to flood risk off-site and that the operation of the airfield remains resilient to flooding. The River Mole flows through the airport, passing under the main and existing northern runways in culvert. Tributaries of the River Mole, including the Crawter's Brook, the Gatwick Stream and Westfield Stream all run through or adjacent to the Project site

3.6.121 The final arrangement and location of the fluvial mitigation is determined by detailed modelling work undertaken in **ES Appendix 11.9.6: Flood Risk Assessment** (Doc Ref. 5.3).

3.6.122 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), 10 options for additional storage have been identified at this stage:

- Option J1 – located within and adjacent to land known as Museum Field;
- Option J2 – located at the existing Summer Holiday Parking;
- Option J3 – located within car park X;
- Option J4 – located within car park Z;
- Option J5 – located within car park B;
- Option J6 – utilising an area to the east of Gatwick Stream, retaining existing trees;
- Option J7 – utilising an area to the east of Gatwick Stream, removing existing trees;
- Option J8 – utilise the areas in between the proposed end around taxiway west;
- Option J9 – utilise the areas in between the proposed end around taxiway east; and

- Option J10 – relocate and reconfigure the existing River Mole into a two-stage channel providing additional flood alleviation.

3.6.123 Options J1 to J10 are presented on **ES Figure 3.3.10** (Doc Ref. 5.2).

Initial Appraisal

3.6.124 Option J1 performed strongly across all criteria. Whilst the site is greenfield land, it was anticipated that the works provide the opportunity for habitat improvements and therefore scored as a good option with regard to the environment. It was anticipated that the works could be undertaken independently of any other construction as they were remote from airfield operations. The option was located outside of the existing airport boundary but was within GAL ownership. However, given its identified need and the potential benefits it can offer, the option scored as 'feasible' for the planning criteria.

3.6.125 Option J2 was considered a high risk option against the business case criteria as it did not contribute significantly to achieving the target protection. It also resulted in the loss of parking spaces which would have needed to be re-provided.

3.6.126 Option J3 was considered 'feasible' against the business case criteria. However, it resulted in the loss of parking spaces during construction which would have needed to be re-provided. The option could be delivered over the winter months to minimise the extent of car parking space loss over the busier period. The option would result in some tree loss and potential impacts on soils and similarly to Options J2 and J4, there is a high risk of encountering archaeological finds.

3.6.127 Options J4 and J5 scored poorly against the operational criteria as it was anticipated that they would not provide sufficient protection against flooding. The loss of parking spaces and loss of trees and soils resulted in the option scoring lower than a number of other options.

3.6.128 Options J6 and J7 scored well against the operations criteria as they were considered capable of offering the necessary protection from flooding. As the works could be undertaken independently of other linked works these options scored well for deliverability. The loss of trees and soils meant the option scored 'feasible' in terms of environment. Option J7 scored low in terms of community as the loss of trees adjacent to the STW could potentially reduce the visual and noise screening for the community.

3.6.129 Options J8 and J9 scored as 'high risk' against the operations criteria as they were considered to offer poor protection against flooding and potentially give rise to safeguarding issues. In terms of deliverability, the restriction on construction hours to avoid impacts on runway operations were considered to affect the programme.

3.6.130 Option J10 was an opportunity created by the option chosen for surface water (Option I5, Pond A) and scored well against all criteria.

Preferred Options

3.6.131 Following consultation, further design development took place including reassessment following the Environment Agency's revised guidance on the climate change allowance. This resulted in some refinement to Option J1 and Option J3, and removal of Option 6 which is no longer required.

3.6.132 Based on the findings of this options appraisal, Option J1 (Museum Field), Option J3 (car park X), and Option J10 (River Mole diversion) in combination perform best overall. Options J1 and J10 perform the best environmentally compared to other options. Option J3 would require mitigation in the form of replacement tree planting and appropriate mitigation to avoid a potential impact on archaeology. In addition to the options which are anticipated to provide the necessary additional floodplain capacity, there may be a requirement for additional works to existing surface water infrastructure, run-off areas and treatment solutions (which are detailed above as part of the Foul Water Drainage (Section H) and Surface Water (Section I) options).

K. Displaced Facilities: Waste Management, Engine Running Areas and Rendezvous Point

Waste Management

3.6.133 Gatwick's existing waste management facilities are located within an area of the existing airfield known as Oscar to the north of Taxiway Juliet. The Central Area Recycling Enclosure (CARE) facility comprises a biomass boiler, a waste processing building, compound area and bin store. This area is required to be reconfigured to provide space for other airfield components as part of the Project. The relocated CARE facility would include a flue stack up to a maximum of 50 metres in height (above ground level).

3.6.134 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), two options for the relocation of the CARE facility have been identified:

- Option K1 – in an area currently used as valet north 'Flying Pan' car park (north of the cargo facility); and
- Option K2 – in an area currently used as car park self-park north.

3.6.135 Options K1 and K2 are presented on **ES Figure 3.3.11** (Doc Ref. 5.2).

Initial Appraisal

3.6.136 Both options were located in areas of existing hardstanding and therefore no greenfield land take was required. Both options required measures to be put in place to ensure their resilience to surface water flooding.

3.6.137 Option K1 was located slightly further inside the airport boundary and was considered more favourable in terms of the business case (reducing the distance travelled by waste vehicles). There was considered to be a lower probability of the waste management site being visible from outside the airport and there were no requirements to construct a new enabling roadway to service the development, meaning the site scored better from a surface access perspective.

3.6.138 Option K2 required heavy goods vehicles (HGVs) to travel a greater distance within the airport to reach the facility. This option was located closer to the airport boundary, therefore the flue stack was potentially more visible from outside the airport.

Preferred Option

3.6.139 Whilst Option K1 scores marginally better in terms of the business case, surface access and environment criteria, both options perform well overall, and were taken forward as part of the consultation on the Project in Autumn 2021. The consultation identified these two possible locations for the new CARE facility and asked respondents which location would be preferred.

3.6.140 Following the Autumn 2021 Consultation, Option K1 was selected. Respondents preferred its central location, noting the shorter journey from the central terminal areas where the bulk of the waste originates, its relative remoteness from the airport boundary and less visibility impacts compared to Option K2.

Engine Running Areas

3.6.141 Aircraft engine running for test and maintenance purposes is facilitated in four locations within the airfield, three of which would be affected by the Project.

3.6.142 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), nine options have been evaluated as part of the appraisal process:

- Option K3 is located on Taxiway Yankee at Block 15/16;
- Option K4 is located on Taxiway Juliet West;
- Option K5 is located at Alpha Box;
- Option K6 is located within the Oscar Area - south of the Hangar 7;
- Option K7 is located on Taxiway Tango Block 53;
- Option K8 is located on Juliet spur;
- Option K9 is located on the area south of the Boeing Hangar;
- Option K10 is located at the 'Old Hangar 4' Entrance; and
- Option K11 is located at 230 stands.

3.6.143 Options K3 to K11 are presented on **ES Figure 3.3.11** (Doc Ref. 5.2).

Initial Appraisal

3.6.144 Option K3 scored 'good' across all criteria as it involved use of the existing operational locations and did not give rise to any impacts on the existing and newly proposed infrastructure. K4 had a similar score although wind impacts would also require further evaluation as the proposed noise mitigation wall adjacent to Juliet spur is developed. Option K5 was a 'less feasible' option because there would be some constraints to normal runway operations.

3.6.145 Options K6 to K11 scored poorly against operational criteria, as engine testing within these locations affected normal operation of the airport (ie there would be blast/ noise impacts within inappropriate areas and the noise wall would affect wind flow, which is imperative for testing).

Preferred Options

3.6.146 An options appraisal of engine running areas was not undertaken at the initial assessment phase. However, this later assessment had no effect on the options appraisal undertaken previously for other components.

3.6.147 As existing locations that require no additional infrastructure and would not give rise to any additional impacts on the environment or community, Option K3 (Taxiway Yankee Block 15/16) and Option K4 (Taxiway Juliet West) perform well as they are already in operation. Therefore, both options have been taken forward as part of the Project. These would ensure that engine ground runs can be conducted in all operational modes.

Rendezvous Point (RVP)

3.6.148 The existing RVP North, one of three such facilities, is located to the south of the existing Motor Transport building and north of the existing Taxiway Juliet within Oscar. It provides a large area of

hardstanding for external emergency services (police, ambulance and fire services), to use as a holding position in the event of a notified aerodrome incident, eg aircraft full emergency. Relocation of the existing facility is required.

3.6.149 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), 4 options have been evaluated as part of the appraisal process:

- Option K12 (former security post, Northgate Area) is located to the north of the central airport area, comprising of a currently unused brownfield site;
- Option K13 (North West Zone Area) is located to the north west of the airport campus, north of Hangar 7, and forms part of the existing long stay car park;
- Option K14 (Northern approach security post) is located immediately north of the Northern Approach - Security Post; and
- Option K15 (Western end of aerodrome) is adjacent to the existing fire training ground, north of Taxiway Juliet.

3.6.150 Options K12 to K15 are presented on **ES Figure 3.3.11** (Doc Ref. 5.2).

Initial Appraisal

3.6.151 Option K12 was a constrained site which performed poorly ('high risk' location) against operations criteria due to its location which was relatively remote from the airfield.

3.6.152 Option K13 performed well against all criteria and supported rapid access to the airfield and was close to the airfield and central airside area.

3.6.153 Options K14 and K15 performed poorly against operational criteria ('high risk' locations) and both affect the available floodplain so scored less well against environmental criteria.

Preferred Option

3.6.154 Option K13 performed best against requirements as it is centrally located with some line of sight, supports rapid access to the airfield and the central airside area, and has no environmental impacts. No changes to the preferred option have occurred following consultation. Therefore this option was taken forward for further design development.

L. Off-Airport Highways: Longbridge Roundabout

3.6.155 The design iteration process for Longbridge Roundabout included a number of options being tested through strategic modelling of the highway network, in consultation with National Highways. A full description of the options considered through this process is provided in the **Consultation Report Appendices – Part B**, B.16 Preliminary Environmental Information Report, PEIR Appendix 12.9.1 Part 4 (Doc Ref 6.2).

3.6.156 A summary of the options is provided here:

- Option L1: Do minimum, assumes minor carriageway works;
- Option L2: existing roundabout to be replaced with a signalised intersection; and
- Option L3: substantially improve the roundabout and provide full width running lanes throughout the junction, replacing the narrow lanes that currently exist.

Initial Appraisal

3.6.157 Option L1 enabled a short right turn storage lane for eastbound A23 Brighton Road traffic waiting to turn into the petrol filling station and Woodroyd Avenue. This reduced the incidence of queueing traffic backing up to the roundabout and the creation of an air quality issue relating to the downstream junction of Brighton Road with Massett's Road. This option served to address an existing congestion issue, which is linked to air quality impacts along Brighton Road but did not create additional capacity for growth and therefore did not score well in relation to the business case.

3.6.158 Option L2 replaced the current roundabout junction layout with a four arm, at-grade, signalised crossroads, allowing more capacity to be delivered whilst retaining safe pedestrian crossing facilities. This option supported growth and was compatible with potential options to improve the North Terminal Roundabout with some limitations due to land constraints. Highway modelling indicated not all congestion would be addressed. Whilst some minor impacts were anticipated due to construction, the revised junction layout could largely be accommodated within the existing highway boundary and therefore no effects were anticipated on the environment .

3.6.159 Option L3 provided the required capacity for growth and addressed existing safety and operational constraints at this junction. Drainage requirements impacted on adjacent land and required mitigation. This option required additional land for the permanent highway works as well as additional temporary access for construction. Works taking place within the River Mole floodplain would lead to the loss existing vegetation.

3.6.160 Examples of Options L1 – L3 for Longbridge Roundabout presented in the Autumn 2021 consultation are provided on **ES Figure 3.3.12(a)** (Doc Ref. 5.2).

Preferred Option

3.6.161 Refinements were made to the design following the PEIR consultation and engagement with key stakeholders (National Highways and local highway authorities). However, of the three options assessed for Longbridge Roundabout, Option L3 remains the preferred option due to its ability to accommodate growth yet maintaining accessibility to the airport during construction works and the ability to mitigate impacts on drainage and vegetation. Although Option L3 would have a greater impact on adjacent land due to drainage mitigation requirements than Options L1 and L2, the effects could be mitigated.

M. Off-Airport Highways: North Terminal Roundabout

3.6.162 Improvements to the roundabout are considered necessary to mitigate capacity impacts arising as a result of the Project.

3.6.163 The design iteration process included a number of options being tested through strategic modelling of the highway network and six options were presented in the PEIR. A full description of the options considered through this process is provided in the **Consultation Report Appendices – Part B**, B.16 Preliminary Environmental Information Report, PEIR Appendix 12.9.1 Part 4 (Doc Ref. 6.2). These initial options were revisited as part of the Summer 2022 optioneering exercise (**Consultation Report Appendices – Part C**, C.1 Consultation Document (Doc Ref. 6.2)) and a further two options were considered. Broadly, these fall into the following three main options presented below. Options in brackets refer to the sub-options analysed in **ES Appendix 3.5.2: North Terminal Roundabout Options Development** (Doc Ref. 5.3):

- Option M1: do minimum involves optimisation of the existing junction layout with at-grade solutions (Option 5);
- Option M2: grade separated junction predominantly within existing highway boundary (Options 1, 4 (and 4, Variant C)); and
- Option M3: grade separated junction not constrained by the existing highway boundary (Options 2, 3, 5, 6, 7 and 8).

Initial Appraisal

3.6.164 Option M1 required optimisation of the existing junction layout with at-grade solutions. This option involved signalisation of the roundabout, local lane widening on approaches to the roundabout or wider expansion leading to additional lanes on approach/circulation. A variation of this option has been adopted as part of the future baseline (and is therefore considered in the topic chapters), however it would have inadequate capacity to mitigate congestion from projected traffic flows with the Project.

3.6.165 Option M2 created capacity on the network by providing grade-separation (flyover or underpass) but limited scope predominantly to land that was within GAL's ownership and/or the existing highway boundary. Options catered for all movements but may not have allowed direct access depending on junction layout. Possible sub-option junction arrangements included free flow (merge/diverge and roundabout solutions) and signal-controlled layouts. These were based on traffic flows and the need for safe and efficient construction and operation but all required some grade separation. Completed layouts minimised encroachment into adjacent sensitive areas such as Riverside Garden Park, minimising impacts on the environment.

3.6.166 Option M3 created capacity, eased layout constraints, and improved efficiency/safety by extending the highway into adjacent land, for example within GAL land (with potential impact on buildings/operation) or third-party land. Potential sub-option junction arrangements included free flow (merge/diverge and roundabout solutions) and signal-controlled layouts. These were based on traffic flows and the need for safe and efficient construction and operation but all required some grade separation. Completed layouts required some land take within adjacent sensitive areas such as Riverside Garden Park. Option M3 would likely have had a greater impact on land, habitats and landscape character compared to Option M2.

3.6.167 Examples of the options presented in the Autumn 2021 consultation for the North Terminal roundabout are provided on **ES Figure 3.3.12(b)** (Doc Ref. 5.2).

Preferred Option

3.6.168 The above options were taken forward within the PEIR and formed the basis of the preferred design presented in the Autumn 2021 consultation. Changes were proposed in response to the consultation, following a process of continued engagement with key stakeholders (National Highways and local highway authorities) and were presented in Summer 2022 as part of a further round of consultation (refer to **Consultation Report Appendices – Part C**, C.1 Consultation Document (Doc Ref 6.2)). One of the fundamental aims during this period of redesign was to improve capacity and performance by separating airport and non-airport traffic whilst limiting any increase in land take outside the highway boundary. Alongside the revised layout, an additional drainage pond would be provided to take surface water run-off from the highways.

3.6.169 Taking account of operational, safety and capacity requirements, variants of Option M2 (Option 4, Variant C presented within **ES Appendix 3.5.2: North Terminal Roundabout Options**

Development (Doc Ref. 5.3)), grade separation predominantly within the existing highway boundary) remain the preferred option. This provides extra capacity for movements to and from the airport and separates airport and non-airport traffic, reducing conflict in peak periods, thereby reducing congestion. As part of this solution, an elevated flyover would be built to carry westbound traffic between Airport Way (from South Terminal and the M23) and the A23 towards Horley. Additional improvements would include local widening on the junction entry/exit lanes for the North Terminal roundabout, together with signalisation of the roundabout and provision of enhanced signage. There would be some loss of vegetation from within the highway boundary, but this would be replaced alongside new drainage ponds.

N. Off-Airport Highways: South Terminal Roundabout

3.6.170 Improvements to the roundabout are considered necessary to mitigate capacity impacts arising as a result of the Project.

3.6.171 The design iteration process included a number of options being tested through strategic modelling of the highway network and four options were presented in the PEIR. A full description of the options considered through this process is provided in the **Consultation Report Appendices – Part B**, B.16 Preliminary Environmental Information Report, PEIR Appendix 12.9.1 Part 4 (Doc Ref. 6.2). These initial options were revisited as part of the Summer 2022 optioneering exercise (**Consultation Report Appendices – Part C**, C.1 Consultation Document (Doc Ref 6.2)). Broadly, these fall into the following three main options:

- Option N1: do minimum involves optimisation of the existing junction layout with at-grade solutions ;
- Option N2: grade separated junction predominantly within the existing highway boundary; and
- Option N3: grade separated junction not constrained by the existing highway boundary.

Initial Appraisal

3.6.172 Option N1 included optimisation of the existing junction layout with at-grade solutions. This option involved signalisation of the roundabout, local lane widening on approaches to roundabout or wider expansion leading to additional lanes on approach/circulation. Signalisation and minor widening of entry/exits were proposed in absence of the Project. As for the North Terminal roundabout, this option has been adopted as part of the future baseline (and is therefore considered in the topic chapters) but would have inadequate capacity to mitigate congestion from projected traffic flows with the Project.

3.6.173 Option N2 (grade separation predominantly within the existing highway boundary) created capacity by providing grade-separation (flyover or underpass) but limited scope to predominantly within GAL land and/or the existing highway boundary. Options catered for all movements. Possible sub-option junction arrangements included alternative mainline design speed alignments. These were based on traffic flows and the need for safe and efficient construction and operation but all required some grade separation. Completed layouts minimised encroachment into adjacent land.

3.6.174 Option N3 (grade separation not constrained by the existing highway boundary) created capacity and eased layout constraints by improving efficiency/safety. It extended the highway into adjacent land, for example within GAL land (with potential impact on buildings/operation) and some sub-options into third-party land. Potential sub-option junction arrangements included offline

roundabout layouts. These were based on traffic flows and the need for safe and efficient construction and operation but all required some grade separation.

3.6.175 Examples of the options presented in the Autumn 2021 consultation for the South Terminal roundabout are provided on **ES Figure 3.3.12(c)** (Doc Ref. 5.2). All options included capacity improvements to M23 Spur Eastbound through the conversion of the existing hard shoulder to a running lane, similar to the westbound spur road improvements completed as part of the M23 Junction 8 to 10 Smart Motorway Project.

Preferred Option

3.6.176 The above options were taken forward within the PEIR and formed the basis of the preferred design presented in the Autumn 2021 consultation. Minor changes were proposed in response to the consultation, following a process of continued engagement with key stakeholders (National Highways and local highway authorities), and were presented in Summer 2022 as part of a further round of consultation. Design amendments were made to the westbound on-slip to reflect the changes to Airport Way. A new drainage pond would be provided to the north-east of the roundabout. alongside a temporary construction compound. The construction of the new slip roads connecting to the east of the roundabout and extending over Balcombe Road both require temporary land take for construction and permanent diversion of rights of way.

3.6.177 As a result of the sub-option appraisal, and taking account of operational, safety and capacity requirements, sub-options of Option N2 (grade separation predominantly within the existing highway boundary) are preferred with the M23 Gatwick Spur/Airport Way carriageway raised, creating a flyover above the existing roundabout.

O. Surface Access: Rail

3.6.178 Gatwick Station is located adjacent to the South Terminal. The station is predominately located on Network Rail's operational land. However, sections of the site fall within the ownership of GAL. It is anticipated that Gatwick will see a sustained increase in rail mode share over the next 10 to 15 years. The rate of change will depend on a number of factors, including the maintenance of a reliable and punctual service. Improvements to Gatwick Station are the subject of a separate planning application, with construction ongoing. The current works include an upgrade to almost double the size of the station concourse and provide additional lifts and escalators, improving access to platforms and the passenger experience. The enhancement will provide for further growth in rail passengers and mode share. These improvements are anticipated to be complete in 2022.

3.6.179 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), three options have been identified:

- Option O1 – do minimum which involves seeing the completion of the Gatwick Station improvements outlined above;
- Option O2 – extension of a new station concourse over Platform 3 and 4, with additional escalators/lifts/stairs to and from platform level; and
- Option O3 – extension of a new concourse to full deck, with additional escalators/lifts/stairs to and from platform level.

3.6.180 Options O2 and O3 are shown on **ES Figure 3.3.13** (Doc Ref. 5.2).

Initial Appraisal

3.6.181 Option O1 scored well across all criteria as it involved maximising the use of the improvements that are currently under construction (due for completion in 2023). Therefore, no additional construction or operational costs would be required and there would be no construction works that could give rise to environmental impacts, or requirements for further consents or land. Initial analysis indicates that, upon completion of the works, there would be sufficient capacity at the station to accommodate the proposed increase in passengers (to 75.6mppa by 2038 (80mppa by 2047)) and the future rail travel targets.

3.6.182 Options O2 and O3 performed worse than Option O1 with regard to community as it was anticipated that construction works could potentially give rise to impacts upon rail commuters, passengers and nearby receptors.

Preferred Option

3.6.183 No significant changes were made to the preferred option following consultation. Therefore, Option O1 remains the preferred option as it is considered that the improvement works would still provide the necessary capacity required to accommodate the anticipated future passenger numbers without adversely affecting airport operations and passenger experience. With funding already in place and works being completed independently from the Project, the option scores well in terms of deliverability and business case. No environmental effects are anticipated from any option given the nature of the works.

P. Surface Access: Inter Terminal Transit System (ITTS)

3.6.184 The ITTS is an automated people mover (monorail shuttle service) which links the South Terminal and North Terminal. This currently operates two three-car trains every few minutes between the terminals.

3.6.185 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options have been identified.

- Option P1 – do minimum. This assumes no change to the current operation (frequency and hours of operation) or capacity. The existing system would be maintained until end of life and a subsequent business decision would be made on refurbishment or replacement;
- Option P2 – optimise current operating pattern. This assumes that the current system would be optimised to operate at its maximum frequency (a shuttle every five minutes on each track in peak periods) and maintenance schedules are amended to increase capacity availability in accordance with peak demand;
- Option P3 – extend to four-car trains and extend platforms. This assumes that both trains would be lengthened by adding an additional carriage, thereby increasing capacity by 33%.
- Option P4 – add crossover for maximum platform utilisation. This assumes that two crossovers would be installed along the track allowing up to four trains to operate at once and minimising wait times for passengers. Train lengths would be optimised to accommodate peak demand (two-car or three-car trains); and
- Option P5 – add bypass loops and maintenance area. This assumes a similar operation to Option P4 but with the introduction of a maintenance area midway along the tracks to allow trains to be taken out of service without reducing station capacity.

3.6.186 Due to the nature of the options, only Options P3, P4 and P5 are shown on **ES Figure 3.3.14** (Doc Ref. 5.2). The other options are not able to be visually represented.

Initial Appraisal

3.6.187 Option P1 would not meet full capacity/operational requirements for growth up to 75.6 mppa so there would be an anticipated deterioration in passenger experience. This could have impacted on safety, and the potential for increased maintenance requirement and risk of reduced service.

3.6.188 Option P2 would make best use of the existing system with the lowest business cost and environmental impacts. By avoiding any infrastructure changes, it represented a neutral business decision for system life and/or replacement/refurbishment. Neither Option P1 or P2 would have any adverse impacts on the environment as no additional built infrastructure would be required.

3.6.189 Options P3, P4 and P5 would all require some form of built infrastructure by way of platform extension or rail infrastructure. Based on the positioning of the ITTS within the airport no greenfield land take would be required. The additional track infrastructure associated with Options P4 and P5 would only be likely to be visible within the airport; however, the canopy extensions associated with the extended platforms for Option P3 could be visible from outside the airport.

3.6.190 Of the options delivering additional physical capacity (P3-P5), Option P3 would have the least environmental impact and cost but with some disruption during construction.

3.6.191 Options P4 and P5 would require changes to the trackwork of the system, which may be incompatible with future operations, noting potential refurbishment/replacement. The options could result in an unknown period of disruption during construction.

3.6.192 There would be no environmental effects for Options P1, P2 and P4 as no works are required or works would only be visible from within the airport boundary. Works to Option P3 and P5 would either be visible outside the airport boundary or would involve a minor loss of landscaped areas but are still 'relatively good' options.

Preferred Option

3.6.193 Prior to consultation, the preferred option was P3. Further work has taken place to determine the scale of intervention necessary to cater for demand. The estimate of the capacity required under the growth scenarios being considered for the Project currently indicate that Option P2 (optimise the current operating pattern) would add sufficient capacity to meet for demand with only minor deterioration in peak period passenger experience. The relatively low capital and operational cost and lack of disruption make this option preferrable to Options P3-P5 and was therefore taken forward for further development.

Q. Surface Access: Forecourts

3.6.194 Existing forecourt areas provide the main vehicular access to each terminal, for passengers, staff, operational and emergency vehicles.

3.6.195 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options have been identified.

- Option Q1 (do minimum) – this option assumes no physical changes to the current layout and operation of the forecourts and all uses remain in place;

- Option Q2 (optimisation of existing highway) – this option assumes that the existing highways are widened on the entry and exit from the forecourts, to support a higher vehicle flow;
- Option Q3 (optimisation with some displacement / use of remote facilities) – this option is similar to Option Q2 and would include the same optimisation of highways but considers the possible relocation of some activities to remote facilities, for example into the long stay car park areas; and
- Option Q4 (North Terminal forecourt extension) – this option assumes increasing the available forecourt space at the North Terminal.

3.6.196 Options Q2-Q4 are shown on **ES Figure 3.3.15** (Doc Ref. 5.2).

Initial Appraisal

3.6.197 Option Q1 scored poorly against the operations, business case and access criteria as it was not capable of delivering sufficient capacity for operational needs as the North Terminal forecourt is already considered under pressure at peak times. Increased congestion would have a marginal impact on air quality and noise although it was considered unlikely to be significant to receptors. There were no other environmental effects.

3.6.198 Options Q2 and Q3 had a similar overall score, although Option Q2 scored less well against Q3 in terms of congestion at peak times. There were no effects on the floodplain, although additional hardstanding would be proposed with both options and as a result would require some mitigation.

3.6.199 Option Q4 added capacity and operational resilience so scored 'good' against the operation and surface access criteria. Given the medium to high cost and complexities associated with the works, the option scored as 'feasible' against the business case and deliverability criteria. It also only provided additional resilience at the North Terminal and did not improve the South Terminal forecourt. The area proposed for the extension was located within the 1:100+25 flood plain and as a result, performed worse than the other options against the planning and water criteria.

Preferred Options

3.6.200 An option appraisal of forecourts was not undertaken at the initial assessment phase. However, this later assessment had no effect on the options appraisal undertaken previously for other components.

3.6.201 Options Q2 and/or Q3 perform the best of the four options and score 'good' or 'relatively good' across all environmental or land use criteria: limited effects are anticipated given the nature of the proposals. Option Q2 scores less well for access than Option Q3 as some peak hours congestion may remain. Further dynamic modelling is required to determine which option is preferred. Several alternative mitigations may be feasible that may make a variation on Option Q2 the optimum solution, without physically displacing any users away from the terminals (refer to **ES Chapter 5: Project Description** (Doc Ref. 5.1)).

R. Active Travel

3.6.202 This section describes the options assessment that was driven by stakeholder comments on the Project. The proposed active travel options have been designed in consultation with stakeholders to encourage walking and cycling by improving connectivity and environs in the vicinity of the airport thereby providing alternatives for travel to the motor car. In summary, these comprise:

- Option R1 – Longbridge Roundabout. Design of new pedestrian/ cyclist route within the site boundary. Minimal change to engineering footprint and proposed structure.
- Option R2 – Longbridge Roundabout. Modifications to circulatory positioning and upgrades to proposed crossings. Impacts on footprint but changes to proposed structures minimised.
- Option R3 – South Horley to North Terminal Roundabout. This would comprise a Zebra / uncontrolled crossing for walkers and cyclists positioned between the petrol station exit and the roundabout entry.
- Option R4 – South Horley to North Terminal Roundabout. This would comprise a signal controlled option.
- Option R5 – rail crossing. This would involve replacement of the footbridge north of Airport Way, to accommodate pedestrians and cyclists (including ramps).
- Option R6 – rail crossing. This would involve additional widening of Airport Way bridge on southern side of the bridge to accommodate path for pedestrians and cyclists, including ramp access from ground level.
- Option R7 – rail crossing. This would involve additional widening of Airport Way bridge on northern side of bridge to accommodate path for pedestrians and cyclists, including ramp access from ground level.
- Option R8 – National Cycle Route (NCR) 21 upgrades south of Airport Way: road marking, lighting, and wayfinding improvements
- Option R9 - National Cycle Route (NCR) 21 upgrades south of Airport Way: widening.
- Option R10 – segregated pedestrian / cyclist path from Longbridge roundabout to North Terminal roundabout.
- Option R11 - segregated pedestrian / cyclist path from Longbridge roundabout to South Terminal roundabout via North Terminal roundabout.

3.6.203 Options R1 to R11 are shown on **ES Figure 3.3.16** (Doc Ref. 5.2).

Initial Appraisal

3.6.204 Option R1 involved limited modifications to the design of Longbridge Roundabout and the proposed works were likely to be achievable within the confines of the site boundary. However, the network was not segregated outside the Esso petrol station. Furthermore, this option increased environmental, flooding, drainage and visual impacts.

3.6.205 Option R2 comprised a completely segregated network and the effects on the boundary were minimal. However, there was a relatively substantial change to the highway design. Similar to Option R1, there were increased impacts on the environment, flooding drainage and views.

3.6.206 Both Options R3 and R4 could be provided within the site boundary although Option R3 would have affected Riverside Garden Park in the vicinity of the proposed ramp.

3.6.207 Option R5 would have increased environmental and visual impacts compared to Options R6 and R7 (eg additional vegetation loss east and west of the rail line and in vicinity of residential properties).

3.6.208 Option R8 comprised a package of upgrades to NCR 21 between car park B and south of Gatwick railway station. The package of measures was within the Project site boundary and minimised tree loss and impacts to the Gatwick Stream. Option R9 proposed the widening of the existing shared use path between the location just south of Gatwick railway station and the

southern end of the Project site boundary to provide a segregated route for pedestrians and cyclists.

3.6.209 Option R10 resulted in a reduction in the number of spaces provided at car park Y as well as a slight impact to the Premier Inn hotel car park. There would also be a requirement for additional storage required for attenuation of the additional paved area. Option R11 also resulted in a loss of car parking spaces at car park Y and would have a slight impact to the Premier Inn hotel car park. Additionally, Option R11 impacted upon the Gatwick Police Station car park and would result in the loss of existing trees.

Preferred Options

3.6.210 The active travel option appraisal was not undertaken at the initial assessment phase. However, this later assessment had no effect on the options appraisal undertaken previously for other components.

3.6.211 Option R2 is considered to perform the best at Longbridge Roundabout as it ensures a complete segregated network around the carriageway and includes crossings.

3.6.212 With regard to the North Terminal Roundabout, there are safety issues in relation to interfaces with the petrol station exit which require further consideration in selecting the preferred solution. However, in this respect Option R4 (signalised crossing) is preferred.

3.6.213 None of the rail crossing options would be taken forward because the existing provision over the railway provides good connectivity, and Option R5 would have adverse environmental impacts in addition to high construction costs.

3.6.214 Option R9 is the preferred option for NCR21. The option provides safety benefits and includes numerous widened sections for overtaking opportunities, although there would be greater vegetation loss than Option R8.

3.6.215 With respect to the segregated pedestrian / cyclist path from Longbridge roundabout to North Terminal roundabout, Option R10 would be the preferred option as it provides segregated provision through the section of path anticipated to have the highest volume of walkers and cyclists and it minimises vegetation losses compared to Option R11.

S. Airfield Construction Compounds

3.6.216 A number of generally small scale compounds are currently located on the airport which are used to support ongoing construction works. However, it is anticipated that the scale of the Project would result in the need for additional compound capacity. The compounds would need to provide space for a number of activities and must be located centrally for access to most airport construction activities.

3.6.217 Prior to the PEIR consultation, seven on-airport options were identified some of which were considered to be inappropriate in terms of location and size to be viable alternatives and therefore weren't considered further. Following further design development, after the PEIR consultation and based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options have been identified:

- Option S1 - MA1 car park site 9;
- Option S2 - MA1 car park site 7 and 8;

- Option S3 - MA1 car park site 3, 4 and 5;
- Option S4 - MA1 car park site 2;
- Option S5 - British Airways (BA) hangar parking area;
- Option S6 - car park Z area;
- Option S7 - Rowley Farm area 1;
- Option S8 - Rowley Farm area 2;
- Option S9 - tennis courts area;
- Option S10 - TUI car park area;
- Option S11 - Old Hotel (Lowfield Heath);
- Option S12 - Lowfield Heath Farm area;
- Option S13 - car park X and V area;
- Option S14 - Crawters Brook;
- Option S15 - Purple Parking Area;
- Option S16 - farm area;
- Option S17 - fire training ground area;
- Option S18 - fire training ground west area;
- Option S19 - Air Museum land area;
- Option S20 - Old Batching Plant area;
- Option S21 - Summer Special south area;
- Option S22 - Pond M north area);
- Option S23 - Oscar area;
- Option S24 - operational stands area; and
- Option S25 - land south east of M23 Junction 9.

3.6.218 Options S1-S25 are shown on **ES Figure 3.3.17** (Doc Ref. 5.2).

Initial Appraisal

3.6.219 Options S1 (MA1 Site 9), S2 (MA1 Site 7 and 8), S3 (MA1 Site 3, 4 and 5), S4 (MA1 Site 2) and S9 (tennis courts area) all performed well in terms of operations, deliverability and environment, given they are currently existing areas of hardstanding that provide a direct access to the airfield works. They were considered to be 'feasible' in terms of business case, with Options S3 and S4 scoring lower as they impacted upon users of Perimeter Road South during peak commuting times.

3.6.220 Options S5 (BA hangar parking area) and S6 scored poorly for operations given the risk of impacting upon adjacent BA operations. Option S5 also scored lower than others in business case terms as there was an impact on existing BA hangar parking. Option S6 performed better as it was within GAL ownership. As an area of existing development, the option performed well against all other criteria.

3.6.221 Options S7 and S8 (Rowley Farm areas 1 and 2) scored poorly in terms being greenfield land, proximity to residential properties and potential effects on the setting of listed buildings. Neither site was within GAL ownership. Option S8 would also require improvements to access with potential impacts on third party users.

3.6.222 Options S10 (TUI car park area) and S11 (Old Hotel (Lowfield Heath)) are located outside of the airport boundary so scored well in terms of operations, but both are considered 'less feasible' options in terms of surface access given the compromised surface access/egress. Option S12 (Lowfield Heath Farm Area) and Option S16 (Farm Area) scored similarly, but as they were not

owned by GAL they were considered as high-risk options in terms of land and property. Option S12 would have potential effects on biodiversity, heritage and landscape.

3.6.223 Option S13 (car park X and V) scored poorly in terms the floodplain and surface access with potential for local traffic impacts on the Perimeter Road South / Charlwood Road. There would also be an impact on staff parking.

3.6.224 Options S14 (Crawters Brook) and S15 (Purple Parking Area) were considered to impact upon operations given their proximity to the proposed new end around taxiway. A large portion of Option S14 and S15 was located within an area of flood risk. Option S14 would experience some biodiversity loss, whilst Option S15 scored well environmentally.

3.6.225 Options S17 (FTG area), S18 (FTG west area) and S19 (Air Museum land area) were considered to be high risk options in terms of surface access given they were remote from strategic road network, railway station and bus routes making staff access difficult. It was considered that access via Charlwood/ Lowfield Heath Road was unacceptable given the impact on those communities.

3.6.226 Option S20 (Old Batching Plant area) was considered to be a good option in terms of business case and deliverability given its location to the airside works areas and that it has previously been used for similar compound related activities. It was a 'less feasible' option in terms of surface access as there were implication for Larkins Road / Perimeter Road North. The site was also located within Flood Zone 3 and surface water attenuation would be required.

3.6.227 Option S21 (Summer Specials South Area) scored well against deliverability, water, environment, community and land and property criteria. In terms of operations, planning and consents and surface access, this is a 'feasible' option. Option S21 scored 'less feasible' however against the business case, as the area is currently used for block parking which would be relocated to make way for the Lima Taxiway extension (see Taxiway Option E20). A construction compound on this site would therefore be very short-term which would not be cost effective.

3.6.228 Options S22 (Pond M North Area) was considered high risk in terms of deliverability given the undulating ground, whilst Option S24 (Operational Stands Area) was deemed high risk for surface access given its proximity to live operations which would require considerable co-ordination to manage access/egress.

3.6.229 Option S23 (Oscar Area) performed worse than others against the business case criteria. In the near term the area is utilised for Motor Transport and the CARE facility which would need to be moved to facilitate a compound and delay its construction. In the mid-term the area was one of the preferred options for new stands.

3.6.230 Option S25 scored poorly for land and property given it was an off-site parcel, far outside the airport boundary and not owned by GAL. The site is greenfield land within the greenbelt and was deemed a high-risk option in planning terms.

Preferred Options

3.6.231 On the south side of the airport, Options S1 and S2 performed best overall given their proximity to the works area and their existing condition as areas of hardstanding. Therefore these options had less impact on the environment compared to offsite locations (eg Option S7 and S8). Both sites have therefore taken forward as the preferred options for further design development.

3.6.232 Of the northern options, Option S20 performed best given its direct access to the airfield and previous use as a construction area. As a 'relatively good' option, this site scored better than others with regard to environmental considerations. This was therefore taken forward as the preferred option for further design development.

3.6.233 Following detailed design development, an additional requirement in the form of a staging and laydown compound has been identified following the original options appraisal. Option S6 (car park Z) has been identified to fulfil this role considering a reduction in on airport parking demand forecast thereby resolving one of the original concerns in respect of progressing this option. The compound will be used as a staging area for the workforce, vehicles and plant for the core and taxiway works. In addition, the site would be used to stockpile small quantities of spoil away. This facility is anticipated to be needed from the start of work until the core airfield works are completed.

T. Highway Construction Compounds

3.6.234 Given the nature of the proposed highway works it is anticipated that at least one construction compound would be required to support these works.

3.6.235 Based on the requirements set out in **ES Appendix 3.5.1: Options Appraisal Tables** (Doc Ref. 5.3), the following options for highway construction compounds have been identified.

- Option T1 - located in Reigate Field which is a greenfield site located immediately north of the South Terminal roundabout;
- Option T2 - located in Balcombe Road Field which is a greenfield site located immediately south of the M23 spur;
- Option T3 - use of car park H which is located immediately east of the Hilton Hotel within the airport boundary;
- Option T4 - use of car park Y which is located north west of the North Terminal roundabout within the airport boundary;
- Option T5 - located at Peeks Brook Lane North which is an existing industrial site currently used as a compound for the M23 spur works;
- Option T6 - located at Peeks Brook Lane South which is a brownfield site currently used temporarily as a car park;
- Option T7 - use of the M23 Compound North located north east of the airport alongside the northbound carriageway of the M23 motorway and currently used as a compound to service the M23 works;
- Option T8 - use of the M23 Compound South which is an existing industrial site located on the eastern side of the M23 motorway;
- Option T9 - located at Junction 10 Copthorne is a partially built industrial site containing a number of industrial units;
- Option T10 - an area adjacent to the River Mole to the north of Longbridge Roundabout; and
- Option T11 - car park B which is located south of Airport Way, adjacent to the railway line and currently used for car parking.

3.6.236 The above highway construction compound options are presented on **ES Figure 3.3.18** (Doc Ref. 5.2).

Initial Appraisal

3.6.237 Options T1 and T10 scored best in terms of deliverability given their proximity to the highway works sites. They scored lower in terms of planning and environment on account of being greenfield sites that could be of ecological value. However, the compounds would be temporary and any effects on the environment would be short term in nature. They were also located near some residential properties so scored lower with regard to community impacts. The sites were not within GAL ownership. In terms of the business case, the sites were considered to be a 'relatively good' option.

3.6.238 Whilst being well located in relation to the works, Option T2 scored lower with regard to planning and environment given its location outside of the airport. It was also located within close proximity to a number of residential properties so scored lower than other options in regard to community. The site was also outside of GAL ownership. In terms of deliverability, it would require additional works to create the access, but it was considered 'feasible' subject to access from the M23 spur being agreed with National Highways.

3.6.239 As existing developed sites (car parks), Options T3 and T4 scored well against the planning, environment and deliverability criteria. Option T3 scored poorly for surface access as it would result in impacts for South Terminal access/egress capacity and conflicted with adjacent uses (eg Hilton Hotel), whilst Option T4 was located partially within the floodplain.

3.6.240 Options T5 and T6 comprised existing brownfield sites, scoring well in relation to the environment. However, both were considered to be 'less feasible' options with regard to surface access given the impacts on the M23 spur and difficulty gaining vehicle access. Neither of the options were owned by GAL.

3.6.241 Options T7 and T8 performed well in relation to operational requirements, given their location away from the airport. However, both were considered to be 'high risk' options in terms of surface access and deliverability given the access restrictions onto the M23 and the longer traffic routing that would be required to gain access to and from the main highway works sites. Neither site was owned by GAL and Option T8 was used by National Highways.

3.6.242 Option T9 also scored well against operational requirements given its location away from the airport. However, this has meant it scored poorly in terms of deliverability, given the requirement to be located near to the works.

3.6.243 Option T11 scored well against deliverability, surface access and environment criteria. The loss of existing car parking capacity meant it scored poorly in terms of the business case and operations. The area is in close proximity to the floodplain and as such scored poorly in terms of water. As areas of existing development, they performed well against all other criteria.

Preferred Options

3.6.244 As a result of their locations adjacent to the existing highways, the initial preferred options presented in the PEIR were T1, T4 and T10. Although T1 and T10 are on greenfield sites, the compounds would be temporary and any effects on the environment would be short term in nature. Option T4 could fulfil several competing requirements (see G12: car park and I4: underground surface water storage), and timing of works suggest these could be sequenced to remove any overlap.

3.6.245 Further design development in relation to the Longbridge Roundabout and the widening of the Airport Way railway bridge to accommodate a shared use path, require highway compounds to be in close proximity to these proposed works. In this respect Option T10 (Longbridge Roundabout Compound) and Option T11 (car park B) have been identified and selected as preferred options. Option T10 would have a potential impact on trees, soils and create a visual impact, however, as stated above, the compound would be temporary and land would be reinstated to previous use following completion of the works.

Preferred Options

3.6.246 Following the appraisal process and based on the above, the options identified as performing best against the criteria have been taken forward to form part of the current design for the Project. Table 3.4.3 summarises the preferred option(s) taken forward within the current design and assessed within the ES.

Table 3.4.1: Preferred Design and Layout Options

Component	Preferred Option(s)
Runways	Option A1 - moving the existing northern runway centreline north by 12 metres to achieve a separation distance of 210 metres. This enables the main and northern runway to operate simultaneously, in a dependent dual runway configuration.
End Around and Exit/ Entrance Taxiways	Option B1 - vacate onto a new end around taxiway inside the airport boundary. This option is the most favourable, but to meet future capacity requirements, it should be provided in combination with Options B2 and B3. Option B2 - taxi the full length of the runway and wait to vacate at the end. Option B3 - arriving aircraft to taxi across the northern runway behind a departing aircraft.
Aircraft Holding Areas	Option C3 - Charlie Box.
Terminals	Option D6 - expand both existing South and North Terminals to provide a total terminal capacity for 75.6 mppa by 2039.
Piers and Stands	Option E10 - new Pier 7 immediately south and west of the existing cargo facility (single loaded). Option E15 - Oscar Stands. Option E17 - 40s (Forties) Stands. Option E20 - Taxiway Lima Extension Stands. Option E21 - Hangar 7 Stands. Option E22 - Stands 150-1.
Hangars	Option F1 - a site which is currently used for car parking (Long Stay Summer Special car park).
Hotels	Option G1 - 1 new hotel on the existing car park H (up to 400 bedrooms). Option G3 - 1 new hotel on the former car rental site (up to 200 bedrooms). Option G4 - 1 new hotel adjacent to and north of multi-storey car park 3 (MSCP3) at South Terminal (up to 400 bedrooms).

Component	Preferred Option(s)
	Option G5 - Conversion of the Destinations Place office building to a hotel, above South Terminal (approximately 250 bedrooms).
Offices	Option G6 - located to support sustainable transport and capable of providing for the estimated 350 m^2 of office floorspace required.
Car Parks	Options G10 & G11- MSCP H (South Terminal, walk to terminal) – 3,700 spaces. Option G12 – MSCP Y (North Terminal, walk to terminal) – 3,035 spaces. Option G13 - MSCP J (North Terminal, walk to terminal) – 890 spaces. Option G15 - North Terminal Long Stay Decking (North Terminal, bus to terminal) – 1,680 spaces. Option G17 - At the existing Purple Parking site (surface level only) – 700 spaces.
Foul Water	Option H2 - South Terminal. Re-route two existing pipelines (pumping station 19 and 23) to Crawley STW to reduce future flow to Horley STW. Option H9 - Airfield. Add a new pipeline to accommodate relocation of Taxiway Juliet and combine with flows from two existing pumping stations (pumping station 2 and 3) in to one new pumping station. Option H11 - North Terminal. New pipeline and pumping station to solve localised pinch point.
Surface Water Drainage	Option I4 - creation of an underground storage pond for additional surface water storage prior to Pond D, maintaining development opportunities for the land. Option I5 - move Pond A north in line with Taxiway Juliet providing local storage and reconfigure the River Mole. Option I6 - new water treatment works.
Fluvial Flood Risk Mitigation	Option J1 - located within and adjacent to land known as Museum Field. Option J3 - located within car park X. Option J10 - River Mole diversion.
Displaced Facilities: Waste Management, Engine Running Areas and Rendezvous Point	Waste management facility: Option K1 - area currently used as valet north 'Flying Pan' car park (north of cargo). Engine running areas: Options K3 - located on Taxiway Yankee at Block 15/16. Option K4 - located on Taxiway Juliet West. Rendezvous Point: Option K13 - located to the north west of the airport campus, north of Hangar 7.
Longbridge Roundabout	L3 - improvements to the existing signal controlled roundabout to increase the junction size and capacity.
North Terminal Roundabout	M2 - grade separation predominantly within the existing highway boundary is preferred which has been refined to 'Option 4, Variant C' (presented within **ES Appendix 3.5.2: North Terminal Roundabout Options Development** (Doc Ref. 5.3)).
South Terminal Roundabout	N2 - grade separation within the existing highway boundary) are preferred and the sub-option being considered is for a grade separated roundabout.

Component	Preferred Option(s)
Rail Access	Option O1 - do minimum as it is considered that it would still provide the necessary capacity required to accommodate the anticipated future passenger numbers without adversely affecting airport operations and passenger experience.
ITTS	Option P2 - optimise the current operating pattern, this would add sufficient capacity to meet for demand with only minor deterioration in peak period passenger experience.
Surface Access: Forecourts	Option Q2 - optimisation of existing highway. Option Q3 - optimisation of existing highway with some displacement/ use of remote facilities.
Active Travel	Option R2 - Longbridge Roundabout. Modifications to circulatory positioning and upgrades to proposed crossings. Option R4 - South Horley to North Terminal Roundabout. This would comprise a signal controlled crossing. Option R9 - National Cycle Route (NCR) 21 upgrades south of Airport Way: widening at localised pinch points. Option R10 – segregated pedestrian / cyclist path from Longbridge roundabout to North Terminal roundabout.
Airfield Construction Compounds	Option S1 and Option S2 on the southern side of the airport. Option S20 on the northern side of the airport. Option S6 required as a staging and laydown compound.
Highway Construction Compounds	Option T1 - Reigate Field. Option T4 - car park Y. Option T10 - field north of Longbridge Roundabout. Option T11 - car park B.

3.7. Conclusion

3.7.1 This ES chapter explains the processes and methodology adopted by GAL to identify and assess potential options and alternatives to deliver further long-term capacity and provide greater resilience to Gatwick's existing infrastructure.

3.7.2 A do minimum option with regard to passenger throughput and airport improvements (Scenario 1) would restrict future growth and Gatwick's ability to contribute to meeting future demand for increased aviation capacity. This option would not allow Gatwick to maintain best use of its existing runways as only one runway would be operational at any time.

3.7.3 GAL is not actively pursuing the option of a second runway to the south of the existing main runway (Scenario 3) in light of the Government's support for the third runway at Heathrow but considers it to be in the national interest for land to continue to be safeguarded to allow for a new runway to be constructed, if required in the future.

3.7.4 GAL is pursuing Scenario 2 (making best use of its existing runways) and, therefore, this ES relates to Scenario 2, given that it results in the benefits set out in paragraph 3.4.15.

3.7.5 A review of design and layout options has been undertaken through an iterative design process for the Project. Throughout the identification, evaluation and refinement processes, the proposals were subject to environmental assessment, engagement with key stakeholders and statutory consultation (Autumn 2021). Following feedback received, the preferred options for the Project were subject to further design development and refinement leading to a targeted consultation in Summer 2022 relating primarily to the proposed highway improvements.

3.7.6 The Project has been the subject to environmental assessment to refine and define appropriate mitigation for the effects on communities and the environment. The results of these assessments can be found in Chapters 7-19 of the ES.

3.7.7 The current design and layout of the Project layout is described in **ES Chapter 5: Project Description** (Doc Ref. 5.1). Overall, it is considered that the selected options offer a sustainable approach to providing greater operational resilience both at Gatwick and improved UK airport capacity.

3.8. References

Legislation

Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Published Documentation

Department for Transport (2014) National Policy Statement for National Networks

Department for Transport (2018) Airports National Policy Statement

Department for Transport (2022) Transport analysis guidance (TAG)

Gatwick Airport Limited (GAL) (2019) Gatwick Airport Master Plan 2019

National Highways (2020). Design Manual for Roads and Bridges

Network Rail (2021). Station Capacity Planning Strategic Planning NR/GN/CIV/100/03

3.9. Glossary

Table 3.7.1: Glossary of Terms

Term	Description
ACL	Airport Coordination Limited
ANPS	Airports National Policy Statement
ATM	Air transport movements
CAA	Civil Aviation Authority
CARE	Central Area Recycling Enclosure
EIA	Environmental Impact Assessment
ES	Environmental Statement
ESEA	European Aviation Safety Agency
GAL	Gatwick Airport Limited

Term	Description
ICAO	International Civil Aviation Organization
IDL	International Departure Lounge
BA	British Airways
ITTS	Inter Terminal Transit System
mppa	million passengers per annum
MSCP	Multi-storey car park
NPS	National Policy Statement
NNNPS	NPS for National Networks
PEIR	Preliminary Environmental Information Report
PTAR	Preliminary Transport Assessment Report
STW	Sewage Treatment Works
130s, 140s	Aircraft stands