



Gatwick Airport Northern Runway Project

Design and Access Statement
Appendix 1 – Design Principles – Clean Version

Book 7

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1 Introduction

1.1 Introduction

- 1.1.1 This Appendix describes the Design Principles that underpin the design and integration of the Project into its context. They are written to capture the key principles documented within this DAS that have shaped the indicative design so far as part of development of the masterplan, and to make a commitment that these will be maintained and developed as part of future detailed design and delivery phases of the Project.
- 1.1.2 The Design Principles represent a ‘forward-looking’ view of the key components of the design, whereas the earlier volumes of this DAS illustrate the process whereby the masterplan was achieved. The principles will be followed at the detailed design stage (following a Development Consent Order (DCO) being granted).
- 1.1.3 The Design Principles reflect the design commitments of GAL in relation to the Project. They are intended to set out a unified approach to design and capture the collective knowledge of the Project team at the time of making an application for development consent. They create an overarching, shared resource which give clarity to stakeholders over the required design outcomes. They give more detail on design intent and objectives to be achieved, whilst providing some flexibility for the detailed designs to be developed.

Approach to Control of Design

- 1.1.4 These Design Principles will be secured through the DCO and will provide certainty as to the principles that will be applied in designing the Project. They provide stakeholders with assurance on how the design of the Project will be developed following the grant of consent.
- 1.1.5 Two DCO requirements in Schedule 2 of the **Draft Development Consent Order** [REP1-004] require that before work can commence on any relevant part of the Project details of buildings, structures and works must be submitted to and approved by

the relevant local planning authority or relevant local highway authority. These details must be in accordance with these Design Principles. One requirement restricts the development of local highways and the other restricts development of the authorised development (excluding highway works and excepted development).

- 1.1.6 This Appendix forms one of a suite of control documents that capture the Project's operational design-related commitments.
- 1.1.7 Other control documents that also secure measures related to the Project's design include:
- The plans contained within **Book 4 – Plans and Drawings** .
 - **ES Appendix 5.3.2 Code of Construction Practice** [REP1-021].
 - **ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** [APP-113 - APP-116].
 - **ES Appendix 5.4.2 Carbon Action Plan** [APP-091].
 - **ES Appendix 5.4.1 Surface Access Commitments**) APP-090].
 - **ES Appendix 11.9.6 Flood Risk Assessment - Annex 2 Surface Access Drainage Strategy** [APP-148] and
 - **ES Appendix 19.8.1 Public Rights of Way Management Strategy** [APP-215].
- 1.1.8 This Appendix will be a control document and should be read in conjunction with the other control documents and **ES Appendix 5.2.3 Mitigation Route Map** [APP-078] to understand the full suite of mitigation measures proposed.
- 1.1.9 The below sets out where design principles are secured in other control documents:
- In the case of landscape and ecological design, detailed landscape requirements are secured in the **ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** [APP-113 - APP-116]; These Design Principles provide landscape and ecological commitments in addition to those commitments and it is integral that these documents are read in parallel when designing works. The **Draft Development Consent Order** [REP1-004] includes a requirement that before works are commenced on any part of the Project, a landscape and ecology management plan (LEMP) must be submitted to and approved by the relevant planning authority. The LEMPs must be in accordance with the **ES Appendix 8.8.1 Outline Landscape and Ecology Management Plan** [APP-113 - APP-116].

- There are specific requirements in the **Draft Development Consent Order** [REP1-004] for the approval of detailed drainage designs. The detailed drainage designs for the proposed development (with the exception of the highways works and excepted development) must be in accordance with the drainage Design Principles included within this Appendix. The detailed drainage designs for the highway works must be in accordance with the **Surface Access Drainage Strategy** which has been discussed with the local highway authorities and National Highways.
- Construction-related design commitments (including compound siting and design) are set out in the **ES Appendix 5.3.2 Code of Construction Practice** [REP1-021] and its subsidiary plans. A DCO requirement specifies that the construction of the authorised development must be carried out in accordance with the **ES Appendix 5.3.2 Code of Construction Practice** [REP1-021].

Approach to Control of Design

- 1.1.10 The works subject to detailed design approval are set out in the Schedule 2 Requirements of the **Draft Development Consent Order** [REP1-004]. The relevant local planning authority (and in some cases the relevant highway authority) will approve the detailed design in accordance with the requirements set out in Schedule 2. This includes ensuring that the detailed design is in general accordance with the Design Principles.
- 1.1.11 To assist with the evaluation of the design against the Design Principles, they have been split into four categories:
- Project-Wide Design Principles;
 - Detailed Built Form Design Principles;
 - Detailed Drainage Design Principles; and
 - Detailed Landscape Design Principles.

Table 1.11.1: Site-wide Design Principles

Site-Wide Design Principles	
Landscaping	
L1	Any retained trees, scrub and hedgerows which are features of ecological value will be reviewed to see if they could be incorporated within the design, where feasible to do so.
L2	Tree and shrub planting will be provided within built-up areas (such as car parks) to reinforce retained tree lines and across the Project. The landscape planting will include a variety of native trees and shrubs and wildflower grasslands.
L3	New woodland will be planted along the highway works and new road alignments. In particular, an existing non-native hedgerow comprising Leyland cypress between the A23 London Road and Perimeter Road East will be replaced with a native species-rich hedgerow.
L4	Vegetation retention proposals for all elements of the Project that coincide with existing significant vegetation including hedgerows, woodland, trees, shrubs, wetland and amenity planting or elements of the Project will be designed to: <ul style="list-style-type: none"> ▪ Ensure green infrastructure assets are retained wherever possible and adverse impacts on the important features and locally distinctive patterns of development at Gatwick Airport are minimised. ▪ Minimise adverse impacts on the character of surrounding landscapes and townscapes. ▪ Prevent the coalescence of the airport and settlements of Crawley and Horley. ▪ Protect important urban green spaces, including Riverside Garden Park and Church Meadows. ▪ Ensure that visually significant vegetation is retained to minimise adverse effects on visual receptors, protect important views and protect the natural beauty and setting of the AONBs and the National Park
L5	The management of, or implementation of, proposed mitigation to enhance existing green infrastructure including hedgerows, woodland, trees, shrubs, wetland and amenity planting will be designed to:

Site-Wide Design Principles	
	<ul style="list-style-type: none"> Enhance the character, visual quality and biodiversity of Gatwick Airport and its surrounding landscape/townscape. Enhance the screening capacity of visually significant vegetation.
L6	<p>Proposed woodland, tree, scrub, shrub, wetland, amenity and grassland planting will be designed to:</p> <ul style="list-style-type: none"> Ensure a high quality environment is created within Gatwick Airport and its surrounding landscape/townscape. Provide replacement/compensation planting where vegetation would be removed, particularly as a result of surface access improvements within and adjacent to the A23/M23 Spur corridor.
L7	<p>Proposed earth shaping, embankments, cuttings or bunds will be designed to:</p> <ul style="list-style-type: none"> Ensure that visual screens are provided to minimise adverse effects on visual receptors and provide an opportunity for the creation of diverse habitats. Provide replacement/compensation features where they have been removed.
L8	<p>Proposed fences, walls or barriers will be designed to:</p> <ul style="list-style-type: none"> Ensure that visual screens are provided to minimise adverse effects on visual receptors. Provide replacement/compensation features where they have been removed.
L9	<p>Proposed hard landscaping will be designed to:</p> <ul style="list-style-type: none"> Enhance existing green infrastructure including hedgerows, woodland, trees, shrubs, wetland and amenity planting; Enhance the character, visual quality and biodiversity of Gatwick Airport and its surrounding landscape/townscape. Enhance the screening capacity of visually significant vegetation.

Site-Wide Design Principles	
Built Form	
BF1	All new buildings constructed as part of the Project will be designed and constructed for Net Zero emissions during operation.
BF2	Detailed design will consider how to reduce reliance on the energy grid during prolonged warmer/colder seasons and more extreme temperature events, particularly low carbon heating and cooling systems and ventilation systems. It will also consider measures to reduce water use and increase re-use across new buildings.
BF3	The design of buildings should consider the implementation of design measures/features to manage the risk of extreme storm events, flood events and heatwave related drought events.
Noise	
N1	In general, detailed design should aim to minimise noise emissions from noise sources and ensure that noise-sensitive facilities are designed to insulate them from external noise to meet good internal noise standards. There are also noise barriers and bunds (described below) which should be designed to deliver the noise screening for aircraft and other sources as reported in the Environmental Statement.
N2	Plant associated with new facilities should be designed with noise attenuation where necessary to avoid noise disturbance to noise-sensitive uses on and off-site, in particular with reference to BS4142 for off-site receptors as referred to in the Environmental Statement.
N3	To reduce adverse noise impacts associated with the proposed surface access improvements, the design shall include: <ul style="list-style-type: none"> ▪ A new right turn onto the A23 from the North Terminal Roundabout which removes the current need for traffic wishing to turn right instead having to turn left up to the Longbridge Roundabout, ▪ around it, and back down the A23, thus reducing traffic flows on this section of the A23.

Site-Wide Design Principles	
	<ul style="list-style-type: none"> ▪ Approximately 1 metre high noise barrier along the North Terminal Roundabout flyover elevated section (facing Riverside Garden Park). ▪ Approximately 1 metre high noise barrier along the South Terminal Roundabout flyover elevated section, north side.
Resource & Waste	
RW1	Detailed design should seek opportunities to repurpose the use of existing assets, components, products and materials at Gatwick Airport.
Lighting & Amenity	
LA1	The extent to which people need to see after dark will vary from area to area, with some requiring high levels of visual acuity whilst others should enable just a basic understanding of scale and the ability to identify a safe passage through a space.
LA2	The lighting design for each project will consider the manner in which the space that is being designed will be used after dark as well as its relationship to spaces adjoining it.
LA3	A considered and consistent lighting approach should be developed for the key navigational tools such as roads and pedestrian paths. Light will play a crucial role in supporting legibility and accessibility and in reinforcing specific visual and physical connections across Gatwick Airport.
LA4	The design of artificial light must support the various needs of the passengers and staff at Gatwick Airport after dark. This includes those with special needs and the elderly. Supporting a highly accessible after-dark environment will include avoiding excessive contrasts, avoiding direct and reflected sources of glare, avoiding shiny, mirror-like surfaces at pedestrian level, controlling shadow and limiting potentially confusing upward lighting.
LA5	Energy efficiency should be considered at all stages of the Project, including design, construction and operation. This includes the efficiency of the energy supply and whether renewable energy measures could be integrated into the design of the Project.

Site-Wide Design Principles

LA6	<p>Artificial light must be designed to assist in maintaining a safe environment at all times. This includes positively defining potential hazards such as steps and ramps and areas where pedestrians encounter moving vehicles, at for example, pedestrian crossings. Such areas may be defined after dark through passive techniques, such as landscape materials with appropriately contrasting reflectance, as well as through active illumination; perhaps using focused light and increased intensity.</p>
LA7	<p>Lighting should be designed to provide an overall sense of security throughout Gatwick Airport, including supporting both active surveillance (e.g. CCTV) if/when required and modelling of people and surfaces should be provided where required. Where the CCTV surveillance is supported by infra-red technology, the requirement for additional light in the visible spectrum may not always be necessary.</p> <p>It should be noted that perceptions of safety and security are not necessarily dependant on providing high intensities of light and indeed, in some cases, low levels of light can be important in maintaining a sense of security and privacy. Creating an environment that feels secure will largely be dependent on ensuring that spaces are legible, appear well maintained, give due consideration to inclusivity and do not inhibit adaptation.</p>
LA8	<p>In general, lighting should be controlled to remain contained within the site boundary. Positioning and the use of shields could be used to prevent unintended light spill.</p>
LA9	<p>Lighting in the vicinity of sensitive receptors should ensure that potential adverse effects are identified, controlled and mitigated. Mitigation should typically be provided in the form of lighting equipment utilising precise optics and lenses, baffles and light shields, in conjunction with a suitable lighting control regime. Individual habitat requirements may necessitate the specification of a particular lighting spectrum, however this should be proportionate and not at the expense of safety.</p>

Site-Wide Design Principles

LA10	The lighting design should consider sustainable development and be designed to minimise adverse impacts on biodiversity, local residents and users of public rights of way and open space through specifying types of lighting equipment, mounting location, materiality, durability and light source to minimise disruption to safety and security during operation.
LA11	Lighting will be designed to avoid disturbance to areas of value for bats by shielding adjacent habitats of value.

Table 1.11.2: Specific Built Form Principles

Specific Built Form Principles	
North & South Terminal Buildings	
DBF1	<p>The extensions to the terminal buildings shall incorporate the following design features:</p> <ul style="list-style-type: none"> ▪ A contemporary aesthetic ensuring that the extensions and the existing buildings complement each other, reflect modern design techniques and use high quality design materials. ▪ The façade will be optimised where possible to provide natural light and views to the airfield. ▪ Materials will include metal cladding and glazed curtain walling.
DBF2	<p>The design of buildings will have regard to the following considerations:</p> <ul style="list-style-type: none"> ▪ Health and wellbeing. ▪ Accessibility for all. ▪ Floorplate configuration to promote natural daylight and intuitive wayfinding. ▪ Efficient servicing and recycling. ▪ Flexibility for future change. ▪ Consider the re-use of existing structure and building fabric. ▪ Sense of place and passenger experience. ▪ Robust fabric and materials. ▪ Acoustic environment design.
Piers	
DBF3	<p>The extensions to the terminal buildings shall incorporate the following design features:</p>

Specific Built Form Principles	
	<ul style="list-style-type: none"> ▪ A contemporary aesthetic ensuring that the extensions and the existing buildings complement each other, reflect modern design techniques and use high quality design materials. ▪ The façade will be optimised, where possible, to provide natural light and views to the airfield. ▪ Materials will include metal cladding and glazed curtain walling. ▪ Building form to consider future expansion and flexibility.
DBF4	<p>The design of buildings will have regard to the following considerations:</p> <ul style="list-style-type: none"> ▪ Health and wellbeing. ▪ Accessibility for all. ▪ Floorplate configuration to promote natural daylight and intuitive wayfinding. ▪ Efficient servicing and recycling. ▪ Correct segregation of passenger and operational flows. ▪ Intuitive wayfinding. ▪ Passenger experience. ▪ Accessibility for all. ▪ Robust fabric and materials. ▪ Consideration for the generation of renewable energy. ▪ Security. ▪ Acoustic environment design.
Hotel Buildings	
DBF5	<p>The buildings will incorporate the following design features:</p>

Specific Built Form Principles	
	<ul style="list-style-type: none"> ▪ A contemporary aesthetic reflecting modern design techniques and use high quality design materials, suitable for its immediate context and adjacent buildings. ▪ The external appearance will comprise lightweight cladding and areas of glazing to the public areas of the building. With windows to individual rooms taking into consideration privacy and acoustic requirements.
DBF6	<p>The design of buildings will have regard to the following considerations:</p> <ul style="list-style-type: none"> ▪ Health and wellbeing. ▪ Accessibility for all. ▪ Floorplate configuration to promote natural daylight and ventilation. ▪ Security, safety and low energy lighting. ▪ Efficient servicing and recycling. ▪ Internal acoustic standards between adjacent rooms or public areas. ▪ Renewable energy generation.
Office Buildings	
DBF7	<p>The building will incorporate the following design features:</p> <ul style="list-style-type: none"> ▪ A site-wide; consistent, contemporary, and light, industrial aesthetic to ensure that the building complements its surroundings, reflects all new buildings complement each other, reflect modern design techniques, high quality design and materials, and an industrial/aviation aesthetic. ▪ Clearly defined entrance points. ▪ The building form will be complemented by soft landscape including amenity space for employees.

Specific Built Form Principles	
	<ul style="list-style-type: none"> ▪ The façade will incorporate large areas of glazing to give visual amenity and natural light to the users, with floor plate depth to be considered to avoid deep floor plates.
DBF8	<p>The design of buildings will have regard to the following considerations:</p> <ul style="list-style-type: none"> ▪ Functionality and efficiency to support the daily operations and tasks of the employees. ▪ Flexibility. ▪ Comfort and wellbeing. ▪ Spaces that promote collaboration and communication. ▪ Technology integration. ▪ Privacy and acoustics. ▪ Accessibility for all. ▪ Solar and passive shade. ▪ Servicing and waste recycling. ▪ Security, access control and CCTV. ▪ Renewable energy generation.
Multi-storey and Deck Parking	
DBF9	<p>The buildings will incorporate the following design features:</p> <ul style="list-style-type: none"> ▪ A naturally ventilated open façade. ▪ Clearly visible entrance and circulation cores. ▪ The building form will be unobtrusive with the structural solution providing the building form and language. ▪ Additional specific façade design guidance for Multi-Storey Car Park H is detailed in Section 6.10.2 of the DAS.

Specific Built Form Principles

DBF10 The design of buildings will have regard to the following considerations:

- Level floor/ramp and ramped floor options.
- Security, safety, CCTV, slip resistance and low energy lighting.
- Blue badge holder parking.
- Ventilation and smoke extraction.
- Charging points for electric vehicles.
- Renewable energy generation.
- Safe walking routes for pedestrians.
- Access control and ticketing.
- Cycle, scooter and motorcycle parking.

Surface Parking

DBF11 The surface parking will incorporate the following design features:

- Clear and orderly layout of spaces to aid circulation and space recognition.
- Easy identifiable entrance and exit systems.
- Parking to have solid surface or where appropriate to be surfaced with a permeable material (such as 'Grasscrete' paving), to facilitate sustainable drainage.

DBF12 The design of buildings will have regard to the following considerations:

- It will have mast lighting and CCTV.
- Security, safety, CCTV, slip resistance and low energy lighting.
- Blue Badge holder parking.

Specific Built Form Principles	
	<ul style="list-style-type: none"> ▪ Use of recycled fabric from Gatwick Airport as sub-base or similar. ▪ Safe walking routes for pedestrians. ▪ Access control and ticketing.
Taxiways	
DBF13	Where proposed taxiways would bisect parts of floodplain areas syphoned connections are proposed to retain floodplain connection on both sides of the taxiways.
DBF14	Earthworks and bunding of approximately 8 metres in height shall be provided at the western end of northern runway and noise barriers approximately 10 metres in height shall be provided for approximately 500 metres to the north of the relocated Taxiway Juliet and around the boundary of the re-located fire training ground.
Perimeter Road South	
DBF15	The design will include the construction of a 300mm high weir on the southern entrance to the River Mole runway culvert (eastern box).
DBF16	Creation of a fish pass on the existing weir located immediately upstream of the River Mole runway culvert to improve fish passage particularly during low flow conditions.
Surface Access	
DBF17	Local highway authority roads are to be designed in accordance the relevant local design standards, including the Manual for Streets.
DBF18	The design will include a noise barrier approximately one metre in height along the North Terminal roundabout flyover elevated section (facing Riverside Garden Park).
DBF19	The design will include a noise barrier approximately one metre in height along the South Terminal roundabout flyover elevated section, north side.

Specific Built Form Principles	
DBF20	The extension to the existing culvert under the A23 on the Burstow Stream Tributary will be designed to be as short as possible and would be designed with a depressed invert and a natural bed gradient in order to maintain continuity of flow and sediment transport capability. The culvert would also be designed with splayed wing walls to reduce the light and dark barrier.
DBF21	An active travel path for pedestrian and cyclists will be provided to connect Longbridge Roundabout to Car Park Y on the southern side of the highways improvement works. This will include a raised embankment on the right bank of the River Mole. To maintain floodplain connectivity culverts will be installed beneath the travel path.
DBF22	The permanent lighting design as part of the Longbridge Roundabout highways improvements will consider the proximity to the Church Road (Horley) Conservation Area.
DBF23	The extent of vegetation clearance and planting as part of the Longbridge Roundabout highways improvements should be designed to avoid visual impacts on views across the Church Road (Horley) Conservation Area.
DBF24	The design will include the provision of a permanent additional pedestrian route linking Riverside Garden Park into the replacement public open space in Car Park B, linking with the Sussex Border Path to the north of the A23.
Care Facility	
DBF25	The building will incorporate the following design features: <ul style="list-style-type: none"> ▪ Structural frame, with lightweight cladding and translucent panels where possible for natural daylighting.
DBF26	The design of buildings will have regard to the following considerations: <ul style="list-style-type: none"> ▪ Health and wellbeing (including DDA compliant access etc).

Specific Built Form Principles	
	<ul style="list-style-type: none"> ▪ Security, safety and low energy lighting. ▪ Efficient servicing and recycling. ▪ Safe pedestrian walking routes. ▪ Lifecycle costs, demolition and future recycling of building fabric. ▪ Surface parking with disability provision.
Fire Station	
DBF27	<p>The building will incorporate the following design features:</p> <ul style="list-style-type: none"> ▪ A contemporary aesthetic reflecting modern design techniques and use high quality design materials, suitable for its immediate context and adjacent buildings. ▪ Large opening doors with fast action open.
DBF28	<p>The design of buildings will have regard to the following considerations:</p> <ul style="list-style-type: none"> ▪ Health and wellbeing (including DDA compliant access etc). ▪ Security, safety and low energy lighting. ▪ Efficient servicing and recycling. ▪ Safe pedestrian walking routes. ▪ Lifecycle costs, demolition and future recycling of building fabric. ▪ Surface parking with disability provision. ▪ Good quality staff accommodation and amenities. ▪ Consideration for the generation of renewable energy.
Hangar	

Specific Built Form Principles

DBF29	<p>The building will incorporate the following design features:</p> <ul style="list-style-type: none"> ▪ Longspan structural frame and large doors to provide clear width access for aircraft. ▪ Metal cladding and roofing with use of transparent or translucent panels for natural daylighting in the main hangar space.
DBF30	<p>The design of buildings will have regard to the following considerations:</p> <ul style="list-style-type: none"> ▪ Security, safety and low energy lighting. ▪ Consideration for the generation of renewable energy. ▪ Good quality staff accommodation and amenities. ▪ Consideration for the generation of renewable energy.

Table 1.11.3: Drainage Principles

Drainage Principles	
Authorised Development (Excluding the highways works and expected development)	
DDP1	Surface water drainage storage attenuation features (tanks, ponds etc) will be sized to cater for the 1 in 100 (1%) Annual Exceedance Probability (AEP) storm event plus an allowance for climate change as required by Environment Agency guidance.
DDP2	Loss of fluvial (river) floodplain would be mitigated to ensure no increase in flood risk to other parties through syphons and the flood compensation areas.
DDP3	Infiltration basins and retention ponds will not appear utilitarian or urban and would be designed to appear as naturalistic elements within the wider setting, that take account of existing topography, gradients and field boundaries. Planting would be provided to soften edges where this is appropriate to the context. The drainage design shall incorporate Sustainable Drainage Systems (SuDS) that provide for runoff treatment and reduce the risk of flooding in local catchments by providing storage and attenuation.
DDP4	The design of drainage and water mitigation measures should consider the exceedance of the networks/measures capacity and ensure that this would occur safely.
DDP5	Surface water drainage systems should be developed in accordance with the ideals of sustainable development (i.e. SuDS). These should seek to mimic the natural environment and replicate the natural drainage prior to development. This should prioritise the infiltration of runoff to ground where practicable over the restriction of runoff rates (i.e. attenuation). It should be noted that based on the preliminary ground investigation the majority of Gatwick Airport is located within an area of clay geology so infiltration may not be feasible.
DDP6	Improvements to the wastewater sewer system will include the following:

Drainage Principles	
	<ul style="list-style-type: none"> ▪ Replacement of pumps and the pumping main at pumping station PS06 to provide additional capacity; and ▪ Construction of a new pumping station on the east side of the Brighton-London mainline railway to convey all wastewater flows from this area to Crawley STW to relieve the gravity outfall pipe discharging to Thames Water’s Horley STW sewer network.
DDP7	The Project will include additional treatment of flows from the long term storage lagoons to increase capacity for the storage of de-icer contaminated runoff.
DDP8	Car parks will include measures (e.g. interceptors) to ensure no detrimental water quality impact upon receiving watercourses.
DDP9	Ground and groundwater conditions will be taken into account in the detailed design to minimise risk to groundwater quality, to minimise impedance to groundwater flow and to minimise risk of groundwater flooding.
DDP10	Storage features within the drainage network will be sufficient for the mitigation and to minimise any impact on water quality may including: <ul style="list-style-type: none"> ▪ A below ground storage Car Park Y up to 32,000m³ within the existing airfield water drainage network. ▪ A new surface water drainage pumping facility from the Pond A catchment.
DDP11	A drainage network would be installed, consisting of carrier drains, filter drains, ditches and attenuation basins/ponds, along with flow control arrangements to limit discharges to watercourses.
DDP12	Drainage requirements will consider no environmentally significant detriment to the water quality of the receiving watercourses.

Drainage Principles	
DDP13	Airfield syphons are proposed to retain floodplain connection beneath the proposed taxiways. Syphons beneath the noise bund would maintain floodplain connectivity.
DDP14	<p>The water treatment works (constructed wetland treatment system) will be designed to treat de-icer contaminated runoff from the pollution storage lagoons based on a flow of 100l/sand treated to a standard that would allow discharge to the Gatwick Stream. The design of the constructed wetland system will include:</p> <ul style="list-style-type: none"> • reed beds, surrounded by embankments and suitable boundary treatment; • blower systems, provided with acoustic hoods and enclosed by acoustic fencing; • a mix of wetland vegetation species within the reed beds, including those that are resilient to climate change; • bunded nutrient dosing tank and pumps, pipework, pumps, bunding and maintenance access; and a cabin, secure storage unit and the reprovision of the car parking for Gatwick Greenspace Partnership.
DDP15	The new pumping station at the south-west of the site will be sized based on the final design of the Project to ensure runoff from new impermeable areas associated with the alterations to the runway and taxiways (within the existing Pond M catchment) is controlled to greenfield runoff rates.
DDP16	<p>Soft/bio engineering will be used in preference to concrete where natural riverbanks require protection at the connecting spillways to the new flood compensation areas (FCAs) from watercourses. The bank forms would also be varied where they are being altered/ lowered to aid natural variance of flow in the channel. Planting would take place on the Museum Field FCA. This would restore natural vegetation to the floodplain whilst protecting the banks from erosion.</p> <p>The FCAs would include measures to reduce their own impact including:</p> <ul style="list-style-type: none"> ▪ Fish refuges such as at low points within the FCA that could be connected to the watercourse by swales to encourage any fish that move with rising flood water to return to the river as flood waters recede.

Drainage Principles	
	<ul style="list-style-type: none"> Design flow control structure(s) to reduce water levels slowly (if the water level receded rapidly fish are more likely to be stranded).
DDP17	A daylighted channel on the River Mole culvert will be provided and designed with a depressed invert and a natural bed gradient to maintain sediment transport capability. The extension will also be designed with splayed wing walls to reduce the light and dark barrier, as well as include baffles (refuges within a culvert that assist fish with their journey upstream) in the new channel or a low flow channel to retain sediment and create suitable depth of flow under a range of conditions. An expanded metal grid will be provided where the River Mole channel runs below the Taxiway Juliet and this new section of channel will include a low flow channel and a bed with substrate to allow vegetation to establish.
DDP18	Syphoned connections will be installed beneath the noise mitigation feature in the north-western area to maintain floodplain connectivity from Man's Brook.
Highways Works (Work No. 35,36 & 37)	
DDP19	The drainage design for the highways works should comply with the principles set out in the ES Appendix 11.9.6 Flood Risk Assessment - Annex 2 Surface Access Drainage Strategy. (Doc Ref. 5.3).

Table 1.11.4: Detailed Landscape Principles

Detailed Landscape Principles	
Replacement Open Space	
DLP1	The location of open space should be easily accessible by all groups of people, including those with disabilities. The design of the space should also consider the needs of different groups of people, such as families with children, older adults, and people with disabilities.
DLP2	The activities and amenities provided in the open space should be versatile and suitable for different age groups and interests. For example, the space could include areas for sports, playgrounds, seating areas, and green spaces for picnics and relaxation.
DLP3	Open spaces should be well-lit and have clear lines of sight to prevent criminal activity and anti-social behaviour. Security measures should be provided, such as CCTV cameras, to deter criminal activity and provide a sense of safety for users.
DLP4	There should be footpath connections between the existing areas of open space in Riverside Garden Park and Church Meadows and replacement areas in Car Park B and to the west of the River Mole adjacent to Church Meadows.
DLP5	Woodland, scrub and species-rich grassland creation within Car Park B to provide an extension of Riverside Garden Park.
DLP6	Creation of new habitats within a newly created mitigation area north and east of Longbridge Roundabout comprising woodland, scrub and tree planting and species-rich, wet and dry grassland creation.
DLP7	Marginal planting would also be introduced around new attenuation ponds.
Museum Field Environmental Mitigation Areas	

Detailed Landscape Principles	
DBF8	The design of the Museum Field Environmental Mitigation Area should consider the creation of new habitats in the western part of the site, comprising woodland, wet woodland, scrub and tree planting and species-rich grassland.
DLP9	The proposed earth bund in the south and east of Museum Field should provide a mosaic of habitats comprising scrub, grassland and bare or poorly vegetated ground to provide a matrix of habitats suitable for a variety of invertebrates.
DLP10	The flood compensation areas (including access arrangements) at Museum Field and Brook Farm shall be designed in a manner that minimises the disturbance of buried archaeological remains as far as practicable.
DLP11	An extension to the River Mole footpath should be provided to the land at Museum Field and Brook Farm.
Active Travel Routes	
DLP12	Active travel measures are to be designed in with due consideration of relevant design guidance such as LTN 1/20 Cycle Infrastructure Design.
DLP13	Active travel measures should consider the inclusive design principles as set out in DMRB CD 143 Designing for Walking, Cycling and Horse-Riding.
DLP14	The Project's active travel path for pedestrian and cyclists connecting Longbridge roundabout to Car Park Y on the southern side of the highways improvement works includes a raised embankment on the right bank of the River Mole. Culverts should be used beneath the path to maintain floodplain connectivity culverts.

1.2 Glossary

Table 1.2.1: Glossary of Terms

Term	Description
CAA	Civil Aviation Authority
DAS	Design and Access Statement
EIA	Environmental Impact Assessment
ES	Environmental Statement
GAL	Gatwick Airport Limited
IEMA	Institute of Environmental Management and Assessment
mppa	Million passengers per annum
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
PEIR	Preliminary Environmental Information Report