

# Appendix C

## Landscape Toolkit





# C1.0 Introduction

## C1.1 The Purpose of this Toolkit

- C1.1.1 This Project will have a wide-ranging influence on its surroundings both in its finished state and over a number of years leading up to completion. It is essential that the Project uses this as an opportunity to generate positive change and nowhere can this be seen more clearly than in the implementation of well-designed and fully integrated landscape and Green Infrastructure (GI).
- C1.1.2 This Toolkit illustrates the range of landscape design elements that can be employed in the application of the landscape design strategy within the Preferred Masterplan. It has been informed by the requirement for good design as required by the Airports National Policy Statement (ANPS). This appendix builds upon the topics described in Chapters 4, 6 and 7 of this document.
- C1.1.3 This Toolkit has been created to accompany the other consultation documentation, acknowledging the importance / significance of the relationship between the airport and its surroundings, particularly nearby communities. Other similar documents which address topics such as air-side and land-side built form and facade treatments, will be created and developed for Heathrow's DCO application.
- C1.1.4 Feedback from the Airport Expansion Consultation (June 2019) and further design development will inform the final version of this Toolkit. The final version will form part of the design principles which accompany Heathrow's DCO application and will form the 'rules' for the implementation of the landscape as part of the Project.

## C1.2 Green Infrastructure and Landscape Design

C1.2.1 Natural England (NE), the Government's adviser for the natural environment in England, defines GI as:

- 'A strategically planned and delivered network comprising the broadest range of high-quality green spaces and other environmental features. It should be designed and managed as a multifunctional resource capable of delivering those ecological services and quality of life benefits required by the communities it serves and needed to underpin sustainability. Its design and management should also respect and enhance the character and distinctiveness of an area with regard to habitats and landscape types; and,
- GI includes established green spaces and new sites and should thread through and surround the built environment and connect the urban area to its wider rural hinterland. Consequently, it needs to be delivered at all spatial scales from sub-regional to local neighbourhood levels, accommodating both accessible natural green spaces within local communities and often much larger sites in the urban fringe and wider countryside.'

C1.2.2 Government guidance on the natural environment describes GI as:

- 'A network of multifunctional green space, urban and rural, which is capable of delivering a wide range of environmental and quality of life benefits for local communities; and,

- GI is not simply an alternative description for conventional open space. As a network it includes parks, open spaces, playing fields, woodlands, but also street trees, allotments and private gardens. It can also include streams, canals and other water bodies and features such as green roofs and walls.'

C1.2.3 Landscape design provides the primary means through which GI, culture and place-making can be considered together to create better landscapes for people and wildlife.



Figure C1.2.1: What is landscape?

Source: An approach to landscape character assessment, Natural England 2014

## C1.3 The Toolkit: An Integrated Design Approach

C1.3.1	Heathrow has looked in depth at how the proposals for landscape and Green Infrastructure (GI) can respond to the mitigation requirements associated with the Project, consistent with the requirements of the ANPS. In doing so it has tested the feasibility of proposals against their ability to deliver sufficient mitigation and benefit to local communities and wildlife.	C1.3.4	The following mitigation components are identified within the Preferred Masterplan: <ul style="list-style-type: none"> <li>European Protected Species (EPS) mitigation areas*</li> <li>Biodiversity offsetting areas</li> <li>Re-provided Public Open Space</li> <li>Enhancements to existing Public Open Space</li> <li>Landscape Green Loop</li> <li>Enhancement to the setting of historic assets</li> <li>Noise mitigation</li> </ul> <p>*EPS mitigation areas will also provide opportunities to mitigate for other legally protected and notable species, as well as semi-natural habitats characteristic of the local area.</p>	C1.3.7	Climate change projections have been considered in the design of the entire landscape infrastructure.
C1.3.2	The landscape and GI component presented at Airport Expansion Consultation One was primarily set out in the corresponding document entitled <i>Our Design Approach to the Natural Environment</i> . The <i>Preliminary Environmental Information Report</i> (PEIR), in the Airport Expansion Consultation (June 2019), sets out emerging mitigation strategies. The following environmental aspects in the PEIR are relevant to landscape and GI: <ul style="list-style-type: none"> <li>Biodiversity</li> <li>Climate change</li> <li>Community (including recreation and amenity resources)</li> <li>Historic environment</li> <li>Land quality</li> <li>Landscape and visual amenity</li> <li>Noise vibration</li> <li>Water environment</li> </ul>	C1.3.5	These are being developed by applying 'good design', consistent with the ANPS, by addressing considerations across all landscape and GI, including design relative to: <ul style="list-style-type: none"> <li>Existing landscape and historical character</li> <li>Sensitivity to place</li> <li>Visual appearance that demonstrates good aesthetics</li> <li>Sustainability</li> <li>Efficient use of natural resources</li> <li>Future resilience</li> </ul>	C1.3.8	Along with the emergence of a Landscape Strategy for smarter, brighter, greener landscapes and in line with Heathrow's sustainability strategy, Heathrow 2.0, this Toolkit sets out to illustrate how some of the proposals, including mitigation measures, may manifest themselves across the Preferred Masterplan.
C1.3.3	The proposals have and will continue to be developed in close collaboration with design teams responsible for rivers and flood, ecology, historic assets, noise, climate change and Public Open Space etc. In order to ensure an integrated approach.	C1.3.6	Heathrow has carefully considering how landscape and GI could be affected by climate change and how it can be designed to provide resilience against projected future climate change effects.	C1.3.9	Along with illustrative material, this Toolkit also describes design principles which will be set out for each Landscape Device in order to achieve good design such as: <ul style="list-style-type: none"> <li>Safe and secure design</li> <li>Measures for inclusive design</li> <li>Airport operations, security and bird strike risk</li> <li>Management and maintenance principles</li> <li>Appropriate species selection taking into account for example growth rates, appropriateness to character and micro-climate, habitat and wildlife corridors and bird strike risk</li> <li>Resilience to climate change</li> <li>Sourcing and re-use of soils</li> <li>Relevant British Standards and other relevant guidance and regulations</li> <li>Potential integration with Local, Regional and National strategies</li> </ul>
				C1.3.10	Heathrow will commit to the design principles once they are finalised for the DCO.



## C1.4 The Landscape Strategy: An Overview

- C1.4.1 The Landscape Strategy is driven by the ambition of Heathrow to become one of the most sustainable hub airports in the world, and to become a great place to live, work and travel.
- C1.4.2 In order to achieve this the Landscape Strategy encompasses three core 'themes' delivering a, smarter, brighter and greener Heathrow.
- C1.4.3 Smarter - seeks to optimise land-use for a more innovative, sustainable and resilient future. For Heathrow to become a sustainable hub airport with ambitious targets such as carbon neutral growth the way we design and organise the landscape will be smarter.
- C1.4.4 Brighter – is about place making and the overall experience and appearance of the airport. For Heathrow to become more integrated with its surrounding communities and to provide a world class passenger experience that delivers a great place to live, work and travel, it will be brighter.
- C1.4.5 Greener – this promotes a campaign of extensive tree planting and sustainable practice that can make our green spaces greener. For Heathrow to generate a more robust GI that delivers better connected, more multifunctional green open space for wildlife and for people, it will be greener.



Figure C1.4.1: The Green Loop (re-provided Public Space northeast of Harmondsworth)

## C1.5 The Landscape Strategy: Responding to Heathrow's Design Challenges

C1.5.1 Heathrow's vision is to give passengers the best airport service in the world. This vision is expanded by Heathrow's plan for sustainable growth, Heathrow 2.0, which identifies four strategies under the headlines:

- A great place to work
- A great place to live
- A thriving sustainable economy
- A world worth travelling

C1.5.2 There is a need to ensure that Heathrow's Vision and sustainable growth strategies are embedded in the design of the expanded airport. Recognising the unusually wide range of design encompassed by the proposals, a strategy was developed that used a series of 'Design Challenges'. These challenges were established to guide all designers across the Project, ensure adherence to Heathrow's vision and strategies, and ensure that the resultant design proposals are exemplary.

C1.5.3 The Design Challenges were developed by Heathrow, and reviewed by Design Council, the independent design review panel appointed by Heathrow. More detail can be found within Chapter 4.

C1.5.4 Figure C.1.5.1 demonstrates how the core themes for the Landscape Strategy respond to the Design Challenges.

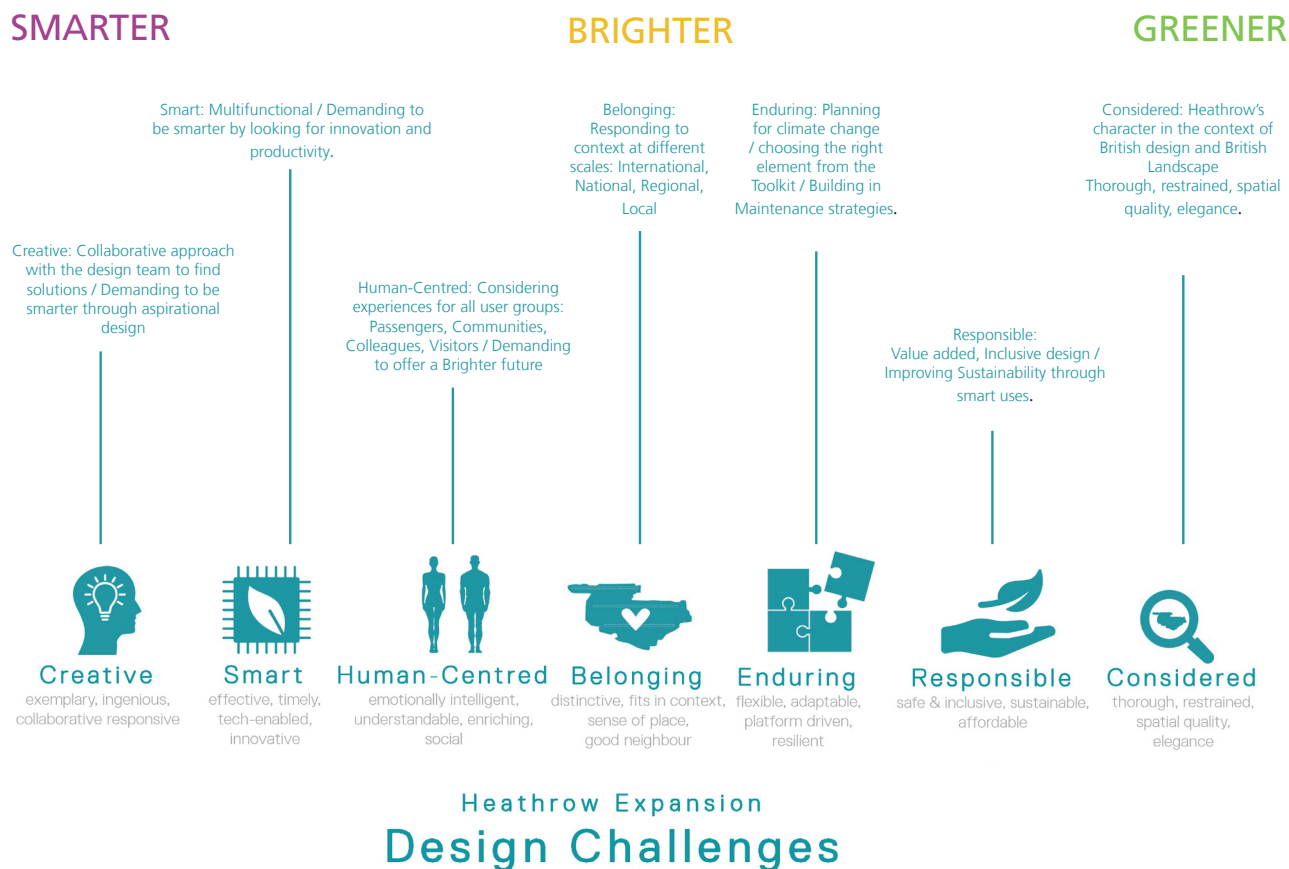


Figure C1.5.1: How the Landscape Strategy responds to Heathrow's Design Challenges



## C1.6 Design of Multifunctional Landscapes

C1.6.1 Key to the success of the Landscape Strategy and the delivery of mitigation measures is a robust approach to multifunctionality.

C1.6.2 Landscape and GI proposals should offer a range of interrelated and complementary benefits for the airport, for adjacent communities and for wildlife such as:

- Landscape setting, context and place-making for development

- Habitat provision and access to nature
- Access, recreation, movement and leisure
- Energy production and conservation
- Food production and productive landscapes
- Flood attenuation and surface water attenuation
- Climate change resilience and countering the 'heat island' effect of urban areas

C1.6.3 Table C1.6.1 shows how the landscape and GI aspects can interrelate, fulfilling different roles and providing a range of benefits.

Landscape and Green Infrastructure Typology	Landscape Device	Potential GI Function:																	
		Access Recreation Leisure					Habitat Provision / Access to Nature				Landscape Setting and Context for Development				Energy Production and Conservation	Food Production / Productive Landscapes	Flood Attenuation / Water resource Management	Climate Change Resilience	
		Community events	Informal Recreation	Formal Recreation	Education	RPOS	Improve / Create Habitat	Wildlife corridor	EPS	Biodiversity Offsetting	Visual integration / Buffer	Visual Amenity	Character Enhancement	Identity and Wayfinding	As above	As above	SUDS	Climate Change Resilience	Carbon Sequestration
e.g. Ecological Landscape	e.g. Woodlands	x	x			x	x	x	x	x	x					x			

Table C1.6.1: Multifunctionality matrix template

Source: Adapted from Natural England Green Infrastructure Guidance 2009

## C1.7 Delivery, Management, Maintenance and Monitoring

### Delivery

C1.7.1 Heathrow will deliver many of the proposals to be set out in the Landscape Strategy. There are some parts of the strategy which require collaborative delivery.

C1.7.2 Given the complex ownerships around the Project, some of our plans will be delivered collaboratively and will require close working, and in some instances collaborative funding, with a number of stakeholders. These will include:

- Colne Valley Regional Park
- Environment Agency
- Thames Water
- Developers
- Local Authorities
- Highways Authorities
- Local Wildlife Trusts
- The Royal Parks
- Charitable Trust\*

\*The use of a charitable trust is one way in which the long-term maintenance of new green open spaces could be funded and managed by Heathrow. A charitable trust could also help to set up and manage Community Initiatives. Alternative methods for funding could be commuted sums.

C1.7.3 Where required to secure the delivery of Heathrow's landscape and GI proposals, compulsory purchase powers will be built into the DCO. In some instances,

it will be more appropriate to agree alternative means of delivering the proposed measures with the relevant stakeholders like those as described above.

### Management

C1.7.4 It is envisaged that as part of the DCO application design principles will accompany the detailed drawings and parameters to provide design assurance and provide a framework for longer-term maintenance and management of the areas affected by the Project.

C1.7.5 A clear structure will be defined as part of the DCO and will identify responsibilities for various parts of design, funding, delivery and maintenance.

### Maintenance

C1.7.6 A maintenance and management strategy is key in securing the consistency and quality of maintenance of new, re-provided and enhanced Public Open Space.

C1.7.7 A well-conceived and thorough maintenance and management plan is essential to deliver quality in the longer-term, which in turn fosters a sense of pride and ownership within local communities and more broadly.

C1.7.8 Landscape maintenance and management plans will set out performance specifications, long term management aims and objectives and appropriate methods of maintenance to achieve those.

### Monitoring

C1.7.9 Monitoring of maintenance operations will ensure appropriate standards to be agreed with relevant stakeholders.

A monitoring strategy will cover:

- Construction operations
- Establishment and long term maintenance.

C1.7.10 The monitoring strategy will set out methods for review of the appropriateness of landscapes and their maintenance practices with specific reference to climate change.



# C2.0 Water

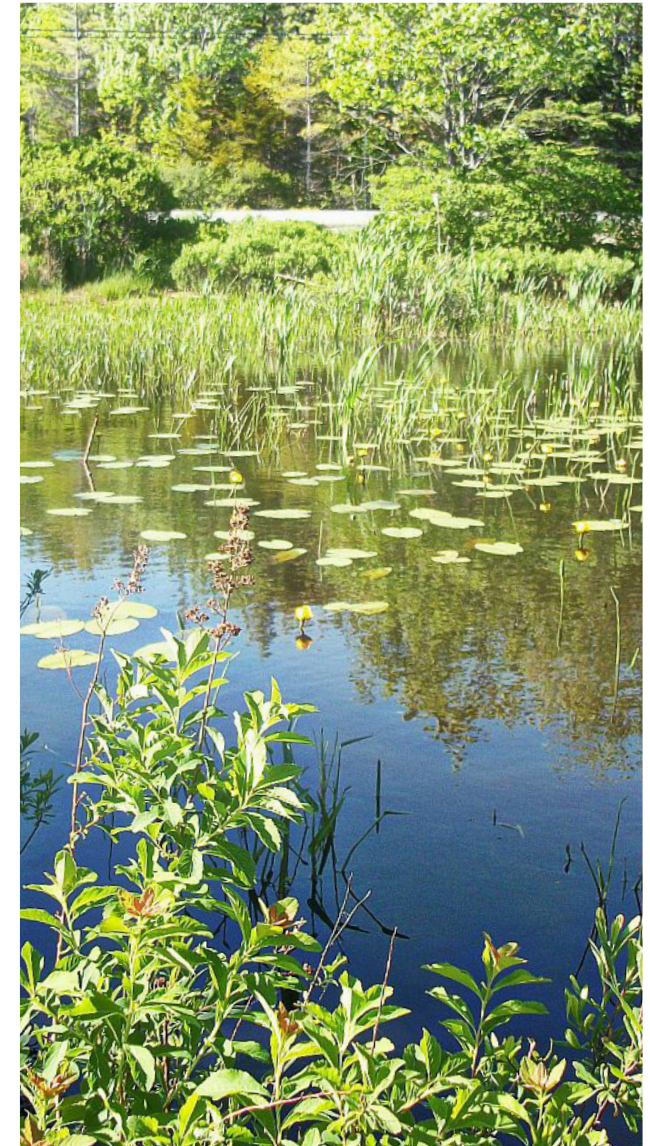
## Introduction

Water forms an integral part of the landscape around Heathrow, as natural and man-made rivers and channels or as large open water bodies behind green embankments.

The Project will be sensitive to these features and their landscapes. Rivers will need to be diverted, compensatory flood alleviation capacity provided, and new water treatment lagoons and reed beds constructed.

Climate change projections point towards an increase in mean winter precipitation and increase in extreme rainfall events. Therefore the design proposals for all elements of the Masterplan component must improve resilience to future flooding. To find out more information on how Heathrow is proposing to mitigate and manage the effects of the Project on carbon and climate change, please see the relevant chapters in the PEIR.

The design proposals for water seek to incorporate smart, innovative ways to clean water, to reuse water in buildings, irrigation systems and for heat storage.



## C2.1 Rivers

### Overview

- C2.1.1 Rivers are a key characteristic of the landscape around Heathrow, gently flowing through the relatively flat landscape. Historically the rivers have been artificially manipulated, changing channel location and form, including the use of structures to control flow.

### Diverted Rivers

- C2.1.2 The Project will require the diversion of a number of rivers and channels around the enlarged airport. These river channels will have as natural profiles as is possible to retain their natural flows and biodiversity.
- C2.1.3 Sections of rivers alongside the airport will need to be netted to stop birds using them and there may also be sections of river where people will be allowed access to play and learn.

### Enhancement of Existing Rivers

- C2.1.4 Some rivers will be combined as part of the proposals, resulting in a loss of overall river length within the site. To offset this, Heathrow will undertake a programme of enhancements of existing river corridors up and downstream of the site. This may involve improvements to their channel structure, removal of barriers to fish passage or reconnection with floodplain.
- C2.1.5 Enhancements could also include: the control of invasive species; improvements to riparian species mixes; and, installation of artificial otter holts. The Project is also trialling opportunities for smarter solutions to netting river corridors to manage risk of bird strike.

### Functions

- C2.1.6 Primary Function:
- Drainage (carrying flowing water)
- C2.1.7 Secondary Functions may include:
- Habitat provision
  - Wildlife corridor
  - Flood attenuation
  - Visual amenity
  - Informal recreation
  - Character enhancement

### Principles

- C2.1.8 Design principles may set out:
- Requirements for flow control structures
  - Potential for incorporation of footpaths and access tracks within the riparian corridor
  - Incorporation of river channel lining where rivers flow across land affected by contamination (e.g. landfills)
  - Bank gradients
  - Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
  - Management and maintenance principles

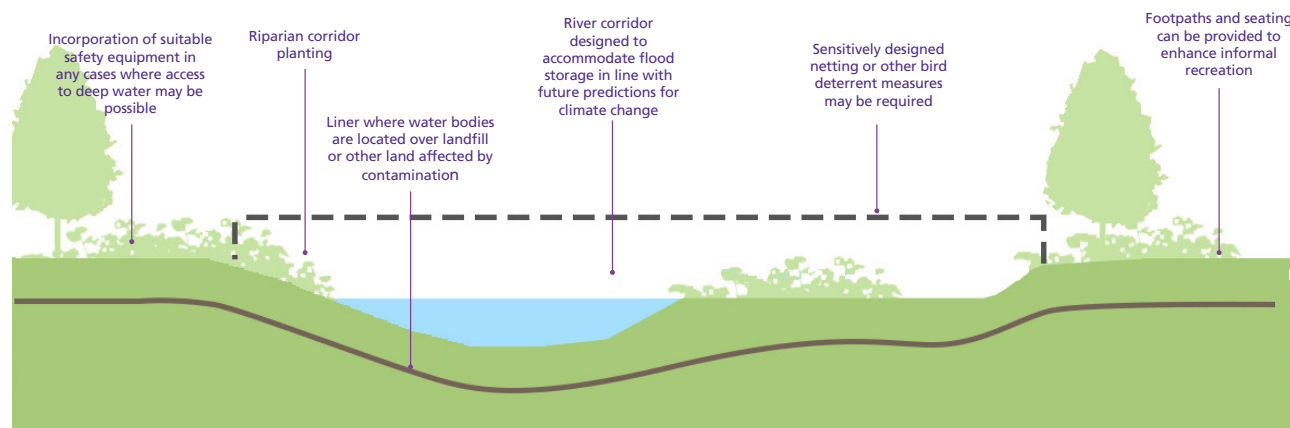


Figure C2.1.1: Design considerations for rivers





Figure C2.1.2: River Colne – edges can be attractive amenity features



Figure C2.1.3: Netted rivers at T5



Figure C2.1.4: Rivers act as important wildlife habitats

## C2.2 Flood Alleviation

### Overview

- C2.2.1 Areas of GI will be required to provide flood alleviation. These will be open green and blue sites that will occasionally store water, with some smaller areas of the sites remaining wet more often. These temporary water bodies offer opportunities for greater biodiversity and can be pleasant open spaces.
- C2.2.2 To facilitate this multifunctional quality, footpaths, seating and signage could be used to encourage informal recreation and ensure connectivity to nearby communities and other open spaces where possible.
- C2.2.3 These features will include measures of resilience to climate change.

### Functions

- C2.2.4 Primary Function:
- Water management
  - Mitigation of displaced flood alleviation
- C2.2.5 Secondary Functions may include:
- Visual amenity
  - Informal recreation and amenity
  - Character enhancement
  - Habitat creation
  - Biodiversity offsetting

### Principles

- C2.2.6 Design principles may set out:
- Key design principles, considerations and drivers
  - Water management systems
  - Appropriate character (naturalistic or otherwise)
  - Slope gradients
  - Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
  - Management and maintenance principles

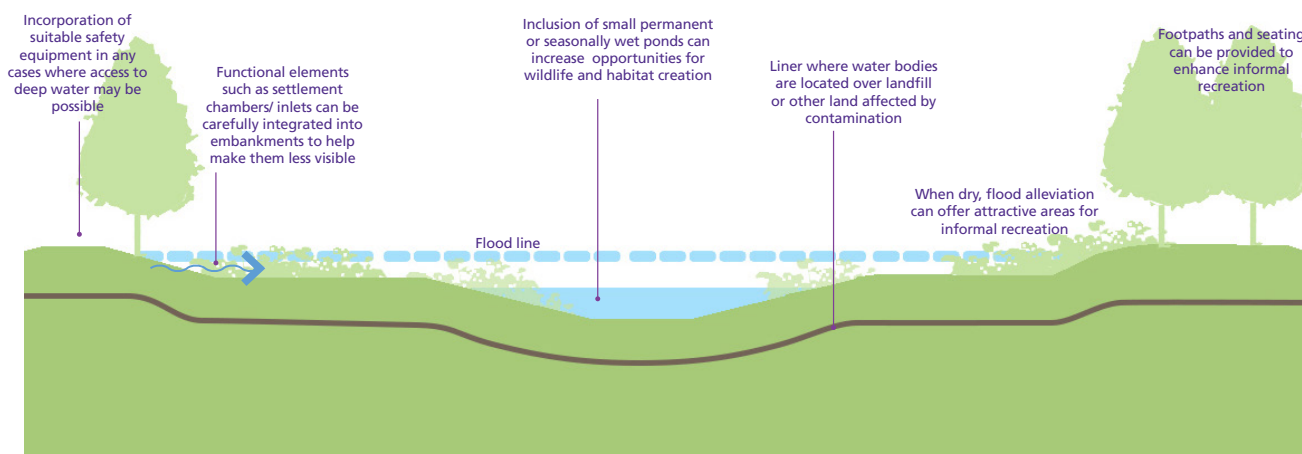


Figure C2.2.1: Design considerations for flood alleviation





Figure C2.2.2: Example of dry storage basin

## C2.3 Sustainable Urban Drainage Systems

### Overview

- C2.3.1 Sustainable Urban Drainage Systems (SUDs) are smaller scale drainage features that collect surface water drainage, hold it temporarily and then let the water gently flow back into the natural water cycle.
- C2.3.2 As part of the Project, the design of any new Airport Supporting Development will be required to incorporate SUDs, and may be combined with other planting around the development plots.
- C2.3.3 SUDs features may also include blue roofs and attenuation ponds or tanks. Blue roofs are water storage systems that allow water to be attenuated on rooftops.

### Functions

- C2.3.4 Primary Function:
- Water resource management
- C2.3.5 Secondary Functions may include:
- Habitat creation
  - Wildlife corridor
  - EPS mitigation
  - Biodiversity offsetting
  - Visual amenity

### Principles

- C2.3.6 Design principles may set out:
- Key design principles, considerations and drivers
  - Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
  - Water treatment methods
  - Consideration of interaction of SUDs with existing land affected by contamination
  - Management and maintenance principles

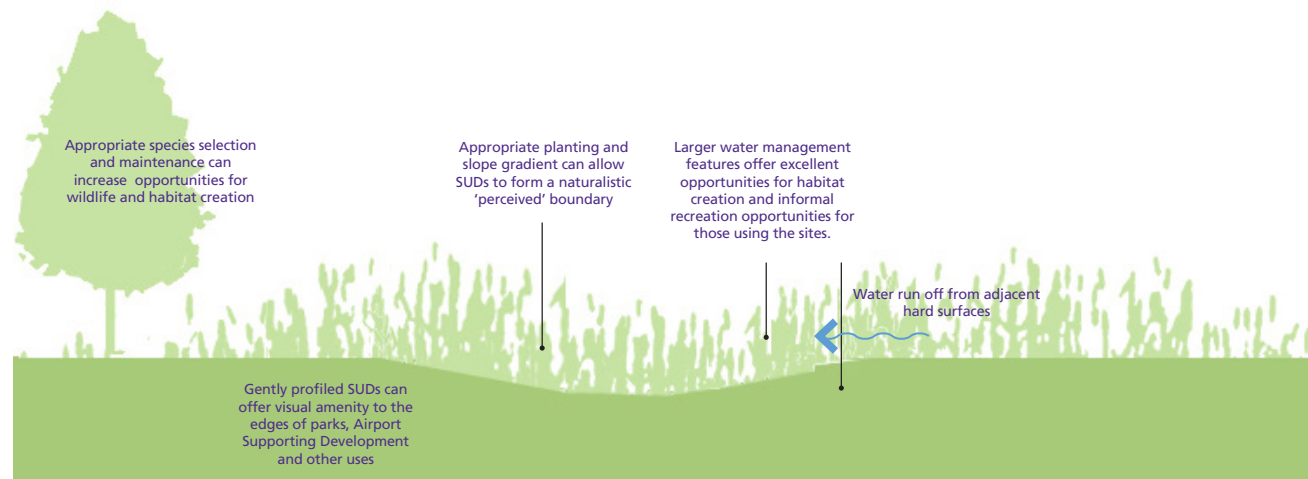


Figure C2.3.1: Design considerations for SUDs



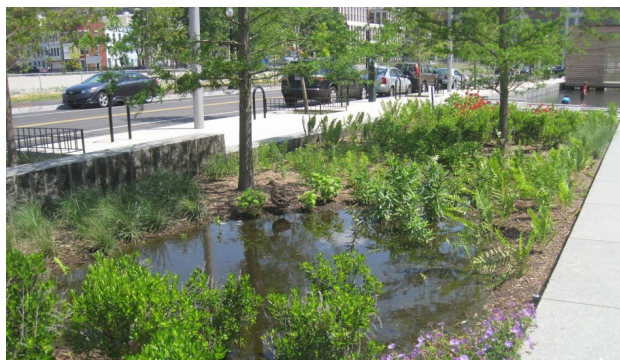


Figure C2.3.3: Bioswales can be an attractive feature of Public Open Space



Figure C2.3.2: Surface water attenuation can form attractive corridors and boundaries



Figure C2.3.4: Example of SUDs pond



## C2.4 Water Treatment

### Overview

- C2.4.1 The operation of the airport means that airport surface water runoff, which is water drained from the runways and taxiways, can contain pollutants such as aircraft de-icers.
- C2.4.2 In order to clean this water, it needs to be treated in reed beds and lagoons around the airport. These are typically not accessible to the public but are surrounded by low grassed bunds which can help them to integrate more sensitively with their surroundings.
- C2.4.3 Smaller balancing ponds will also be required for new roads; these will help trap silt and other car produced pollutants and accidental spillages. These will be visually integrated into the new road corridor GI.

### Functions

- C2.4.4 Primary Function:
- Water resource management
- C2.4.5 Secondary Functions may include:
- Potential for formal recreation (education)

### Principles

- C2.4.6 Design principles may set out:
- Key design principles, considerations and drivers
  - Planting of embankments
  - Naturalistic integration of associated utilities
  - Fencing
  - Safety measures
  - Interaction with nearby water systems
  - Management and maintenance principles

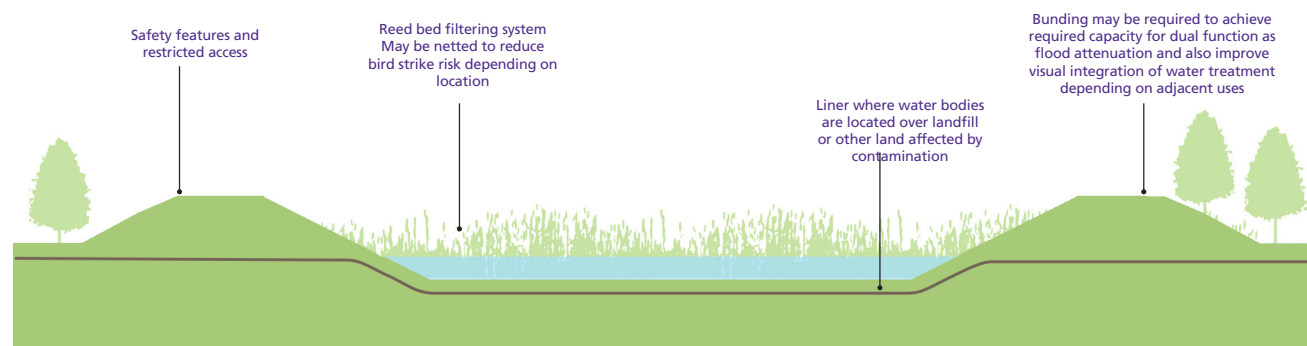


Figure C2.4.1: Design considerations for water treatment



Figure C2.4.2: Mayfield Farm - an existing water treatment facility at Heathrow

## C2.5 Biodiversity Ponds

### Overview

- C2.5.1 A number of biodiversity ponds will be provided or, in some cases, re-provided. These features will generally be small scale and can be incorporated into the flood alleviation sites or elsewhere as part of wider biodiversity offsetting sites.
- C2.5.2 Airport safety will influence the quantity, distribution and scale of new water bodies created primarily to enhance biodiversity and support biodiversity offsetting. Margins will be carefully designed to be biodiverse but difficult for birds to enter and prevent human interaction, as feeding may encourage large birds such as geese and swans.

### Functions

- C2.5.3 Primary Function:
- Habitat creation
- C2.5.4 Secondary Functions may include:
- Water resource management
  - Wildlife corridor
  - EPS mitigation
  - Biodiversity offsetting
  - Visual amenity
  - Character enhancement

### Principles

- C2.5.5 Design principles may set out:
- Key design principles, considerations and drivers
  - Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
  - Safety measures
  - Principles for access
  - Interaction with nearby water systems
  - Integration with local, regional and national strategies
  - Management and maintenance principles

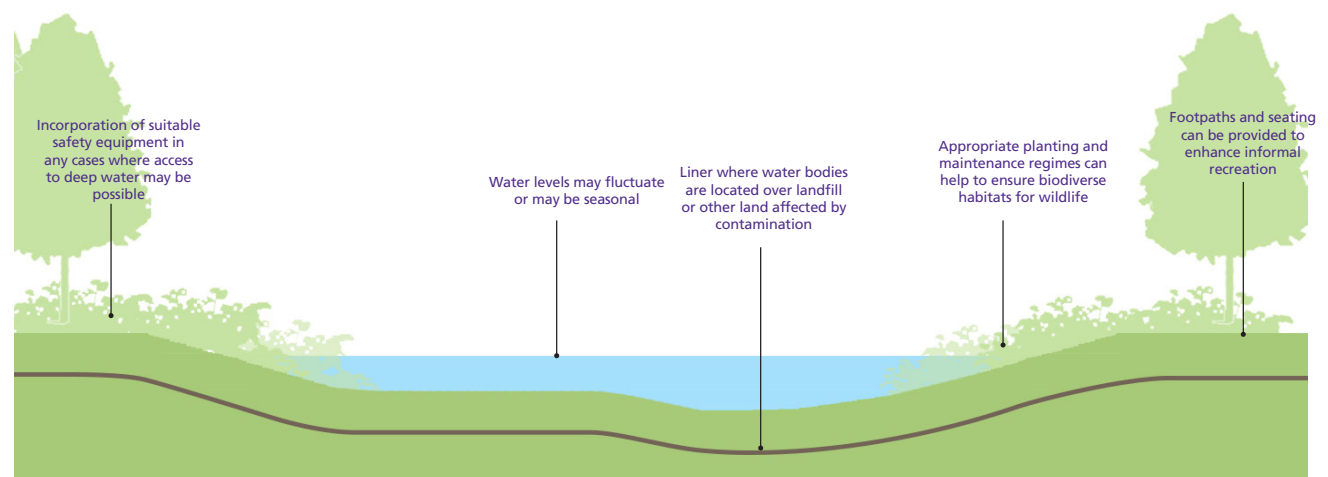


Figure C2.5.1: Design considerations for biodiversity ponds





Figure C2.5.2: A biodiversity pond can also be an attractive amenity

## C2.6 Thermal Ponds

### Overview

- C2.6.1 As part of the aspiration to become smarter, brighter and greener, and to use more sustainable low carbon energy sources, the Project may require deep ponds as heat sources / sinks known as thermal ponds. Storing thermal energy is more efficient than using new heat sources. These ponds may be lined and covered by an insulation layer.
- C2.6.2 The ponds will be surrounded by a low bund and fenced to prevent access. Planting will be used to carefully integrate the ponds and associated support facilities such as pump houses with their surroundings.

### Functions

C2.6.3 Primary Functions:

- Thermal storage

C2.6.4 Secondary Functions:

- Productive landscape (if photovoltaics can be incorporated)

### Principles

C2.6.5 Design principles may set out:

- Key design principles, considerations and drivers
- Planting of embankments
- Naturalistic integration of associated utilities
- Fencing
- Safety measures
- Management and maintenance principles

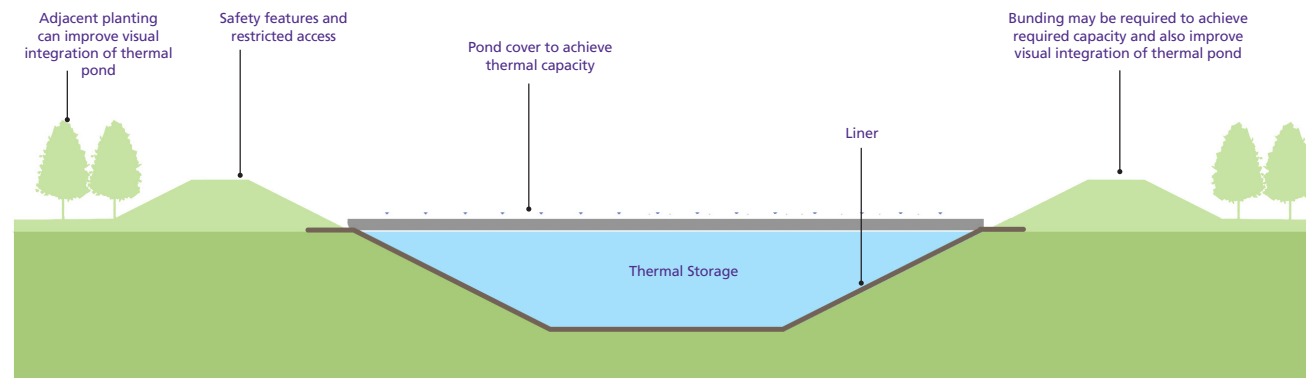


Figure C2.6.1: Design considerations for thermal ponds

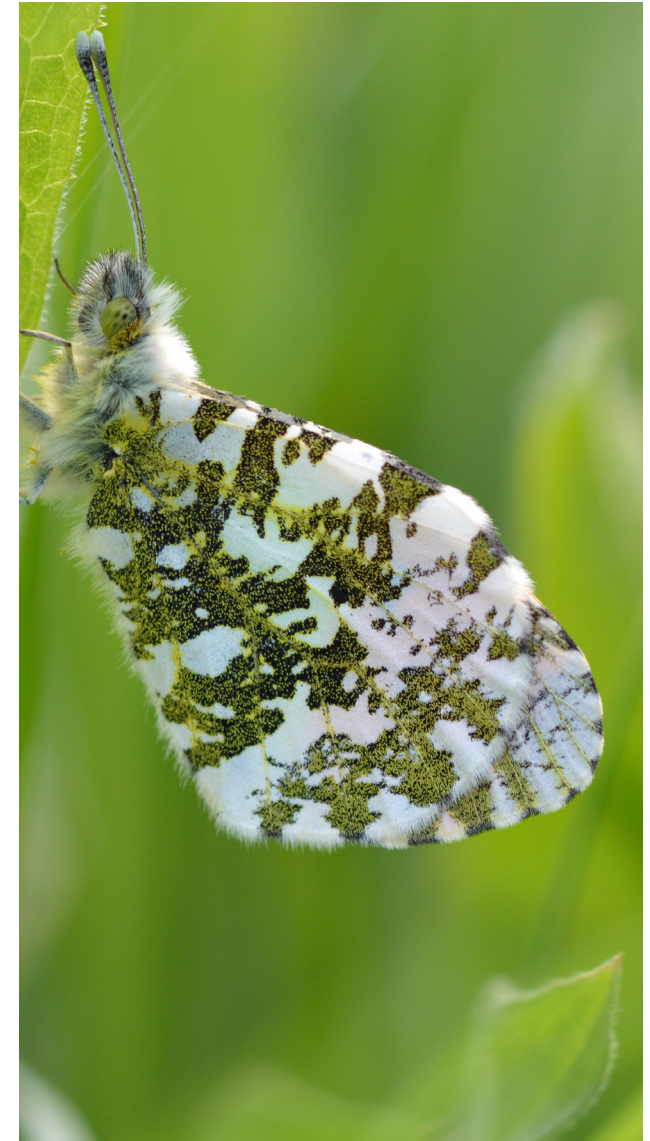
# C3.0 Planting for Biodiversity

## Introduction

The Biodiversity Strategy sets out how the proposals will be able to offer a net gain for biodiversity and deliver a robust network of habitats and wildlife corridors capable of supporting a range of species including European Protected Species (EPS), notably bats, otters and great crested newts.

Landscape options include biodiverse grassland, ponds (included within the water typology), scrubland and woodland. Many other devices can support the ecological value of the Project, offering habitat creation, EPS habitat and biodiversity offsetting as secondary functions.

The creation of landscapes for wildlife offers a fantastic opportunity to improve the character and amenity value of any project and is an essential part of the proposals, improving access to nature and delivering the aims and objectives of National and Regional Strategies.





## C3.1 Woodlands

### Overview

- C3.1.1 As part of the biodiversity offsetting measures and provision for European Protected Species, some sites will incorporate areas of woodland. Woodland planting can also be used to aid the integration of the Project proposals at a macro-scale and will offer cooling effects and carbon storage benefits.
- C3.1.2 Woodland will incorporate native tree species appropriate to individual sites with consideration for foraging and habitat provision as well as other factors such as climate change and also airport operations.
- C3.1.3 Bird strike management issues around woodland structure would be dealt with principally through the specification of location.

### Functions

#### C3.1.4 Primary Functions:

- Habitat provision - to mitigate impacts on existing habitats and species

#### C3.1.5 Secondary Functions:

- Informal recreation
- Re-provided Public Open Space
- Visual amenity
- Character enhancement
- Micro-climate / cooling effect
- Carbon sequestration

### Principles

#### C3.1.6 Design principles may set out:

- Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
- Management and maintenance principles
- The treatment of existing scrubland (i.e. existing trees and understory planting will be retained where possible and in accordance with BS 5837:2012)
- Where possible a range of maturities will be selected

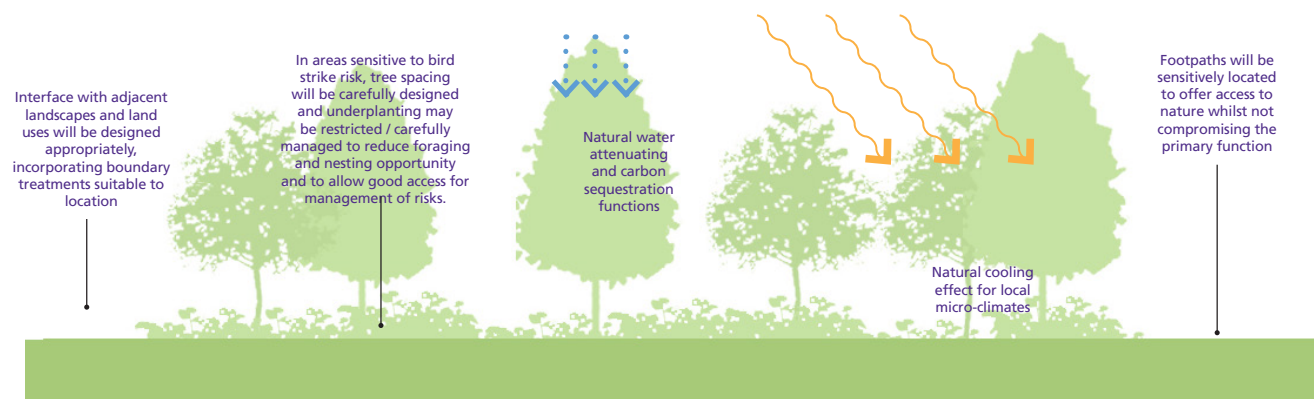


Figure C3.1.1: Design considerations for woodlands

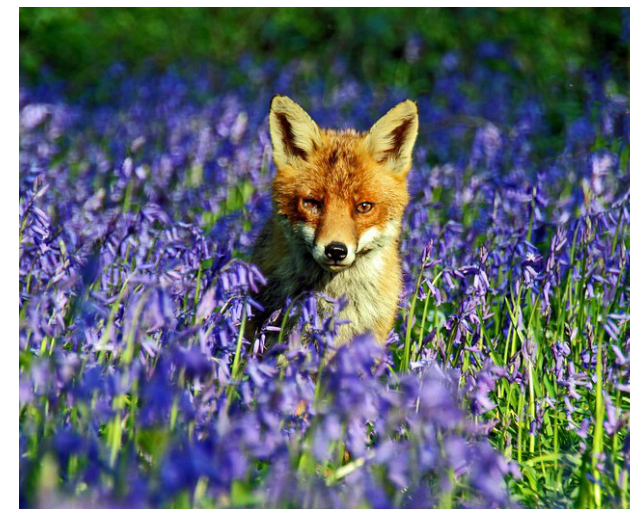


Figure C3.1.2: Open structure of woodlands allows for management

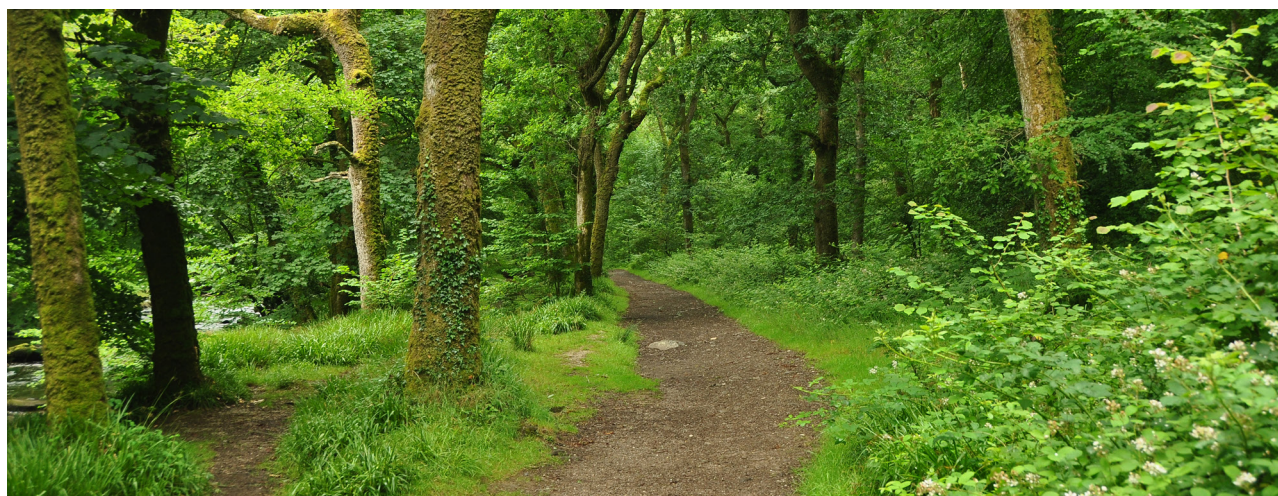


Figure C3.1.3: Mature woodlands

## C3.2 Scrubland

### Overview

- C3.2.1 This is a naturalistic planting type that will be used to support biodiversity offsetting and habitat creation, generally in combination with grassland planting to form more diverse vegetation mixes.
- C3.2.2 Scrubland may be used to help with design integration at a local scale due to its smaller stature.
- C3.2.3 Scrubland will be used in small blocks to manage out bird strike risk, and will use native species.

### Functions

- C3.2.4 Primary Functions:
- Habitat Provision. To mitigate impacts on existing habitats and species
- C3.2.5 Secondary Functions:
- Informal recreation
  - Re-provided Public Open Space
  - Visual amenity
  - Character enhancement
  - Micro-climate / cooling effect
  - Carbon sequestration

### Principles

- C3.2.6 Design principles may set out:
- Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
  - Management and maintenance principles
  - The treatment of existing scrubland (i.e. Existing trees and understory planting will be retained where possible and in accordance with BS 5837:2012)

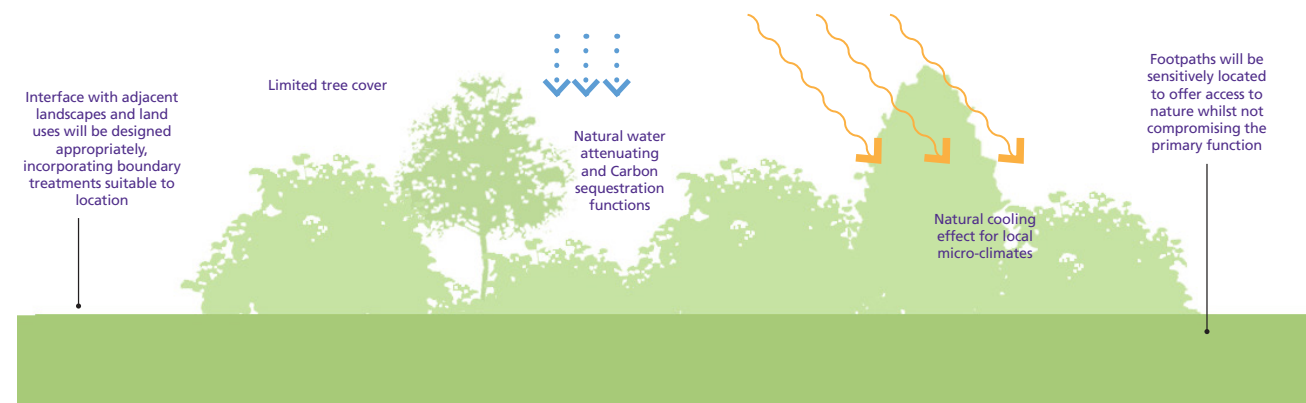


Figure C3.2.1: Design considerations for scrubland





Figure C3.2.2: Scrubland planting as part of a diverse habitat mosaic



Figure C3.2.3: Scrubland planting as part of a naturalistic parkland



### C3.3 Biodiversity Grassland

#### Overview

- C3.3.1 These are off-airport grasslands that will reflect local diversity and richness. They will typically be meadows and will contain high grass and flower diversity. They will be an attractive resource and will provide valuable habitat particularly for pollinators.

#### Functions

- C3.3.2 Primary Functions:

- Habitat creation

- C3.3.3 Secondary Functions:

- Biodiversity offsetting, carbon sequestration, visual amenity, character enhancement, and informal recreation

#### Principles

- C3.3.4 Design principles may set out:

- Key design principles, considerations and drivers
- Sourcing of appropriate soils (the requirement to consult soil specialists and source soils locally where possible)
- Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
- Integration with local, regional and national strategies (for pollinators for example)
- Management and maintenance principles



Figure C3.3.1: Biodiversity grassland make-up will reflect different soils and site conditions and support a variety of wildlife

# C4.0 Infrastructure and Amenity Planting

## Introduction

Humans have been using landscapes as clues for navigation for millennia, and still look to recognise river corridors, tree groupings as landmarks for destinations and now road routes, approaches and gateway spaces. This planting is important now for wayfinding and character enhancement.

Planting or woody vegetation will form an important part of the GI creating amenity spaces, influencing their character and, in some instances, defining them. It will integrate new development within its surroundings, acting as an important carbon store and habitat creation.

Planting will take many forms from small shrub to large trees, avenue plantations, woodland and scrub.





## C4.1 Roads

### Overview

- C4.1.1 Infrastructure planting will be used along roads to carefully integrate routes with their surroundings. In some cases, planting could frame views, aid wayfinding and improve setting, character and identity. The vegetation will help with roadside pollution and carbon storage.
- C4.1.2 This planting type will have in some locations a very simple structure of evenly spaced trees, in some locations a diverse structure of trees with understory shrubs to provide relatively dense blocks of vegetation.

### Functions

- C4.1.3 Primary Functions:

- Identity and wayfinding

- C4.1.4 Secondary Functions:

- Wildlife corridor
- Biodiversity offsetting
- Visual amenity
- Character enhancement

### Principles

- C4.1.5 Design principles may set out:

- Key design principles, considerations and drivers
- Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
- Appropriate arrangement, groupings and interaction with adjacent features
- Integration with local, regional and national strategies
- Management and maintenance principles



Figure C4.1.1: Examples of infrastructure tree planting to roads



Figure C4.1.2: Tree planting in paving - image courtesy of GreenBlue Urban

## C4.2 Utilities

### Overview

- C4.2.1 The Project will require replacing or redirecting important utilities such as power and water. The movement of these facilities is an important and necessary part of the Project, and Heathrow is committed to deliver such works while minimizing effects for communities and the environment.
- C4.2.2 Most utilities require linear easements above them, which are corridors for maintenance or replacement access. The building of new development and the planting of trees may be restricted within these corridors.
- C4.2.3 In some cases the Project offers opportunities for improvement to landscapes such as in the under-grounding of overhead powerlines, or the creation of green open leisure routes along utility easement corridors.



Figure C4.2.1: Overhead powerlines - some may be relaid underground

### Functions

- C4.2.4 Primary Functions:
- Productive landscapes
- C4.2.5 Secondary Functions:
- Habitat creation
  - Biodiversity offsetting
  - Informal recreation
  - Re-provided Public Open Space
  - Visual amenity
  - Character enhancement

### Principles

- C4.2.6 Design principles may set out:
- Key design principles, considerations and drivers
  - Easements
  - Safety measures
  - Appropriate arrangement of planting and recreational features such as footpaths, kick about spaces etc.
  - Appropriate species ranges (e.g. rate of growth, appropriate character, biodiversity value, bird strike risk, resilience to climate change)
  - Integration with local, regional and national strategies
  - Management and maintenance principles

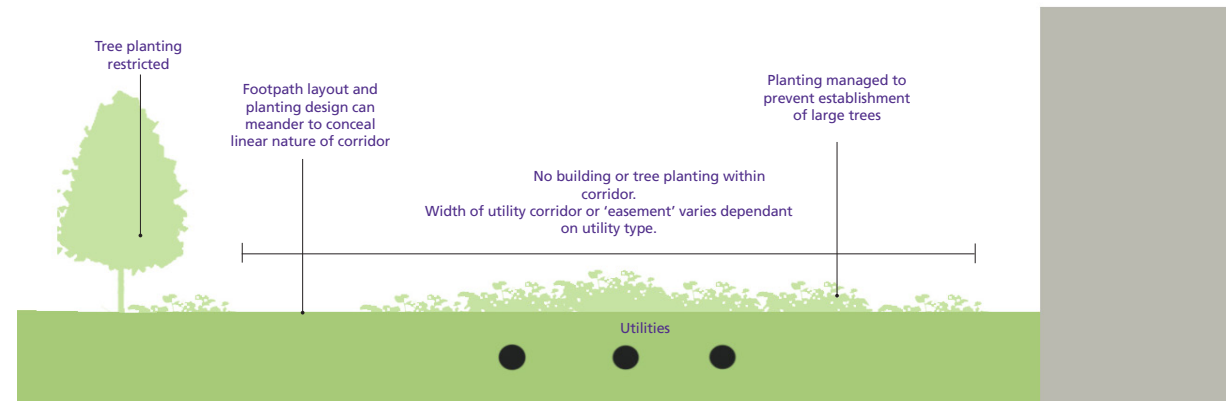


Figure C4.2.2: Diagram illustrating design considerations for utilities

## C4.3 Buffer Planting to New Development

### Overview

- C4.3.1 The Project requires a certain amount of new and relocated Airport Supporting Development (ASD) around the airport. This will require careful integration with surroundings, including though the use of appropriate landscape planting. This is referred to as 'buffer planting' within the Project proposals.
- C4.3.2 The width of the buffer planting surrounding ASD will respond to the sensitivity of adjacent land uses and communities. The character and species selection will respond to location and proximity to ecology corridors, airport boundaries and so on.

### Functions

- C4.3.3 Primary Functions:
- To mitigate impacts on adjacent receptors
- C4.3.4 Secondary Functions:
- Visual amenity
  - Character enhancement
  - Wayfinding
  - Habitat creation and biodiversity offsetting
  - Water management

### Principles

C4.3.5 Design principles may set out:

- Appropriate character (naturalistic or otherwise)
- Water treatment and management systems
- Appropriate species ranges (Species selection will take into account rate of growth, appropriateness to character, habitat and wildlife corridor creation, suitability regarding bird strike risks, resilience to climate change)
- Management and maintenance principles
- Existing trees and understory planting will be retained where possible and in accordance with BS 5837:2012.
- Where possible a range of maturities will be selected

C4.3.6 Buffer width varies dependant on ASD type and sensitivity of adjacent land uses and communities. ST1-ST4 are PEIR codes for different sorts of adjacent land uses with different levels of sensitivity:

- ST1 – 3m minimum maintenance buffer
- ST2 – 8m minimum landscape and maintenance buffer
- ST3 – 13m minimum landscape and maintenance buffer
- ST4 – 23m minimum landscape and maintenance buffer within the Project proposals

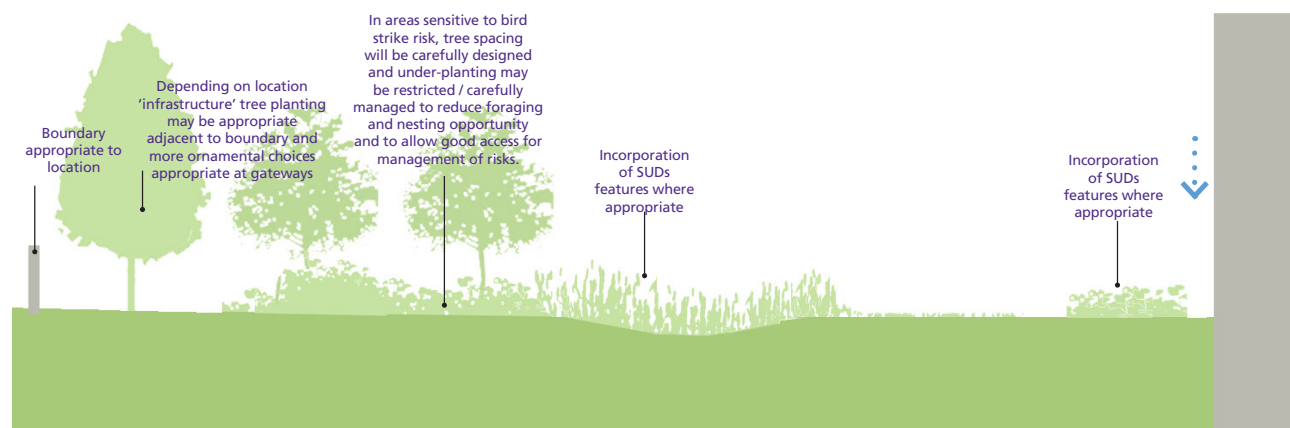


Figure C4.3.1: Diagram illustrating design considerations for buffer planting to new development



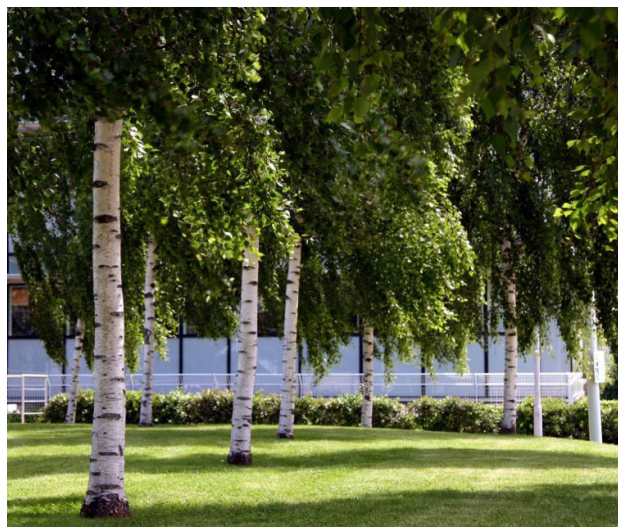


Figure C4.3.2: Examples of buffer planting