

## C4.4 Planting to Public Open Spaces

### Overview

C4.4.1 This planting type will vary in character depending on location and application, and use a combination of tree and shrubs (and potentially perennials and herbaceous plants) to help create recreational and amenity landscapes and gardens.

C4.4.2 Important functions will be to enhance public amenity along with supporting biodiversity such as insect pollinators.

### Functions

C4.4.3 Primary Functions:

- Re-provided Public Open Space

C4.4.4 Secondary Functions:

- Informal recreation
- Community events
- Visual amenity
- Character enhancement
- Habitat creation
- Biodiversity offsetting
- Water resource management
- Micro-climate / cooling effect, carbon sequestration

### Principles

C4.4.5 Design principles may set out:

- 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 recreational features such as footpaths, kick about spaces, etc., with consideration for safety and security
- Appropriate arrangement, groupings and interaction with adjacent features such as EPS corridors or land uses such as dwellings or Airport Supporting Development

- Sourcing of appropriate soils (the requirement to consult soil specialists and source soils locally where possible)
- Integration with local, regional and national strategies
- Management and maintenance principles

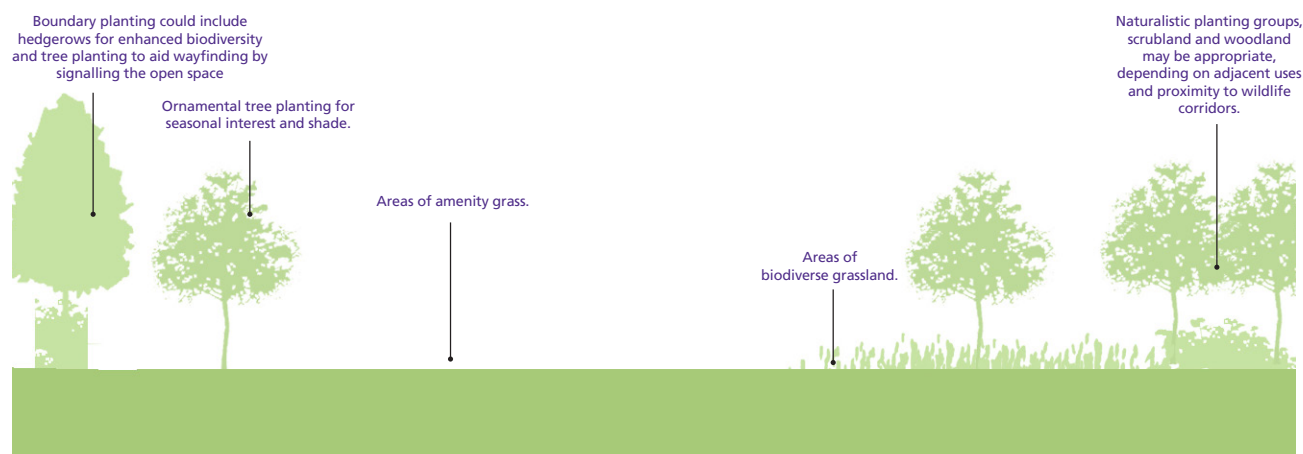


Figure C4.4.1: Diagram illustrating design considerations for planting to Public Open Space



Figure C4.4.2: Public Open Space is essential for human wellbeing and for wildlife

## C4.5 Public Realm and Streetscapes

### Overview

- C4.5.1 Planting to publicly accessible open space (public realm) will be important for the airport terminal areas and also for enhancements within the surrounding communities.
- C4.5.2 This formal planting type for areas of residential property and commercial activity (streetscape) will be largely dependent upon trees in paving areas with planting beds and areas of lawn.
- C4.5.3 Functions for this planting type include visual amenity, character enhancement or reinforcement, and helping biodiversity, along with air pollution and micro-climate benefits.

### Functions

- C4.5.4 Primary Functions:
- Character enhancement

### C4.5.5 Secondary Functions:

- Identity and wayfinding
- Community event
- Visual amenity
- Habitat creation
- Biodiversity offsetting
- SUDs and water resource management
- Micro-climate / cooling effect
- Carbon sequestration

### Principles

#### C4.5.6 Design principles may set out:

- Appropriate species ranges (species selection will take into account rate of growth, appropriateness to character, habitat creation, suitability regarding bird strike risks, resilience to climate change)
- Appropriate arrangement, groupings and interaction with adjacent features such as buildings, roads, underground services and street furniture with consideration for safety and security
- Sourcing of appropriate soils (the requirement to consult soil specialists and source soils locally where possible)
- Integration with local, regional and national strategies
- Management and maintenance principles

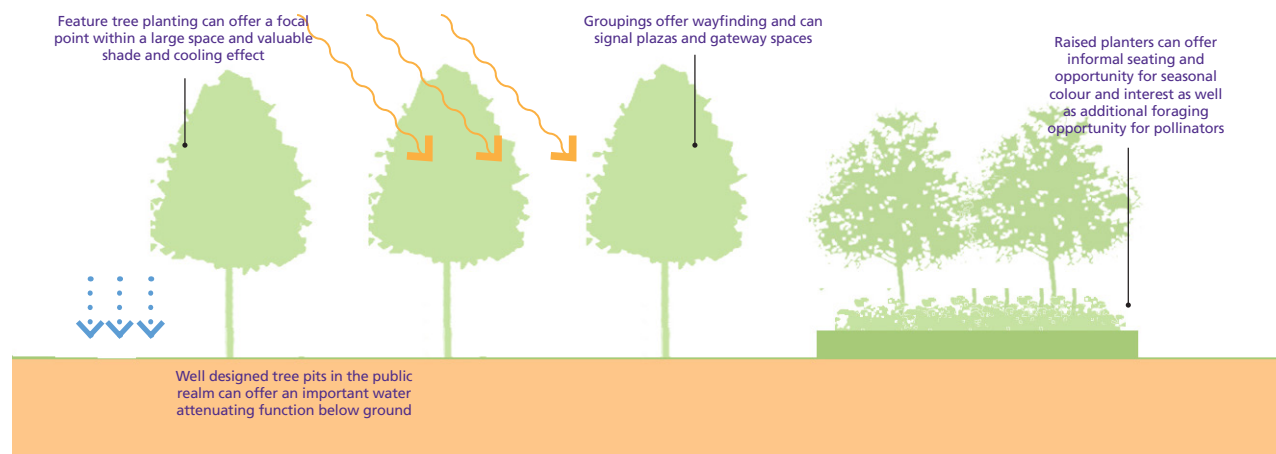


Figure C4.5.1: Diagram illustrating design considerations for public realm and streetscape



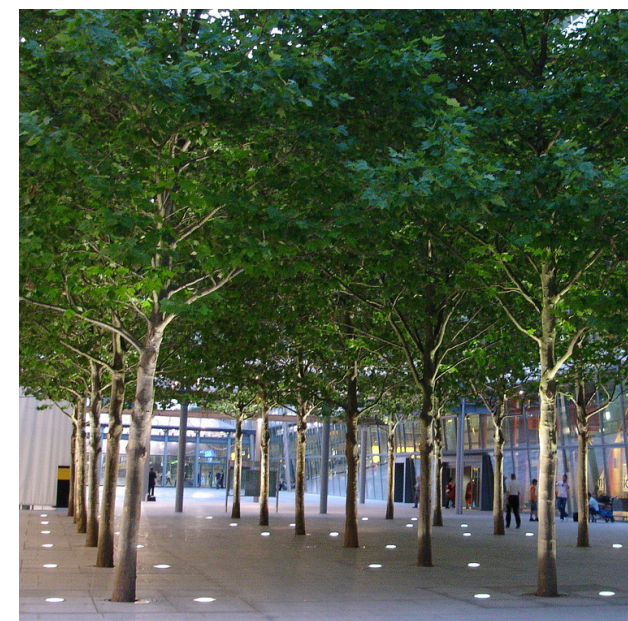


Figure C4.5.2: Appropriate tree planting is essential in establishing the right character



## C4.6 Green and Blue Roofs

### Overview

- C4.6.1 In some locations, the Project may be able to incorporate green and blue roofs.
- C4.6.2 Green roofs are roofs which incorporate special waterproofing, drainage and growing mediums such as lightweight aggregates and soils to support low and slow growing plant species such as sedums.
- C4.6.3 Green roofs are an excellent way to 'put back' spaces for wildlife where commercial and industrial uses are developed. They offer carbon sequestration and have a cooling effect for buildings and local micro-climate.
- C4.6.4 Consideration of bird strike risk will dictate potential locations and plant species, and will be an important factor in management and maintenance proposals.
- C4.6.5 Blue roofs are roofs with water attenuating properties and use water storing mediums such as lightweight aggregates or can incorporate a 'crate' system. Blue roofs are an important device in slowing the transport of water from rainfall to rivers, therefore helping with flood management and conservation of river corridors by managing flow rates. Blue roofs can also incorporate plants.

### Function

C4.6.6 Primary Functions:

- SUDs and Water resource management

C4.6.7 Secondary Functions:

- Habitat creation

- Micro-climate / cooling effect
- Character enhancement (from the air)
- Visual amenity (from the air)
- Identity and wayfinding (from the air)
- Carbon storage

### Principle

C4.6.8 Design principles may set out:

- Appropriate locations for application, taking into account bird strike risks and land uses
- Appropriate species ranges (species selection will take into account rate of growth, habitat creation, suitability regarding bird strike risks, resilience to climate change)
- Sourcing of appropriate water management products with regard to sustainability and durability
- Sourcing of appropriate soils (the requirement to consult soil specialists and consideration for weight of soils)
- Integration with local, regional and national strategies
- Management and maintenance principles



Figure C4.6.1: Green roofs - growing medium and planting to roofs

## C4.7 Greened Facades and Green Walls

### Overview

- C4.7.1 In some locations it may be appropriate to incorporate planting to building facades which can provide a natural cooling system both for the building and surrounding landscape, reduce wind tunnel effects and soften the appearance of structures.
- C4.7.2 This Toolkit makes a distinction between green walls and greened facades. The term 'green walls' refers to the application of an artificial system of soil and water supply to a facade, requiring considerably greater maintenance but offering a greater range of species possibilities. Green walls may be more suitable to a limited number of gateway and/or terminal spaces.
- C4.7.3 The term 'greened facades' refers to the application of climbing plants to building facades and the choice of appropriate species is more limited but requires less maintenance.

### Principles

- C 4.7.6 Design principles may set out:
- Appropriate locations for application, taking into account bird strike risks and land uses
  - Appropriate species ranges (species selection will take into account desired effects, rate of growth, habitat creation, suitability regarding bird strike risks, resilience to climate change)
  - Sourcing of appropriate water management products with regard to sustainability and durability
  - Sourcing of appropriate soils (the requirement to consult soil specialists and consideration for weight of soils)
  - Integration with local, regional and national strategies
  - Management and maintenance principles

### Functions

- C4.7.4 Primary Functions:
- Visual amenity
- C4.7.5 Secondary Functions:
- Micro-climate / cooling effect
  - Carbon sequestration
  - Character enhancement
  - Identity and wayfinding



Figure C4.7.1: Green walls



Figure C4.7.2: Green facades



## C4.8 Airfield / Trial Plots

### Overview

- C4.8.1 Large areas of the new airfield will be covered by grassland to help with surface water drainage and reduce the heat island effect that large areas of hard landscape can generate in summer.
- C4.8.2 These grasslands will have well defined maintenance and management strategies to ensure they do not attract birds and play their part in the safe operation of the airport.
- C4.8.3 The Project is working with specialists to trial different grass types with improved carbon storage properties. This could increase the amount of carbon that is permanently locked up within the airfield grassland areas, thereby reducing carbon emissions from the Project. If successful, this smarter, brighter, greener technology could be used for all sorts of applications within the Project and beyond.

### Functions

- C4.8.4 Primary Functions:
- Carbon storage
- C4.8.5 Secondary Functions:
- Education

### Principles

- C4.8.6 Design principles may set out:
- Species ranges and potential applications
  - Integration with local, regional and national strategies
  - Management and maintenance principles



Figure C4.8.1: On-airport grasslands - safe for on-airport use

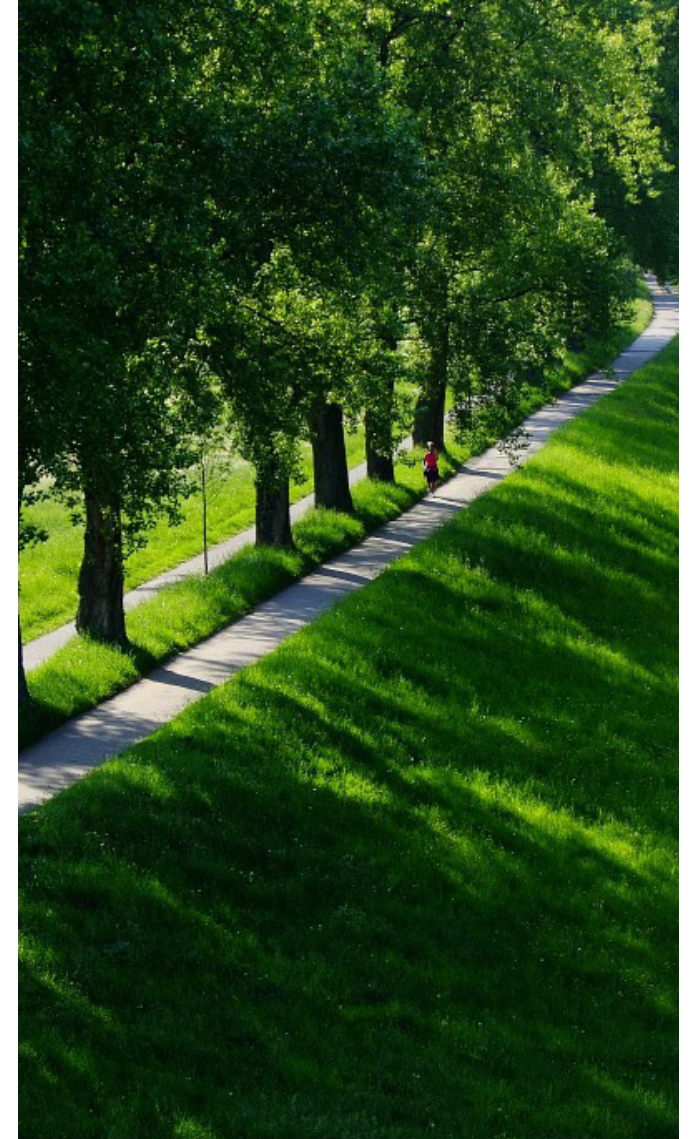
# C5.0 Landforms

## Introduction

The landscape around Heathrow is largely flat with man-made embankments and landfill being the most prominent permanent landforms. Gravel extraction has also made noticeable changes to this landscape.

The Project will require new landforms such as sloped embankments or linear bunds, most often formed with soil, in order to support structures, integrate different elements with their surroundings, and provide a buffer for noise.

Construction of the Project will also mean there are substantial temporary spoil mounds (stored soils and other materials) and borrow pits (created where the Project has extracted aggregates for construction).





## C5.1 Interface with Engineered Structures / Features

### Overview

- C5.1.1 Landforms will be used to support new structures, roads and the runway. These landforms will use natural ground profiles where space allows and reinforced steepened slopes where it is constrained. The reinforced earth slopes will be attractively finished and the natural slopes planted with species appropriate to location.

### Functions

- C5.1.2 Primary Functions:

- Visual amenity

- C5.1.3 Secondary Functions:

- Micro-climate / cooling effect
- Carbon storage
- Habitat creation
- Identity and wayfinding

### Principles

- C5.1.4 Design principles may set out:

- Appropriate species ranges (species selection will take into account desired effects, rate of growth, habitat creation, suitability regarding bird strike risks, resilience to climate change)
- Sourcing of appropriate soils (the requirement to consult soil specialists and consideration for weight of soils)
- Integration with local, regional and national strategies
- Management and maintenance principles



Figure C5.1.1: Landforms can 'blend' large structure into the landscape



Figure C5.1.2: Landforms can buffer biodiversity value



Figure C5.1.3: Landforms can take on a sculptural quality



Figure C5.1.4: Retaining structures - gabion baskets



## C5.2 Bunds (Noise and Visual)

### Overview

- C5.2.1 Earth bunds (linear mounds of earth) will be used to provide noise attenuation and visual mitigation around the airport boundary and where space allows.
- C5.2.2 Noise bunds will be planted with airfield grass and managed in the same way to reduce risk of bird strike.

### Functions

- C5.2.3 Where possible, visual mitigation bunds will be planted with other types of grassland including biodiverse grass and incorporate tree planting to integrate parts of the development with their surroundings and generate wildlife habitats.

### Principles

- C5.2.4 Primary Functions:
- Noise attenuation, visual amenity
- C5.2.5 Secondary Functions:
- Character enhancement
  - Identity and wayfinding
- C5.2.6 Design principles may set out:
- Appropriate species ranges (species selection will take into account desired effects, rate of growth, habitat creation, suitability regarding bird strike risks, resilience to climate change)
  - Sourcing of appropriate soils (the requirement to consult soil specialists)
  - Integration with local, regional and national strategies
  - Management and maintenance principles

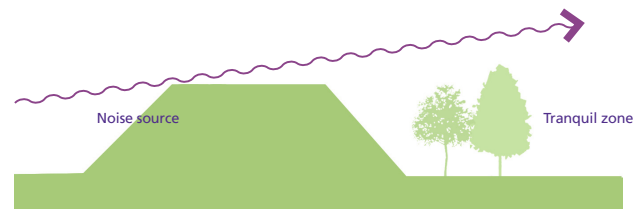


Figure C5.2.1: Diagram illustrating design considerations for noise bunds



Figure C5.2.2: Bunds for visual mitigation

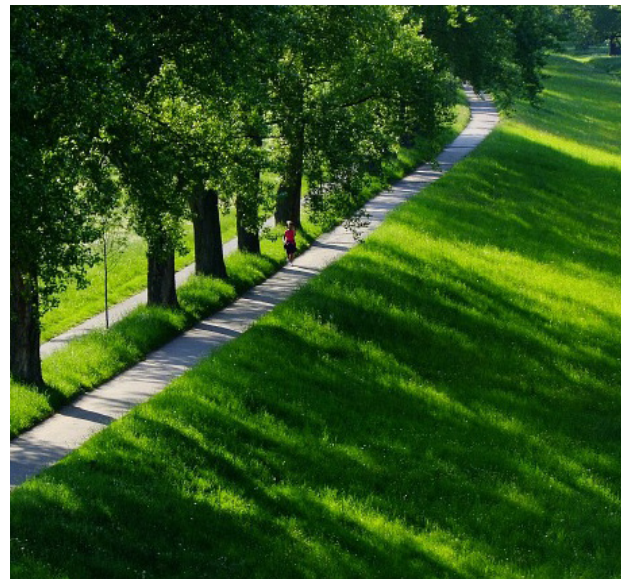


Figure C5.2.3: Noise bunds can take on a sculptural quality



Figure C5.2.4: Temporary bunds for visual mitigation



## C5.3 Borrow Pits and Spoil Heaps / Soil Stores

### Overview

- C5.3.1 These are temporary landscape features created during the construction phase of the works.
- C5.3.2 Borrow pits will be created where gravel deposits are excavated. This will happen to ensure aggregate reserves are not sterilised by construction, or in areas where flood alleviation basins are required.
- C5.3.3 Borrow pits will be in-filled after the construction process with either excavated materials (to create new landfills) or water.
- C5.3.4 Spoil heaps and soil stores will be temporary stockpiles of excavated material. They may be seeded with wild flowers where possible to improve their appearance during the construction works, whilst offering important temporary foraging sites for bees, butterflies and other pollinators.
- C5.3.5 The conservation of soils will be an important part of the Project including their longer term safeguarding and resilience to potential erosion. Good quality soils will be conserved and re-used within the Project, for example, to provide new landscaping or for displaced allotments.

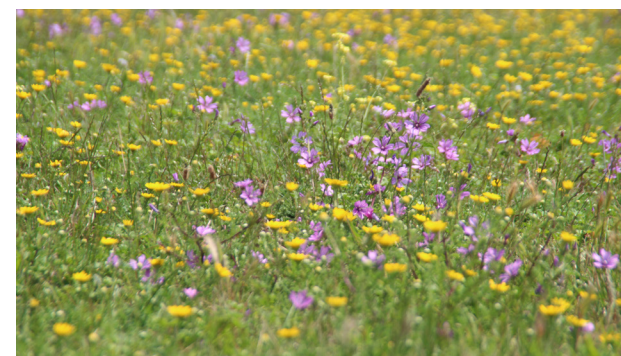


Figure C5.3.1: Seeded spoil heap can offer temporary habitat for pollinators

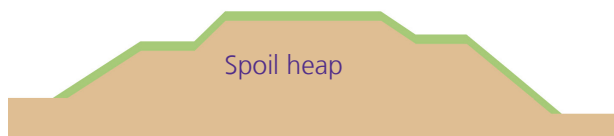


Figure C5.3.2: Borrow pits and spoil heaps

# C6.0 Boundaries

## Introduction

The boundary proposals for the Project will take a number of different forms depending upon the required function of each section. These include:

- Temporary boundaries during the construction phase
- Airside security fence
- Noise and blast barriers
- New walls and fences associated with re-provided Public Open Space and amenities

Some of the roads may also require acoustic fencing.





## C6.1 Temporary / Construction Fence

### Overview

- C6.1.1 These will be required during the construction phase to protect the public from access to work areas, but also to contain views of the construction and help reduce wind blown materials.
- C6.1.2 There will be opportunity to include viewing windows and interpretation boards on the temporary hoardings to facilitate communication with adjacent community groups.

### Functions

- C6.1.3 Primary Functions:

- Visual amenity

- C6.1.4 Secondary Functions:

- Education

### Principles

- C6.1.5 Design principles may set out:

- Appropriate graphic character
- Safety and security
- Location of viewing points



Figure C6.1.1: Graphics and greening



Figure C6.1.3: Viewing windows



Figure C6.1.2: Hoarding for sites



Figure C6.1.4: Interpretation of historic findings

## C6.2 Security Fence

### Overview

- C6.2.1 This is a requirement for the safe operation of the airport and will provide a continuous secure boundary. The design of this element is fixed, as is its location relative to the airport airfield and features outside of the airport boundary.
- C6.2.2 Where possible, buildings and landscape features will conceal the airport security boundaries.

### Functions

- C6.2.3 Primary Functions:

- Airport security

### Principles

- C6.2.4 Design principles may set out:
- Key design principles, considerations and drivers
  - Safety and security requirements
  - Appropriate adjacent species ranges (species selection will take into account desired effects, rate of growth, habitat creation, suitability regarding bird strike risks, resilience to climate change)
  - Management and maintenance



Figure C6.2.1: Examples of security fences



## C6.3 Noise and Blast Barriers

### Overview

- C6.3.1 Barriers will be required for noise and blast attenuation around the edges of the airfield. Blast attenuation barriers protect boundaries from jet engines. These locations will include taxiway turns and the ends of runways, particularly in close proximity to residential and public areas.

### Functions

- C6.3.2 Primary Functions:

- Noise and blast attenuation

### Principles

- C6.3.3 Design principles may set out:

- Safety and security requirements
- Appropriate materials, finishes and appearance
- Appropriate adjacent species ranges (species selection will take into account desired effects, rate of growth, habitat creation, suitability regarding bird strike risks, resilience to climate change)
- Management and maintenance



Figure C6.3.1: Planted blast walls along the Southern Perimeter Road



Figure C6.3.2: Noise wall with photovoltaics fitted



Figure C6.3.3: 5m high freestanding blast walls at T5



Figure C6.3.4: Noise wall with planting

## C6.4 Acoustic Fence

### Overview

C6.4.1 Acoustic fencing may be used along sections of roads in close proximity to housing and Public Open Space. Planting may be used where possible, to better integrate boundaries with their surroundings.

### Functions

C6.4.2 Primary Functions:

- Noise attenuation

### Principles

C6.4.3 Design principles may set out:

- Safety and security requirements
- Appropriate materials, finishes and appearance
- Appropriate adjacent species ranges (species selection will take into account desired effects, rate of growth, habitat creation, suitability regarding bird strike risks, resilience to climate change)
- Management and maintenance

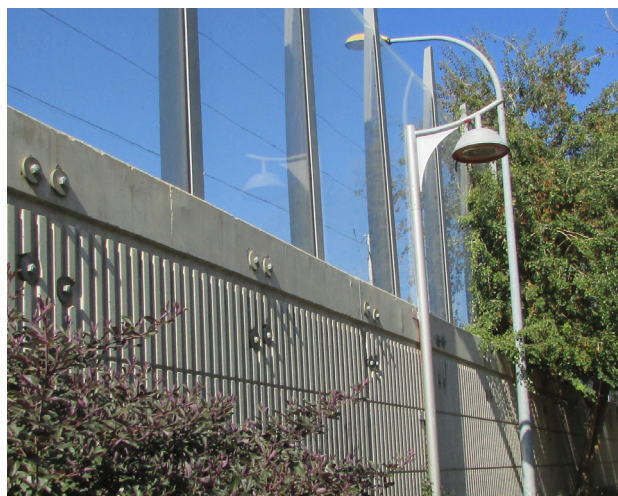


Figure C6.4.1: Examples of roadside acoustic fencing



# C7.0 Amenities

## Introduction

The Project will require the re-provision of a number of community facilities, open spaces and parks. The ANPS states that this re-provision must be 'equivalent or better... in terms of quantity and quality'.

These facilities will be re-provided close to the communities that they currently support, will be appropriately sized and will be designed to provide robust, functional and attractive spaces that are good for people and good for wildlife. The designs will respond to the setting of any heritage features close by and will be sensitive in terms of siting and design relative to the existing landscape.

The long term maintenance and management of the facilities will be considered as part of their design.



## C7.1 Allotments

### Overview

- C7.1.1 These will be re-provided in communities around the airport where they are lost, in accordance with legislation, policy and guidance.
- C7.1.2 These gardens will re-provide the opportunity to grow food and flowers, keep bees and support wildlife. There are also opportunities for community gardens to be established in other places.
- C7.1.3 Boundaries will be designed to offer additional wildlife habitats, offer a sense of enclosure from within and integration from without.

### Functions

- C7.1.4 Primary Functions:
- Growing food, plants and flowers

### C7.1.5 Secondary Functions:

- Recreation
- Character enhancement
- Visual amenity
- Habitat creation and biodiversity offsetting

### Principles

#### C7.1.6 Design principles may set out:

- Key design principles, considerations (including engagement and feedback from plot holders, communities and local and national management organisations) and drivers
- Safe and secure design

- Measures for inclusive design
- Appropriate arrangement of paths, entrances and facilities
- Relevant British Standards and other relevant guidance and regulations
- Management and maintenance



Figure C7.1.1: Examples of allotment spaces



## C7.2 Sports Pitches

### Overview

- C7.2.1 Sports pitches will be re-provided as part of the Project. Their design and placement will be considerate of nearby wildlife habitat provision, the provision of sufficient connectivity and the needs of current and future users. The design process will refer to legislation, National and Local Planning Policy and Guidance as well as Sport England guidance.
- C7.2.2 Where any displaced existing sports facilities offer a secondary informal recreation, the Project proposals will ensure that this is also incorporated within the replacement open space.
- C7.2.3 Boundary design is key to multifunctionality with opportunities to create wildlife habitats and also to visually buffer activities from neighbours.

### Functions

- C7.2.4 Primary Functions:

- Formal recreation

### Principles

- C7.2.5 Design principles may set out:

- Key design principles, considerations (including engagement and feedback from plot holders, communities and local and national management organisations) and drivers
- Safe and secure design
- Measures for inclusive design
- Appropriate arrangement of paths, entrances,

lighting and facilities

- Relevant British Standards and other relevant guidance and regulations such as Sport England guidance
- Management and maintenance

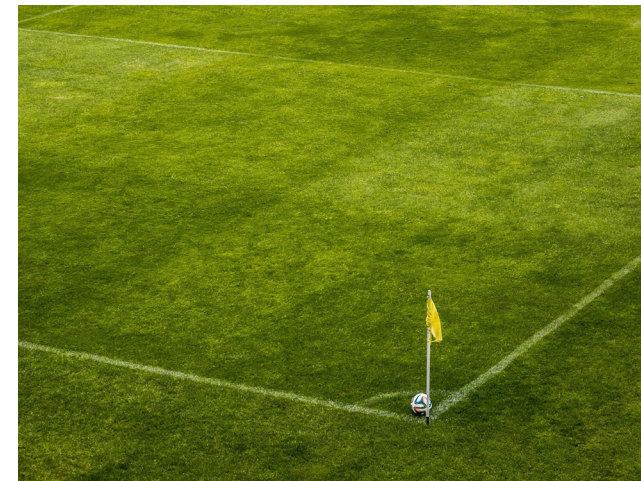


Figure C7.2.1: Examples of sports pitches

## C7.3 Exercise Trim Trails

### Overview

- C7.3.1 Trim trails are routes through green open spaces with simple items of exercise equipment along the way.
- C7.3.2 They offer an excellent opportunity for a range of outdoor activities that allow users to get closer to nature; essential for good health and well-being. Opportunities facilitated by trim trails for exercise in a natural environment include jogging, circuits and more unusual or improvised exercise routines such as parkour.

### Functions

- C7.3.4 Primary Functions:
- Informal recreation

### Principles

- C7.3.5 Design principles may set out:
- Key design principles, considerations and drivers
  - Safe and secure design
  - Measures for inclusive design
  - Appropriate arrangement of paths and equipment
  - Relevant British Standards and other relevant guidance and regulations
  - Management and maintenance



Figure C7.3.1: Examples of trim trails



## C7.4 Parkland

### Overview

- C7.4.1 A range of parks will re-provide Public Open Spaces as part of the Project. The careful placement of these spaces will be key to their success, offering good connectivity and enhancing and extending existing provision where appropriate.
- C7.4.2 The character of these spaces may be naturalistic and offer a wide range of wildlife habitats with predominantly ecological planting, whilst others will have the feel of more amenity focused parkland, with opportunities for amenities that support informal uses such as picnic facilities or informal play elements.

- C7.4.3 Parks provide cool spaces during heat-waves and help reduced urban heat island impact.

### Functions

- C7.4.4 Primary Functions:
- Re-provided Public Open Space
  - Formal and informal recreation
- C7.4.5 Secondary Functions:
- Character enhancement
  - Visual amenity
  - Habitat creation and biodiversity offsetting
  - SUDs

### Principles

- C7.4.6 Design principles may set out:
- Key design principles, considerations and drivers
  - Safe and secure design
  - Measures for inclusive design
  - Appropriate arrangement of paths, entrances and facilities
  - British Standards and other relevant guidance and regulations
  - Management and maintenance



Figure C7.4.1: Diagram illustrating design consideration for parkland



Figure C7.4.2: Examples of parkland landscapes and uses

## C7.5 Play

### Overview

- C7.5.1 Play provision will be an essential component to a number of open spaces be it informal adventure and nature play, or play in formally equipped spaces.
- C7.5.2 Boundary design is key to multifunctionality with opportunities to create wildlife habitats and also to visually buffer activities from neighbours. Design will be in keeping with best practice such as Fields in Trust standards and guidelines.

### Functions

- C7.5.3 Primary Functions:

- Formal and informal recreation

- C7.5.4 Secondary Functions:

- Education

### Principles

- C7.5.5 Design principles may set out:

- Key design principles, considerations and drivers
- Safe and secure design
- Measures for inclusive design
- Appropriate materials, finishes and appearance
- Relevant British Standards and other relevant guidance and regulations
- Management and maintenance



Figure C7.5.1: Informal play



Figure C7.5.2: Formal play space



# C8.0 Routes

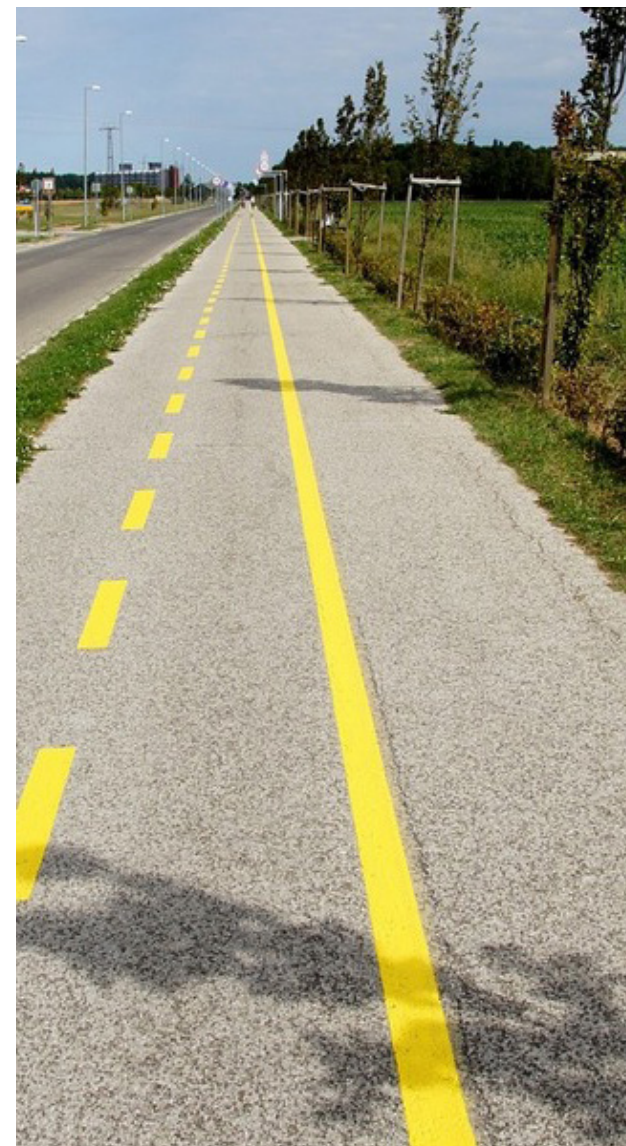
## Introduction

A network of new and enhanced pedestrian and cycle routes will be provided around and into the expanded airport as part of the aspiration for a smarter, brighter, greener future for Heathrow. These will be a combination of larger more direct commuter routes and smaller scale less formal recreational ones.

Important to this provision is the concept of a Green Loop. The Green Loop is an approximately 20km route that invites residents, employees and visitors to experience the landscape in new ways. The Green Loop will:

- Improve connectivity around the airport's perimeter
- Offer an informal recreation as a leisure route
- Connect communities, Public Open Spaces and biodiversity sites
- Utilise existing and new footpaths and cycleways to connect communities and green open spaces

The Green Loop will work in tandem with the 'Hub and Spoke' network to provide improved cycle routes to and around the airport.



## C8.1 Cycle Paths

### Overview

- C8.1.1 Surface access is an important part of the Project proposals and details for cycle provision can be found within the *Surface Access Proposals* document.
- C8.1.2 A network of cycle routes will be provided around the expanded airport. Where space allows, these routes will comprise segregated cycle paths or wide shared-use paths. In more constrained locations the routes will comprise in-carriageway cycle lanes. All cycle routes will provide hard surfacing and wayfinding. Most cyclable routes will be lit. In some locations this may not be appropriate, for example, where routes run through sensitive wildlife corridors.

### Functions

- C8.1.3 Primary Functions:
- Access
- C8.1.4 Secondary Functions:
- Formal and informal recreation
  - Character enhancement
  - Identity and wayfinding

### Principles

- C8.1.5 Design principles may set out:
- Key design principles, considerations and drivers
  - Safe and secure design
  - Measures for inclusive design
  - Appropriate materials, finishes and appearance
  - Relevant British Standards and other relevant guidance and regulations
  - Management and maintenance



Figure C8.1.1: Examples of cycle paths



## C8.2 Footpaths and Bridleways

### Overview

C8.2.1 The landscape proposals include a number of new footpaths and opportunities for enhancements to existing footpaths and bridleways. This part of the Toolkit will be important in the definition and illustration of the Green Loop, which ranges along its length from footpaths through townscape and villages to more informal recreational routes running through the Colne Valley and the country parks. Surfaces will be sensitive to character and use. Lighting will be appropriate to location, with consideration given to wildlife requirements.

C8.2.2 It is important that routes offer safe and comfortable access with inclusive design, suitable controlled crossings and well considered wayfinding.

### Functions

C8.2.3 Primary Functions:

- Access

C8.2.4 Secondary Functions:

- Formal and informal recreation
- Character enhancement
- Identity and wayfinding

### Principles

C8.2.5 Design principles may set out:

- Key design principles, considerations and drivers
- Safe and secure design
- Measures for inclusive design
- Appropriate materials, finishes and appearance
- Relevant British Standards and other relevant guidance and regulations
- Management and maintenance

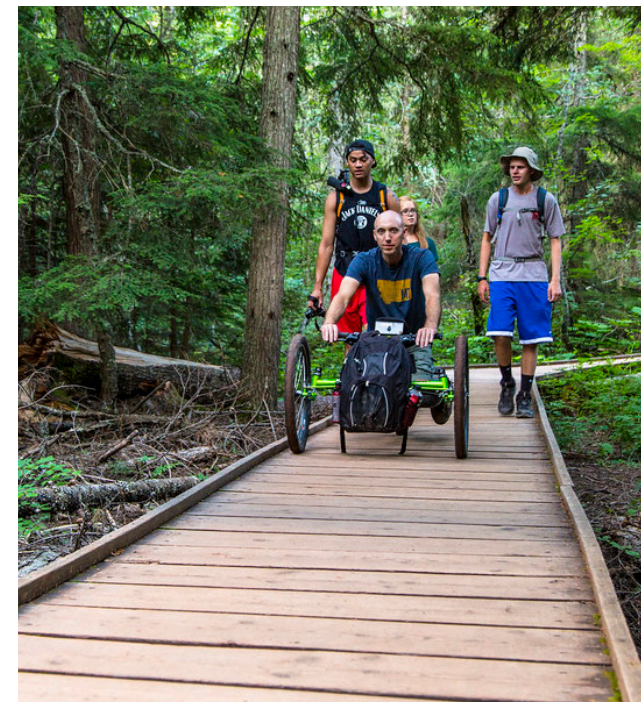


Figure C8.2.1: Examples of footpaths and bridleways