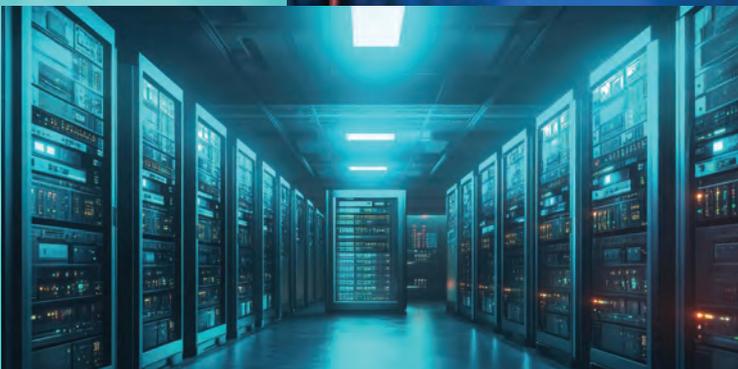




```
...: function(a, b, c) {
  var r, i, e, n;
  n = a.length;
  r = Math.min(n, b);
  if (!c) {
    for (i = 0; i < r; i++)
      for (e = 0; e < c; e++)
        if (r = t.apply(a[i], a), r == 1) break
  } else
    for (i = 0; i < r; i++)
      if (r = t.call(a[i], i, e[i]), r == 1) break
  } else if (a) {
    for (i = 0; i < r; i++)
      if (r = t.call(a[i], i, e[i]), r == 1) break
  } else
    for (i = 0; i < r; i++)
      if (r = t.call(a[i], i, e[i]), r == 1) break;
  return e
};
trim: b && !b.call("u00ffu00a0") ? function(e) {
  return null == e ? "" : b.call(e)
} : function(e) {
  return null == e ? "" : (e + "").replace(C, "")
};
msubarray: function(e, t) {
  var n = t || [];
  return null != e && (N(Object(e)) ? u.merge(n, "string" == typeof e ? e : e) : e);
};
msubarray: function(e, t, n) {
  var r, i;
  if (!t)
    if (!n) return e.call(n, e, n);
    for (r = 0, i = 0; i < n; i++)
      if (r = t.call(e[i], i, e[i]), r == 1) break;
  return e
};
```

# East Havering Data Centre Campus Local Development Order



## APPENDIX 3 - DRAFT DESIGN CODE

March 2026

# East Havering Data Centre Campus LDO Draft Design Code

## Contents

	Page
<b>Introduction</b>	3
<b>Part 1: East Havering Data Centre Campus : Introduction</b>	5
<b>1A Build Zone Design Requirements</b>	6
<b>1B Data Centres</b>	12
<b>1C Campus Management and Security Facilities</b>	18
<b>1D Electrical Infrastructure</b>	19
<b>1E District Heating Energy Centre</b>	19
<b>1F Indoor Horticulture</b>	20
<b>1G Visitor Centre</b>	21
<b>1H Sustainable Design Standards</b>	22
<b>1I Operational Noise Limits</b>	23
<b>1J Plot Access, Parking and Servicing</b>	29
<b>1K Lighting</b>	35
<b>1L Landscaping</b>	41
<b>1M Ecological Creation Features</b>	46
<b>1N Recycling and Waste Management</b>	48
<b>1O On Plot Drainage Standards</b>	49
<b>1P External Building and Site Signage</b>	50
<b>1Q Utility Infrastructure</b>	51
<b>Part 2: Site Wide Infrastructure</b>	52
<b>2A Site Road Design Standards</b>	53
<b>2B Standards for Shared Footway and Cycle Path</b>	58
<b>2C Signage</b>	58
<b>2D Campus Security Gates</b>	58
<b>2E Operational and Estate Management Parking Provision</b>	60
<b>2F Lighting</b>	60
<b>2G Landscaping</b>	63
<b>2H Ecological Creation Features</b>	69
<b>2I Drainage Standards</b>	69
<b>2J Service Infrastructure</b>	72
<b>Part 3: Ecology Park</b>	73
<b>3A Soft Landscaping</b>	74
<b>3B Hard Landscaping</b>	82
<b>3C Landscaped Earth Mounds</b>	87
<b>3D Visitor Provision</b>	91
<b>3E Lighting</b>	95

<b>Part 4: Highway Standards</b>	97
<b>4A General Requirements</b>	98
<b>4B Highway Works on Fen Lane</b>	98
<b>4C Highway Works on Ockendon Road</b>	99
<b>4D Lighting Standards</b>	99
<b>4E Tree Protection Measures</b>	99
<b>4F Ecological Creation Features</b>	101

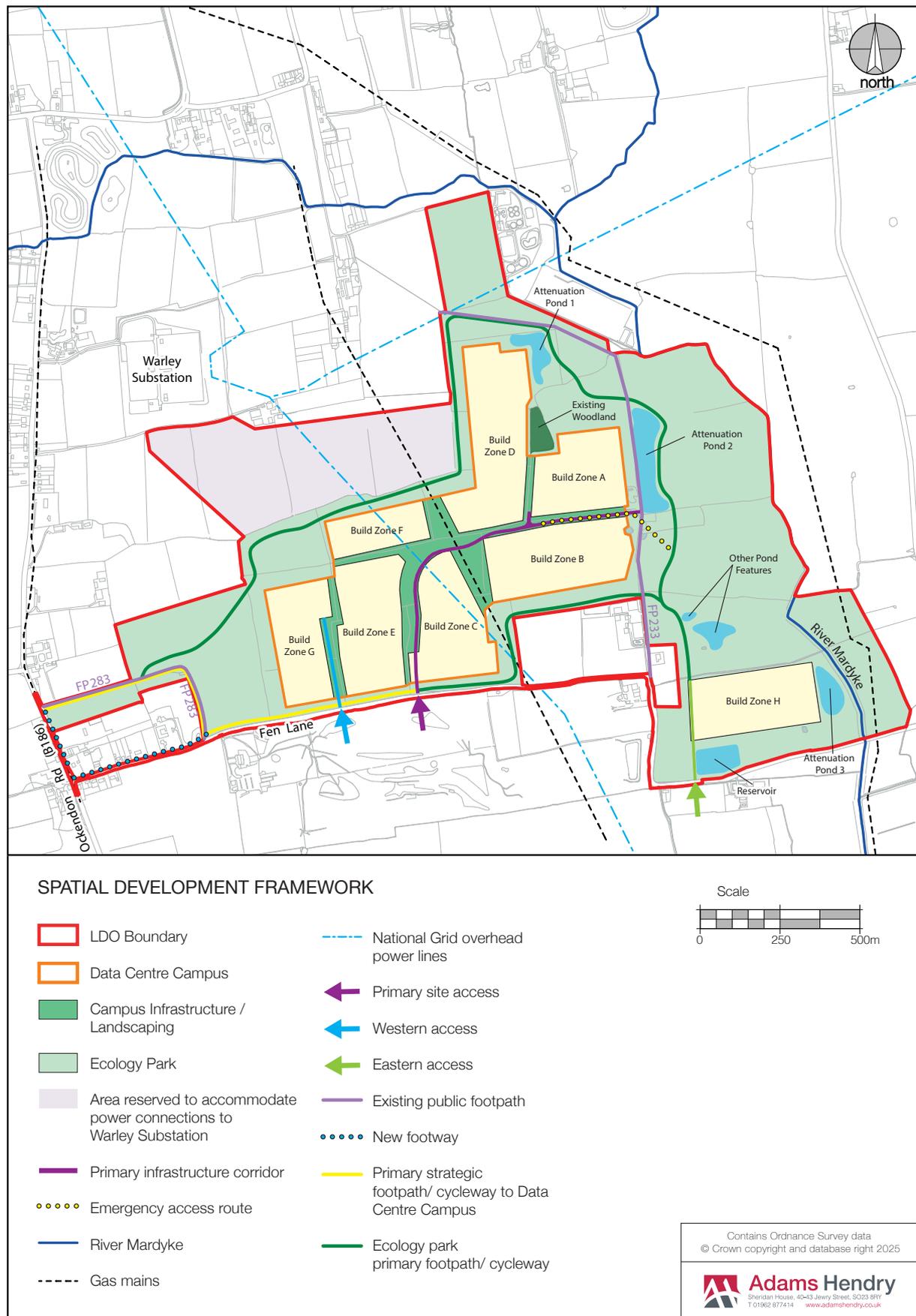
## **Apendices**

Appendix 1:	Accepted Luminaires
Appendix 2:	Soft Landscaping Specification
Appendix 3:	Schedule of General Maintenance Requirements for Street Furniture and Visitor Provision, Play Equipment and Footpaths/Cycleways
Appendix 4:	Tree Protection Schedule and Tree Protection Plans
Appendix 5:	Highway Drawings
	Appendix 5a: Fen Lane and Ockendon Road Drawings;
	Appendix 5b: Cross Sections;
	Appendix 5c: Long sections;
	Appendix 5d: Contours Plan;
	Appendix 5e: Drainage drawings; and
	Appendix 5f: Construction detail drawing.

## East Havering Data Centre Campus: Introduction

1. The East Havering Data Centre Campus Design Code forms part of the East Havering Data Centre Campus Local Development Order 2026 (the LDO) and must be read in conjunction with it.
2. The Design Code sets out the minimum standards to be applied to the development permitted by the Order to ensure that a high and consistent standard of design is maintained throughout.
3. The principles of sustainable design are incorporated into the Design Code to deliver a stimulating working environment within the campus area which will meet the commercial requirements of future occupiers. The campus will be set within an Ecology Park providing public access to natural landscapes.
4. The principal components of the spatial development framework are identified on Figure 1.1 and are described throughout the Design Code using the terminology in the key.
5. Part 1 of this Design Code sets out standards for individual development plots within the designated Build Zones. Infrastructure standards, (excluding the ecology park) are set out in Part 2. Standards for the Ecology Park are set out in Part 3 and the standards for Highway Works on Fen Lane and Ockendon Road in Part 4.
6. Development must accord with all relevant aspects of the Design Code to benefit from the permitted development rights conferred by the LDO.

**Figure 1.1: Spatial Development Framework**



# Part 1: Plot Design Standards within Build Zones

## 1A Build Zone Design Requirements

### Build Zones

1A.1 All buildings, external plant and plot based infrastructure must be located within Build Zones A-H as shown on Figure 1.1.

### Land Uses

1A.2 The land uses acceptable within a particular Build Zone are shown on Figure 1.2. Only these uses will be permitted.

### Development Phasing

1A.3 The Build Zones shall be developed in accordance with the phasing plan at Figure 1.3.

1A.4 Other than for Build Zones F and H or the campus security facility on Build Zone C, full details of the development of each Build Zone shall be provided with each Prior Notification submission.

1A.5 The rate of development within a Build Zone shall proceed in a controlled and co-ordinated manner in accordance with the Code of Construction Practice (CoCP).

1A.6 Development within a Build Zone shall not compromise the delivery of the remaining development within that Build Zone and shall be subject to the delivery of the necessary supporting infrastructure.

### Height

1A.7 Final ground levels shall not exceed the levels (AOD) shown on Figure 1.4 .

1A.8 Finished floor levels of buildings are not fixed and may be above or below the maximum ground levels shown on Figure 1.4. The height of buildings shall be measured from the finished floor level to the highest point of the roof and other than in Height Restriction Zone 4 shall include lift overruns, roof top plant and acoustic screens, and/or any other structure (excluding exhaust flues).

1A.9 Lift overruns, roof top plant and acoustic screens and/or any other structure (excluding exhaust flues) within Height Restriction Zone 4 shall be permitted up to a maximum height of 6m (including an allowance for a 1m high acoustic screen) above a 21m high building. Roof top plant shall otherwise not exceed 5m in height.

1A.10 Exhaust flues in all height restriction zones shall extend no more than 5m above roof top plant including acoustics screens (where required) or 5m above the building height in all other cases.

1A.11 Roof top mansafe systems shall not exceed 1.5m in height from the roof of the building.

1A.12 Where the FFL is lower than the maximum ground levels shown on Figure 1.4, buildings shall not exceed the relevant maximum height(s) (mAOD) for that part of a Build Zone as shown on the maximum heights plan in Figure 1.5. An illustrative example is shown on Figure 1.6.

Figure 1.2: Land Use Plan

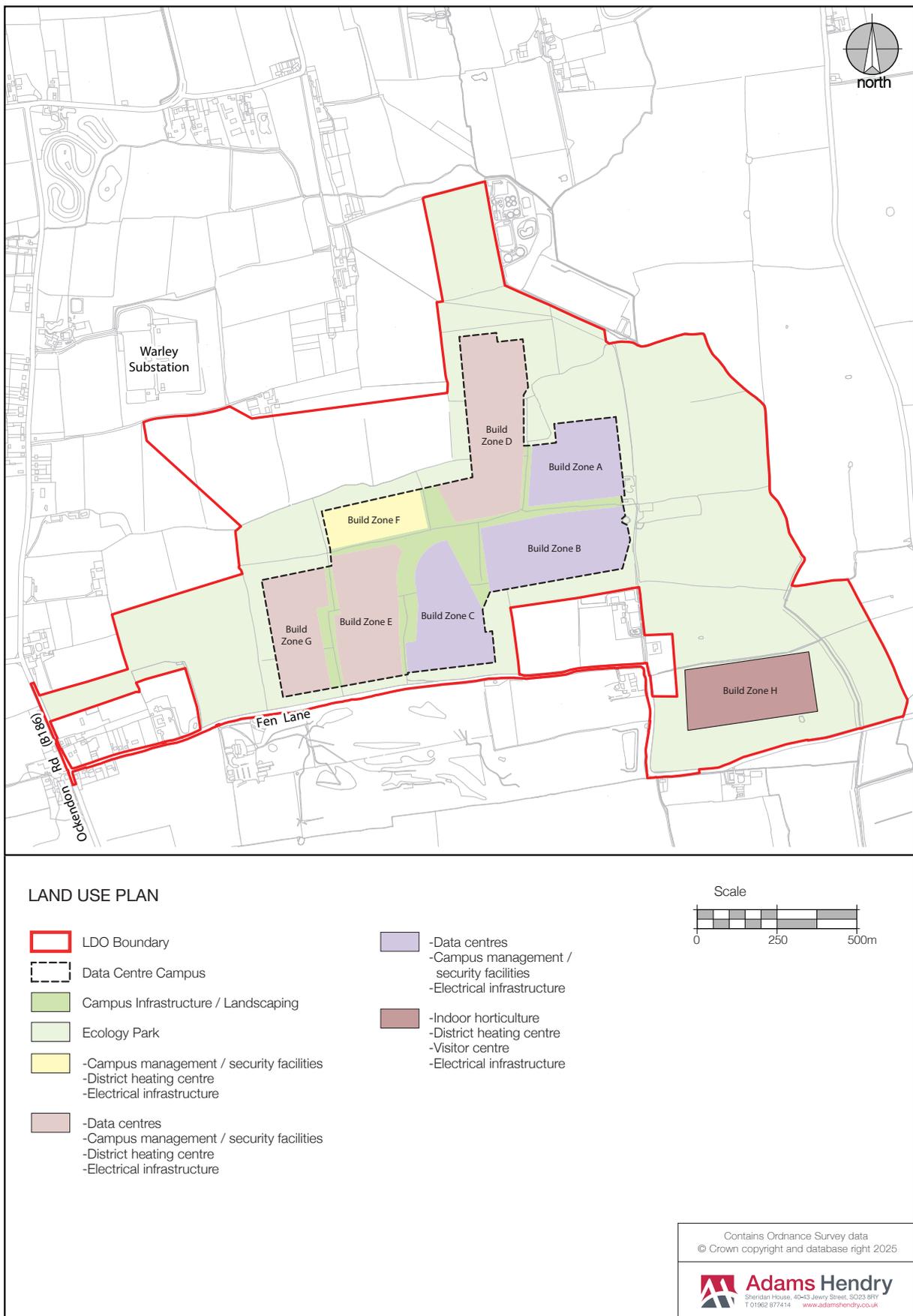


Figure 1.3: Development Phasing

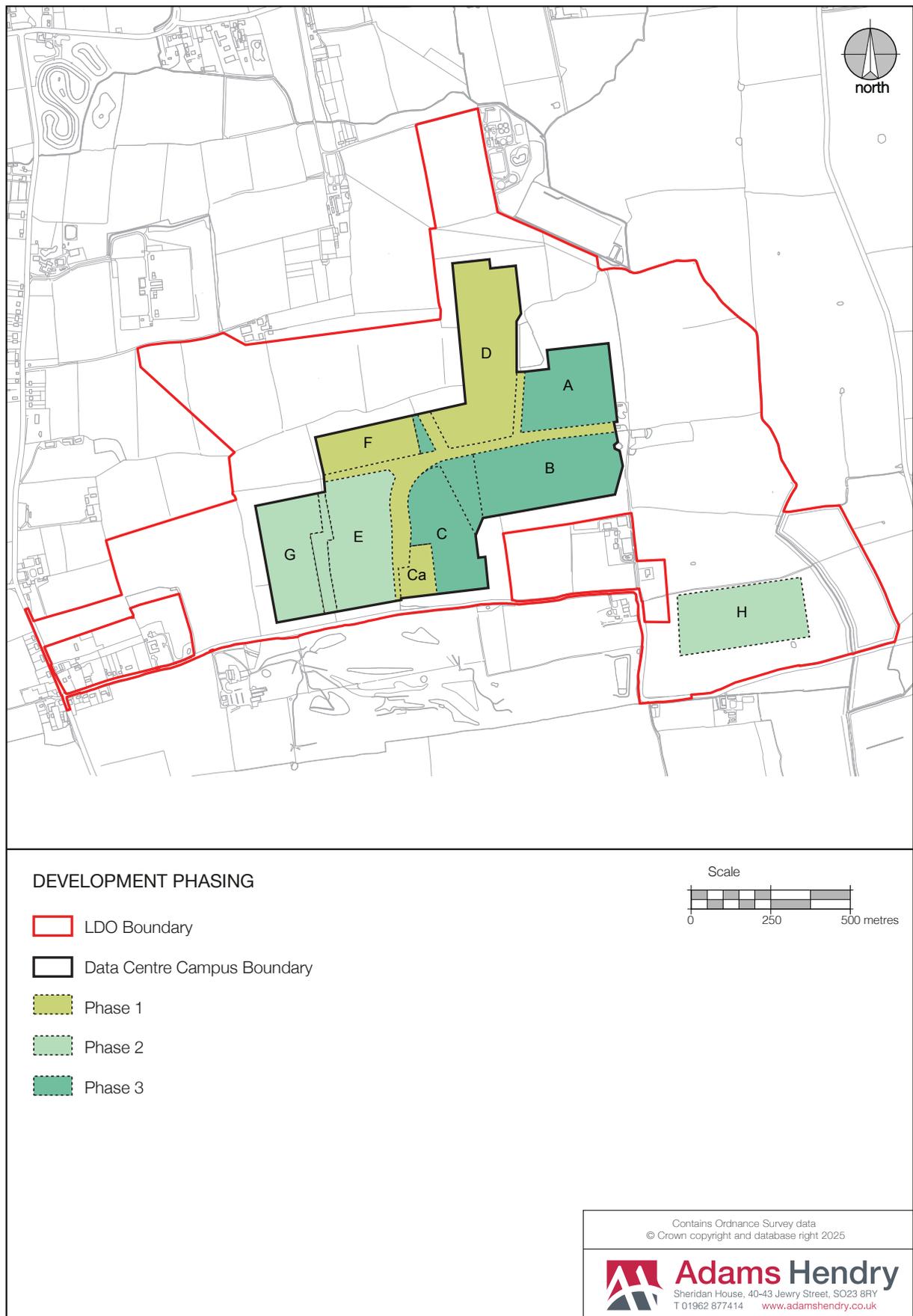


Figure 1.4: Ground Levels

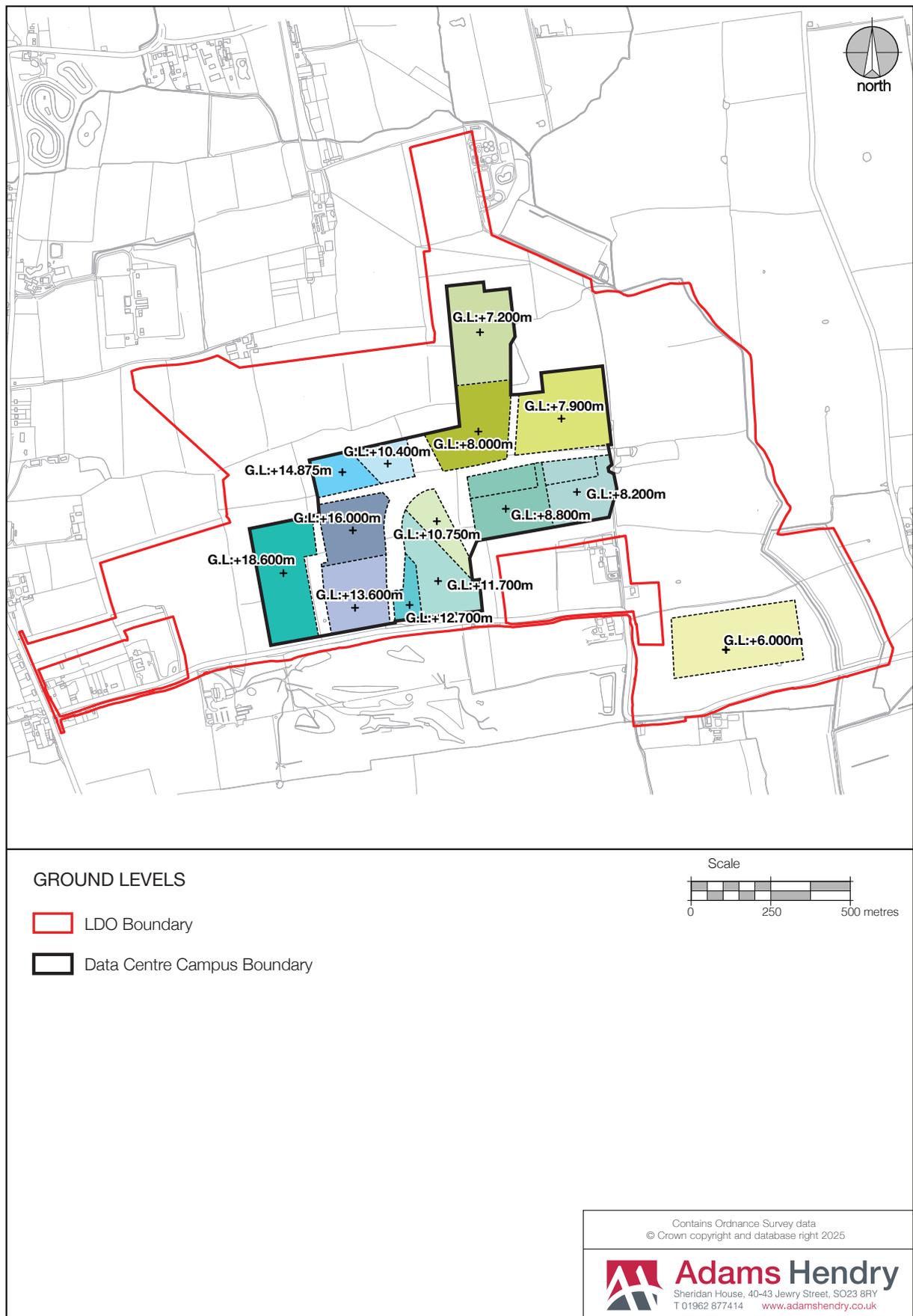
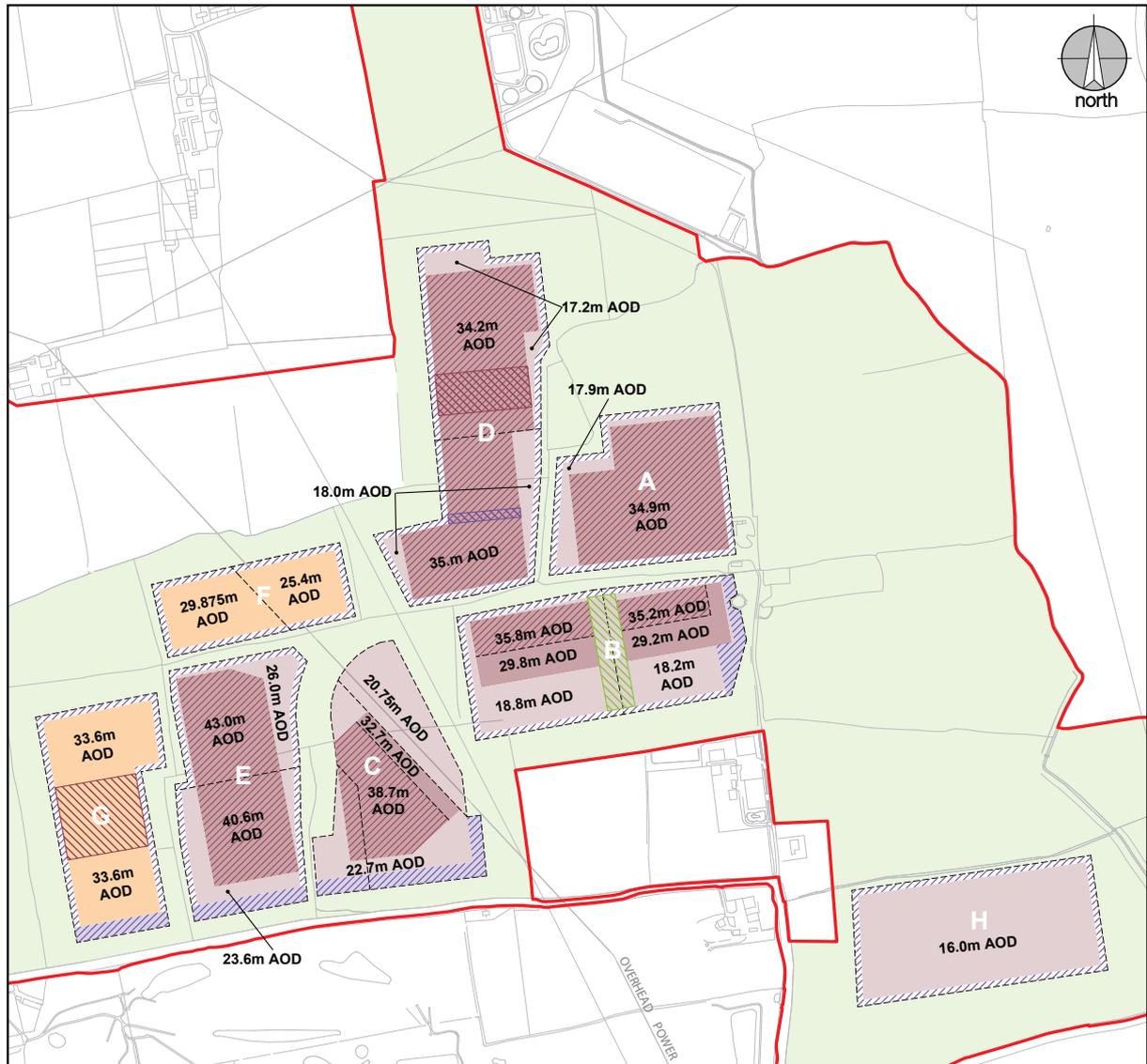


Figure 1.5: Maximum Heights (AOD)



MAXIMUM HEIGHTS (AOD)

- LDO Boundary
- Height Restriction Zone 1 (Max 15m above FFL)
- Height Restriction Zone 2 (Max 10m above FFL)
- Height Restriction Zone 3 (Max 21m above FFL)
- Height Restriction Zone 4 (Max 21m above FFL + lift overruns and rooftop plant including acoustic screens up to max 6m)
- 30m Separation Corridor Zone max height 10m
- 15m Fixed Separation Corridor max height 10m
- 45m Fixed Separation Corridor max height 10m
- 25m Buffer Zone
- 10m Buffer Zone

Note: All heights are maximum heights AOD  
Heights are measured from finished floor levels (FFL) (AOD)

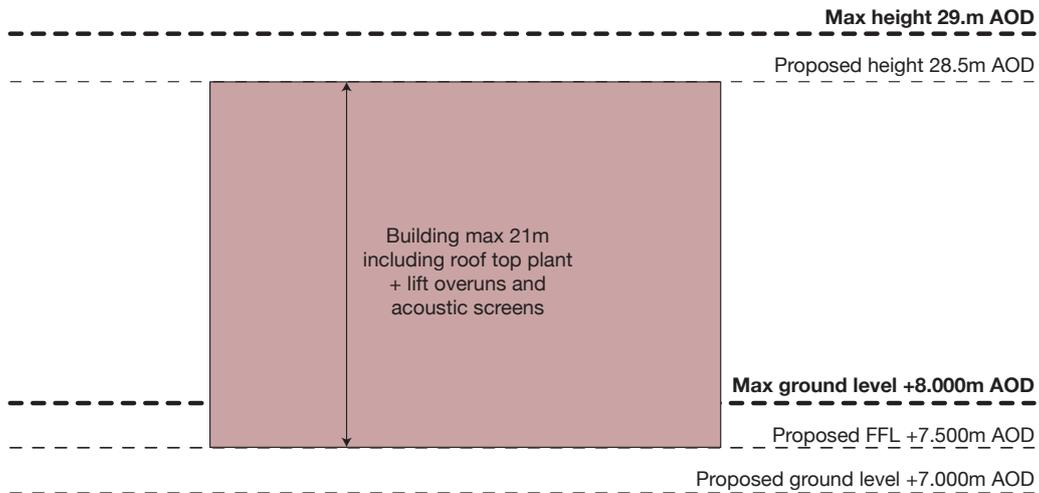


Contains Ordnance Survey data  
© Crown copyright and database right 2025

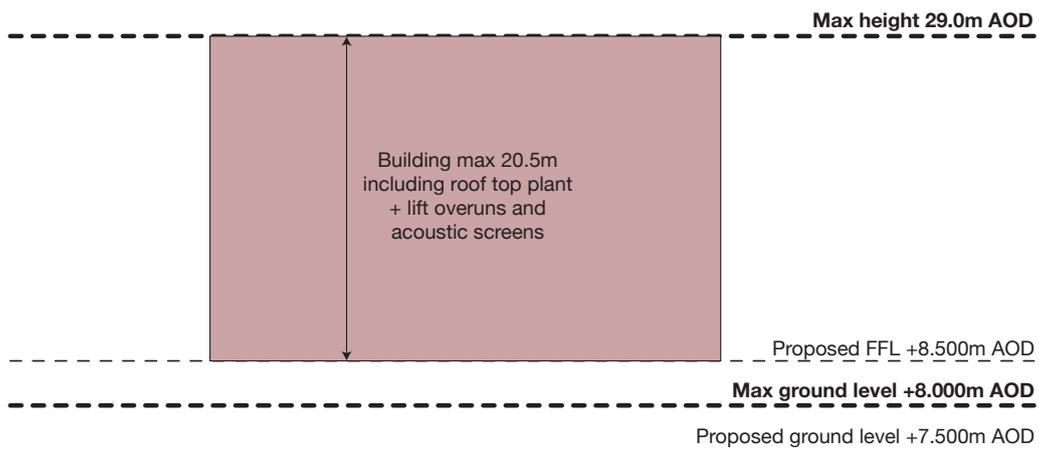
**Adams Hendry**  
Sheridan House, 40-43 Jewry Street, S023 8RY  
T 01962 877414 www.adamshendry.co.uk

**Figure 1.6 Maximum Heights Illustration:**

**Height Zone 3 - Example 1: FFL below maximum ground level**



**Height Zone 3 - Example 2: FFL above maximum ground level**



1A.13 Where the FFL is set higher than the maximum ground level, buildings shall only be permitted where the finished floor level is set to ensure that the maximum height mAOD as shown in Figure 1.4 is not breached. An illustrative example is shown on Figure 1.6.

1A.14 Within the buffer zones, only soft and hard landscaping, access roads, parking, lighting, fencing and gates, security cameras or sensors and related electric supply control cabinets or pillars may be provided.

## 1B: Data Centres

### Building Size, Location and Separation Corridors

1B.1 Data centre buildings within any Build Zone shall not exceed 200m in length.

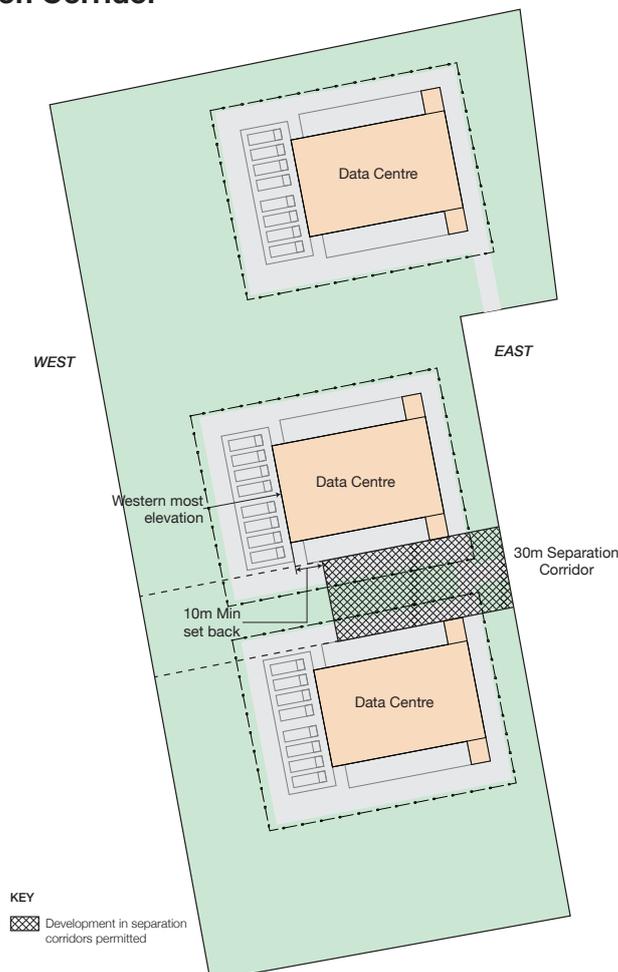
1B.2 There shall be a minimum separation corridor of 15m between data centres as measured from the façade of data centre buildings (excluding gantries) in all Build Zones. A fixed location for a separation corridor between data centre buildings within Build Zones B (minimum width 45m) and D (minimum width 15m) is shown on Figure 1.5. In Build Zones D and G, a 30m separation corridor between data centres is required within the general location shown on Figure 1.5.

1B.3 Each of the following criteria apply to development within separation corridors (including gantries). Development shall not be permitted if it:

- exceed 50% coverage within the corridor;
- exceeds a height of 10m when measured from FFL;
- spans the width of the corridor connecting two data centres.

1B.4 In Build Zone D and G, development within the separation corridors shall additionally be set back by a minimum of 10m from the western elevation of the westernmost data centre as illustrated in Figure 1.7.

**Figure 1.7: Separation Corridor**



## Materials and Roofing Principles

1B.5 Data Centres shall be constructed to the material specification set out in Table 1.1:

**Table 1.1: Material Specification**

Materials	Data Centre	Campus management	Electrical Infrastructure	Energy Centre	Indoor Horticulture	Visitor Centre
<b>Metal and Industrial Materials</b>						
<p><b>Metal Cladding including Roofing</b></p> <ul style="list-style-type: none"> <li>Zinc, copper, aluminium, Corten steel or factory-coated steel cladding systems.</li> <li>Pre-weathered or patinated finishes.</li> <li>Standing seam or rainscreen systems for refined detailing.</li> </ul> <p><b>Perforated Metal Plant Screening</b></p> <ul style="list-style-type: none"> <li>Laser-cut or perforated metal panels (zinc, aluminium, or steel) to screen plant, service areas, or rooftop equipment.</li> <li>Integrated louvre systems with acoustic performance to mitigate noise from plant areas.</li> <li>Finishes to match or complement adjacent cladding or screening materials.</li> </ul>	✓	✓	✓	✓	✓	
<b>Roofing</b>						
<ul style="list-style-type: none"> <li>Single-ply membrane systems (e.g. PVC, TPO or EPDM) suitable for flat or low-pitch roofs</li> <li>High-performance built-up bituminous or liquid-applied membrane systems where appropriate.</li> <li>Finishes to be durable, UV-stable, and compatible with rooftop plant zones, maintenance access and photovoltaic installations where required.</li> </ul>	✓					
<b>Masonry and Mineral Materials</b>						
<p><b>Facing Brick (Buff and Light Earth Colours)</b></p> <ul style="list-style-type: none"> <li>Buff, cream, or soft grey tones.</li> <li>High-quality mortar detailing to match or subtly contrast with brick tones.</li> </ul> <p><b>Natural Stone</b></p> <ul style="list-style-type: none"> <li>Suitable for plinths, boundary walls, or key façade elements.</li> <li>Textures and colours to complement adjacent materials.</li> </ul> <p><b>Concrete Block Bricks</b></p> <ul style="list-style-type: none"> <li>Architectural-grade concrete block units in neutral or buff tones with textured, split-face, or honed finishes for secondary façades or service structures.</li> </ul>	✓	✓	✓	✓	✓	✓

Glazing Materials						
<p><b>Glass and Transparent Structures</b></p> <ul style="list-style-type: none"> <li>High-performance glass.</li> <li>Low-iron, laminated, or thermally efficient glazing units.</li> <li>Minimal and visually recessive framing systems (timber, aluminium, or steel).</li> <li>Limited reflectivity.</li> </ul>	✓	✓			✓	✓
Natural and Timber Materials						
<p><b>Charred Timber Cladding</b></p> <ul style="list-style-type: none"> <li>Sustainably sourced and charred using traditional shou sugi ban methods for accent façades and detailed architectural features.</li> </ul> <p><b>Treated, Approved FSC-Certified Timber</b></p> <ul style="list-style-type: none"> <li>Fully FSC-certified timber, responsibly sourced.</li> <li>Pressure-treated or thermally modified for cladding, detailing, or external joinery.</li> </ul> <p><b>Timber Shingles</b></p> <ul style="list-style-type: none"> <li>Treated hand-split or machine-cut timber from durable, sustainably sourced species (e.g., cedar, larch, oak) for roofing and vertical cladding applications.</li> </ul>		✓				✓
Roofing Materials						
<p><b>Clay, Concrete Tile or Slates</b></p> <ul style="list-style-type: none"> <li>Terracotta, warm grey, muted earth tones.</li> <li>Sloped roofs.</li> <li>Traditional appearance and thermal performance.</li> </ul> <p><b>Green / Vegetated Roof</b></p> <ul style="list-style-type: none"> <li>Low-maintenance grasses or sedum.</li> <li>Flat or low-slope roofs.</li> <li>Sustainability and stormwater management.</li> </ul> <p><b>Single-Ply Membrane (TPO / EPDM / PVC)</b></p> <ul style="list-style-type: none"> <li>White, light grey, black.</li> <li>Flat roofs.</li> <li>Durable, efficient, minimal visual impact.</li> </ul>						✓

1B.6 All materials shall durable, compliant with fire safety standards, minimise visual impact and embodied carbon and shall be locally sourced where possible.

1B.7 A minimum 20% of building material elements shall comprise of recycled or reused content.

1B.8 Building entrances, technical support areas with windows and glazed facades shall face primary building frontages where possible.

1B.9 The façade of data centre buildings and external appearance of gantry screens and roof top plant shall accord with the indicative colour palette set out in Figure 1.8.

1B.10 Unless it is demonstrably not feasible

- Green/living walls and/or climbing plants shall be incorporated on building elevations; and
- Green roofs shall be incorporated on areas not required for plant or photovoltaic panels.

Figure 1.8: Data Centre Colour Palette and Indicative Materials

Building colour palette



Roof plant colour palette



Roof plant screening



Gantry screening colour palette



Gantry screening



Roofing colours



*Indicative Green /Living Wall*



1B.11 Roof materials should be non-reflective and dark or recessive in colour. Lighter colours should be avoided.

#### ***Indicative Roofing Materials***



#### **Gatehouses**

1B.12 Gatehouses shall be constructed to the material specification for campus management set out in Table 1.1 and accord with the colour palette in Section 1C.

#### **External Plant**

1B.13 Permanent external plant ancillary to a data centre building (excluding electrical infrastructure as described in Section 1D) shall be located on rooftops, on gantry support systems or underneath such support systems at ground level adjacent to the data centre building they serve. Wherever possible external plant shall face away from sensitive receptors, such as residential properties, and limited in noise output to meet the operational noise limits set out in Section 1I.

1B.14 External plant may include heat exchangers and pumps, heating and cooling plant, backup power generators, rainwater harvesting and PV renewable energy systems and other related support tanks and plant equipment such as sprinkler tanks and associated pump houses.

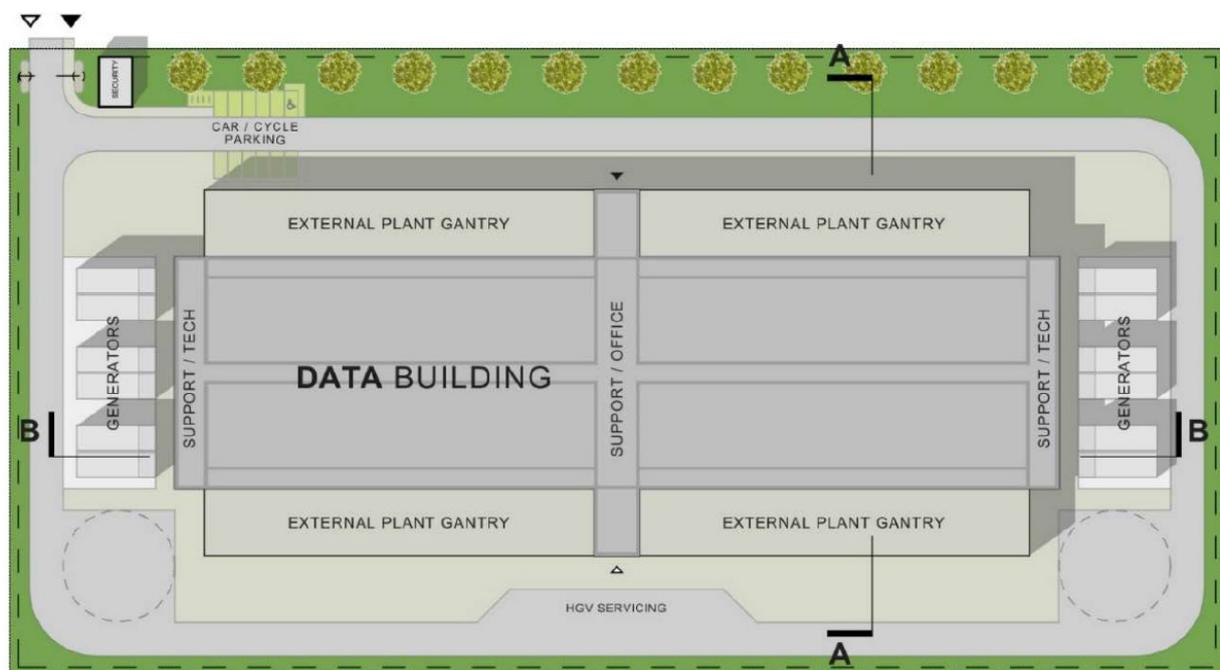
1B.15 Tanks for rainwater harvesting (see 1H.9 – 1H-12) may be stored on or under the gantries or may be underground. The tanks shall be installed to a maximum depth of 9m.

1B.16 Backup power generators may be either single or doubled stacked either at ground level immediately adjacent to the building they relate to or on gantries external to the data centre buildings. The fuel tank shall either be integral to the generator or buried underground and pumped to the generator. The requirements set out at 1O.9 shall apply to the storage of fuel on site. Where fuel is stored underground, tanks shall be installed to a maximum depth of 4.5m.

1B.17 Generators shall use hydrogenated vegetable oil (HVO) or an alternative biofuel. Diesel generators are not permitted.

1B.18 A typical arrangement of external plant and generators is shown on Figure 1.9

**Figure 1.9: Typical Arrangement of Plant and Generators**



1B.19 Backup generators may be used for routine testing and maintenance or in the event of a total grid outage.

1B.20 A small generator <50kVA to provide backup power for an on-plot security gatehouse at the entrance to each plot may be provided if required.

## Waste Heat

1B.21 Waste heat connection points shall be incorporated into the cooling system pipework or ducting, within an appropriate location inside data centre buildings to maximise the potential recovery of waste heat.

## 1C: Campus Management and Security Facilities

1C.1 The Campus Management Security Control Facility (SCF) shall have oversight and management of the security of the whole site. The SCF may include CCTV monitoring rooms, storage and welfare facilities, meeting rooms, offices and maintenance facilities. The SCF shall be located at the main entrance to the data centre campus.

### Materials and Roofing Principles

1C.2 The campus management and campus security building shall be constructed to the material specification set out in Table 1.1. The requirements set out at 1B.6 and 1B.7 also apply.

1C.3 Different elevational treatments or colours shall be used to denote the main entrance of a building. The fenestration shall be appropriate to the commercial nature of the development and include areas with windows and/or glazed facades on the primary building façade.

1C.4 External ducting shall be arranged to avoid visual clutter.

1C.5 Green/living walls and/or climbing plants shall be incorporated on building elevations unless it is demonstrably not feasible. Green roofs shall be incorporated on areas not required for photovoltaic panels.

1C.6 The façade of campus management and security building shall accord with the colour palette set out in Figure 1.10.

**Figure 1.10: Colour Palette**

#### Roofing colours



#### Building colour palette



## 1D: Electrical Infrastructure

### UKPN Substation

1D.1 The UKPN substation shall be located within a fenced compound in Build Zone F and may include:

- a main substation building comprising electrical equipment, switch gear, control/office building, portable buildings, and cabling; and
- external to the building within the compound:
  - o incomer feeder circuit bays @132kV;
  - o 132 kV customer bays to feed the on-site distribution transformers to include cable sealing ends, surge arrestors, disconnectors, circuit breakers, current transformers, voltage transformers and earth switches.
  - o Bus-section breakers and associated Bus-bars.

### Other Electrical Infrastructure

1D.2 Other electrical infrastructure required in connection with the development approved under this LDO may be located within any Build Zone and may comprise:

- various Grid Transformers (GT);
- primary substations each comprising electrical equipment, switch gear, equipment/control buildings and cabling sitting within an external fenced compound;
- primary switch rooms each comprising electrical equipment switch gear and distribution cabling;
- electrical energy centres located adjacent to data centres each comprising low voltage switch gear and transformers. Energy centre sizes may vary depending on the electrical capacity;
- external electrical equipment, equipment rooms and cabling required for an electrical private wire and micro grid network sitting within an external compound; and
- other smaller electrical and telecommunication disruption equipment enclosures and substations.

### Materials

1D.3 Electrical infrastructure shall be constructed to the material specification set out in Table 1.1. Buildings housing electrical infrastructure shall accord with the colour palette set out in Figure 1.10.

## 1E: District Heating Energy Centre

1E.1 The district heating energy centre shall include sufficient space for the installation of pumping and heat generation plant and required ancillary equipment.

### General Cladding and Roofing Principles

1E.2 The energy centre building and roofing shall accord with the colour palette set out in Figure 1.10 and shall be constructed to the material specification in Table 1.1. The requirements set out at 1B.6 and 1B.7 also apply.

1E.3 Ducting vents shall cover no more than 5% of the façade.

## 1F: Indoor Horticulture

### Building Size

1F.1 The greenhouse(s) may include ancillary offices, welfare facilities and a packing and storage area.

1F.2 External storage is not permitted.

### External Plant

1F.3 External plant, including a hot water storage tank, a CO<sub>2</sub> tank, standby generator and water reverse osmosis machine (treatment plant to purify water) shall be located within an external screened compound which shall be no higher than 0.5m above the external plant.

1F.4 No more than one 60 tonne tank of liquid CO<sub>2</sub> shall be stored on the site.

1F.5 The standby generator < than 200kVA, shall use hydrogenated vegetable oil (HVO) or an alternative bio oil. Diesel generators are not permitted. Build Zone operational noise limits are set out in Section 1I.

### Loading Bays and Servicing Yard

1F.6 A maximum of two loading bays may be provided to enable deliveries by an articulated lorry.

1F.7 Where dock levellers are provided, they shall include flexible shelters to minimise the ingress of air and water into the building. Insulated, electric overhead sectional doors shall include safety windows and coloured to suite the overall elevational treatment.

1F.8 Service yards and loading bays shall be designed so that an articulated lorry can turn and enter/exit the indoor horticulture site in forward gear.

### Materials and Roofing Principles

1F.9 The horticultural uses shall be constructed to the material specification set out in Table 1.1. The requirements set out at 1B.6 and 1B.7 also apply.

#### **Indicative Materials**



1F.10 Glasshouses shall be provided with overhead blackout screens and side screens to prevent light pollution after dusk.

1F.11 Ancillary offices, welfare facilities, packing and storage areas shall accord with the colour palette set out in Figure 1.10.

### Reservoir

1F.12 Water for use in the glasshouses shall be drawn from a new reservoir with a maximum capacity of 40,000 m<sup>3</sup> located within the Ecology Park on land to the south of Build Zone H.

1F.13 The reservoir shall comprise a maximum 2m high graded bund (max 1:3 slope) and excavation shall be to a maximum of 2m below existing ground levels.

## 1G: Visitor Centre

1G.1 The Visitor Centre shall be located adjacent to the ecology park in Build Zone H and shall include:

- a flexible/multi-purpose room or space that can accommodate 25-50 people (a minimum GIA of 70m<sup>2</sup>) suitable for educational purposes;
- a dedicated area for educational exhibits;
- an ancillary food/beverage provision (vending machines as a minimum);
- ancillary office space;
- storage space; and
- staff restroom including kitchen facilities.

1G.2 The visitor centre shall be fully accessible in accordance with Part M of the Building Regulations (or as subsequently amended).

### Materials and Roofing Principles

1G.3 The visitor centre shall be constructed to the material specification set out in Table 1.1. The requirements set out at 1B.6 and 1B.7 also apply.

The façade of visitor centre shall accord with the colour palette set out in Figure 1.11.

**Figure 1.11: Colour Palette**

Visitors Centre colour palette



## 1H: Sustainable design Standards

### BREEAM Rating

1H.1 Data centres, campus security facility and campus management buildings and the energy centre shall achieve a minimum BREEAM rating of Excellent.

1H.2 The visitors centre shall achieve a BREEAM rating of Outstanding.

### Carbon Reduction Targets

1H.3 All data centres shall aim to be carbon net zero.

1H.4 Each data centre building shall achieve as a minimum an on-site carbon reduction of 40% beyond Building Regulations, with at least 14% of this carbon reduction being achieved via energy efficiency measures alone. Where the London Plan target carbon reduction emission rates exceed that stated above each data centre building shall meet the requirements of the London Plan.

1H.5 The campus security facility and campus management building shall achieve an on-site carbon reduction of 100% beyond Building Regulations, with at least 10% of this carbon reduction being achieved via energy efficiency measures alone.

1H.6 The visitor centre shall achieve an on-site carbon reduction of 100% beyond Building Regulations, with at least 35% of this carbon reduction being achieved via energy efficiency measures alone.

1H.7 Where carbon net zero cannot be achieved, a financial contribution towards carbon offset schemes will be required.

### Water Use

#### Potable Water Use

1H.8 The following measures shall be implemented in all buildings to improve domestic water use efficiency in welfare areas:

- AMR water meters and reporting software to enable effective monitoring.
- Leak detection systems equipped with alarms.
- Minimum water efficiency standards for all fixtures and fittings including:
  - o Dual flush WCs with a flush volume of 4.5 litres or less;
  - o Electronic sensor taps and flow rate less than 6 litres/min at 0.3MPa;
  - o Showers flow rate less than 6 litres/min at 0.3MPa.
- Solenoid valves and occupancy controls in each welfare area, water supply controlled by Infra-red movement detectors.

#### Rainwater Harvesting

1H.9 Rainwater shall be collected and stored from the roof areas of all data centres and glasshouses and prioritised as the primary source of water for data centre cooling and irrigation purposes respectively.

1H.10 Rainwater storage tanks may only be topped up with potable water when water levels in the storage tanks fall below a mid-level sensor.

1H.11 The storage collection tanks shall be sized to meet a peak 24-hour water demand, plus an additional 24-hour reserve and may be above or below ground at a maximum depth of 9m. All rainwater collected shall be filtered and treated before use.

1H.12 Rainwater shall be collected and stored from the roof areas of the campus management, campus security building and visitor centre for non-potable use, such as toilets and irrigation of soft landscaping.

### Photovoltaic Panels

1H.13 Photovoltaic panels (PVs) shall be maximised on the roofs of data centre buildings (excluding security gatehouses), the campus management and campus security buildings, the district heating energy centre and visitor centre where not occupied by roof top plant unless it can be demonstrated that this is unfeasible due to operational requirements.

## 11: Operational Noise Limits

### Management of Operational Noise

11.1 Operational noise from development shall be managed through the process shown in Figure 1.12 which all developers shall follow during the design, construction, and commissioning of development within a Build Zone.

### Design Stage Assessment

11.2 The layout of buildings within a Build Zone shall be designed within input from an acoustic consultant to minimise the requirement for high specification noise mitigation devices (such as enclosures).

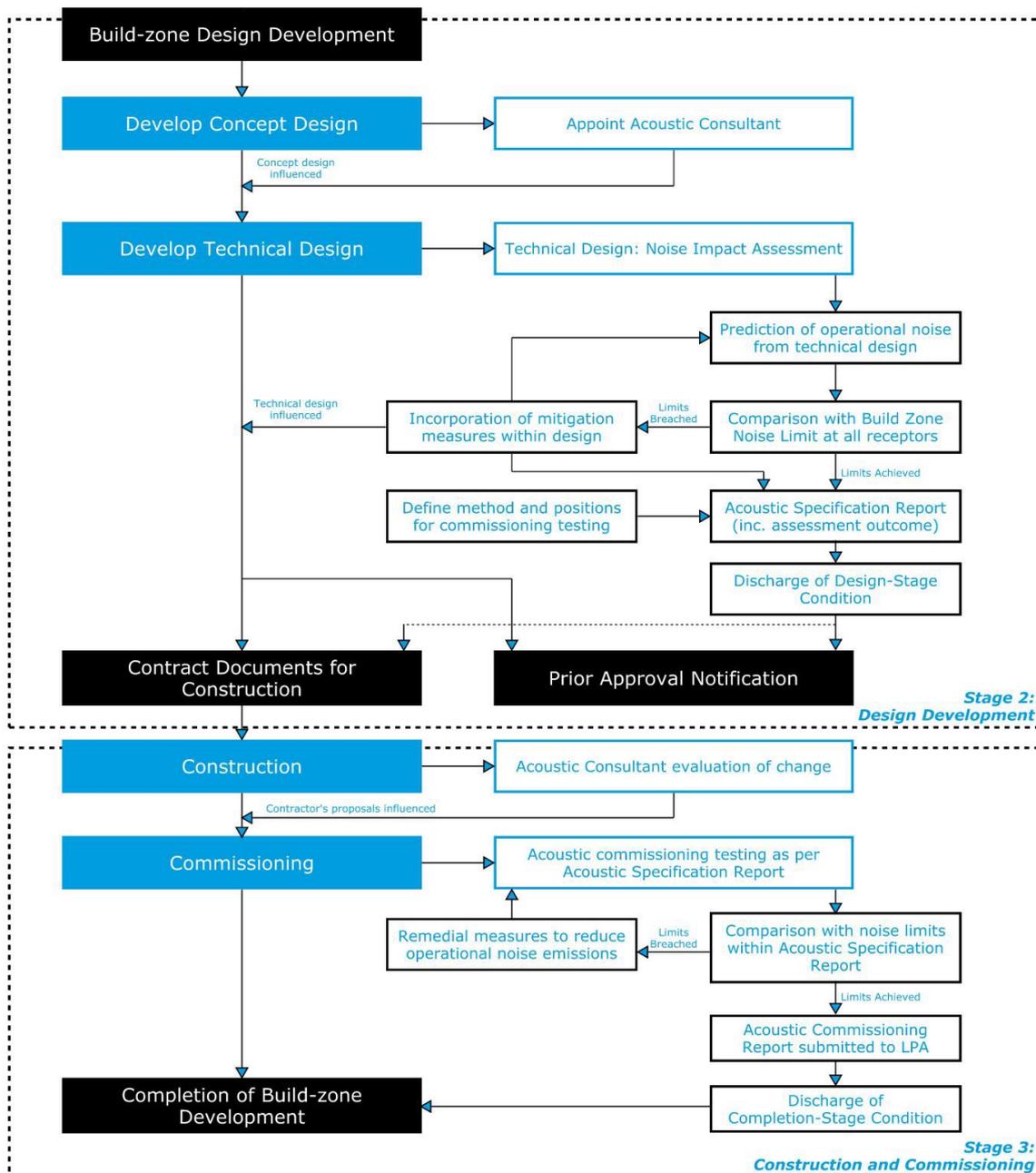
11.3 An acoustic consultant shall carry out an assessment of the operational noise predicted to arise from all development proposed in a Build Zone. The assessment shall be repeated until the limits set out within Tables 1.2 and Table 1.3 are expected to be achieved.

11.4 The technical design assessment shall be documented within an Acoustic Specification Report (ASR). This assessment shall incorporate the screening effects of any completed buildings and structures within the site that are present at the time of the assessment.

11.5 The ASR shall include following information:

- Detailed acoustic specifications for the proposed development including (where relevant):
  - o Noise emission limits for specific items of mechanical or electrical plant (such as a maximum sound power level);
  - o Assumed quantities and operating hours of key plant items;
  - o Physical requirements (mass, height, etc.) for acoustic barriers (where proposed);
  - o Minimum insertion loss requirements for sound-attenuating devices such as duct attenuators, acoustic louvres, attenuation packages, acoustic enclosures); and
  - o Minimum sound insulation requirements for key elements (such as plant room external walls).

Figure 1.12: Management of Operational Noise.



- Sound propagation calculations to ISO 9613-2<sup>1</sup> to determine the operational noise level from the fully completed Build Zone development at each of the noise-sensitive receptors as listed in Tables H1.3.1 to H1.3.4.
- A method statement for commissioning noise monitoring, informed by the Build Zone sound propagation model, to include:
  - o A description of where noise monitoring will be carried out;
  - o The expected operational noise level at this position; and
  - o The operating conditions required for the commissioning noise monitoring.

11.6 Prior to commencement of development within a Build Zone, the above ASR shall be submitted to the local planning authority for approval pursuant to condition 45 in Schedule 2 of the LDO.

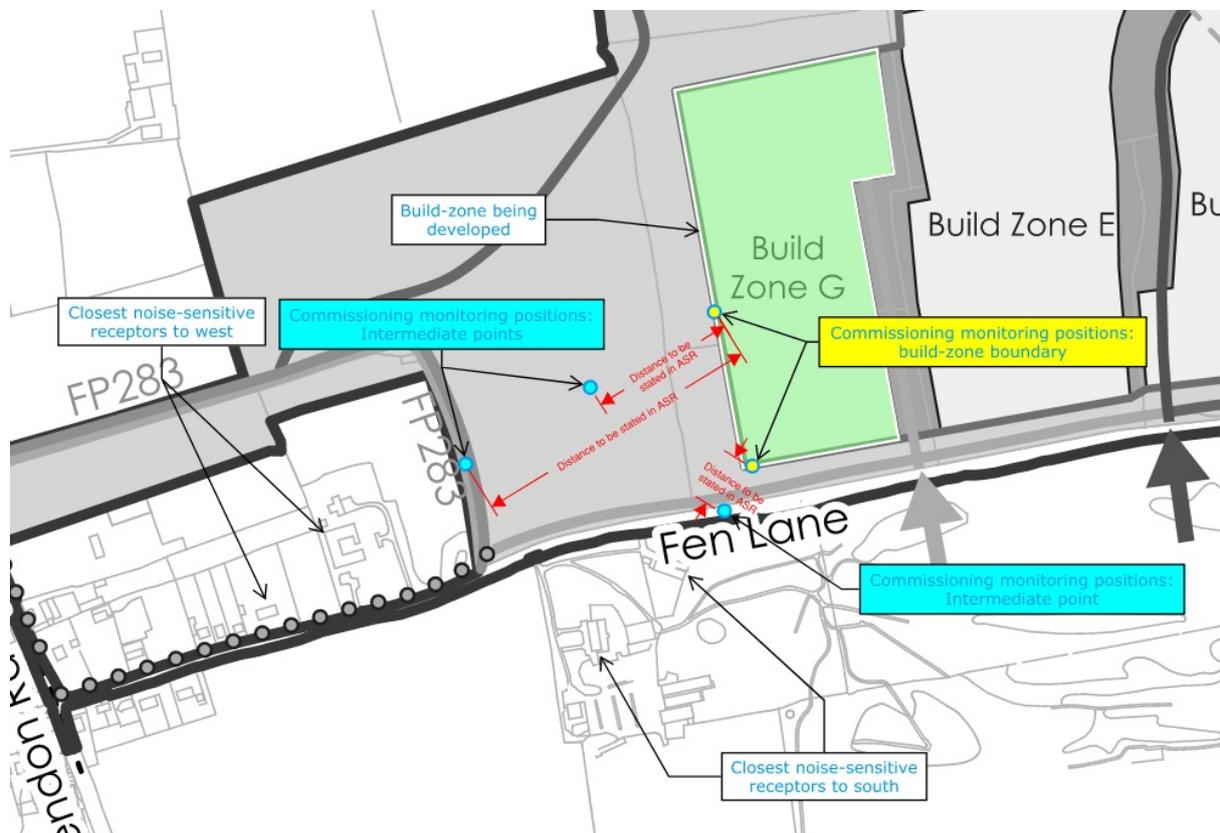
### Definition of Approach to Commissioning Noise Monitoring

11.7 The noise limits set out in Tables 1.2 - 1.5 apply at the nearby noise-sensitive receptors and are below the existing background sound level<sup>2</sup>. For this reason, commissioning noise monitoring positions will need to be defined closer to the source of sound.

11.8 Noise monitoring positions shall be selected at positions where extraneous noise from other sources (including other Build Zones) is minimised and to ensure noise emission from both ground-based and roof-based plant is adequately quantified. This is expected to lead to measurements at increasing distances from the Build Zone boundary in each direction to the nearest receptors. The ASR shall state the operational noise level expected to occur at each of these noise monitoring positions under normal and emergency operating conditions.

11.9 An example of how the commissioning noise monitoring positions could be defined for a Build Zone is shown in Figure 1.13.

**Figure 1.13: Example of how commissioning noise monitoring positions could be defined**



### Commissioning

11.10 Within one month of occupation / first use of development within a Build Zone, pursuant to condition 46 in Schedule 2 of the LDO, noise monitoring shall be carried out by an acoustic consultant in accordance with the ASR. The results of the noise monitoring at each position shall be compared to the operational noise predictions within the ASR, and reported to the local planning authority for approval in an Acoustic Commissioning Report (ACR)

<sup>1</sup>International Organization for Standardization, ISO 9613-2: 'Acoustics – Attenuation of sound during propagation outdoors – Part 2: Engineering method for the prediction of sound pressure levels outdoors' (2024).

<sup>2</sup>Defined as per British Standard 4142:2014+A1:2019 and quantified in terms of the dB LA90,T parameter.

11.11 Where noise monitoring results exceed the operational noise predictions within the ASR, investigations and further noise monitoring (if required) shall be carried out to determine the cause of the exceedance. Remedial work shall then be carried out to reduce noise emissions from the Build Zone and then commissioning noise monitoring shall be repeated.

11.12 Once operational noise from the Build Zone is shown, through monitoring, to be adequately controlled, a further ACR shall be submitted to the local planning authority as evidence of compliance.

## Operational Noise Limits

### Normal Operating Conditions

11.13 Operational noise from each Build Zone during normal operating conditions<sup>3</sup> for the daytime (07:00 – 23:00 hours) and night-time (23:00 – 07:00) shall not exceed the limits set out in Table 1.2 and 1.3 respectively at the closest residential receptors.

11.14 Noise limits are rating levels as defined in BS 4142:2014+A1:2019 and shall include penalties, where appropriate, to account for acoustic features such as impulses, tones, intermittent features (or any other characteristics that draw more attention to the sound source) that are audible at the receptor.

**Table 1.2: Build-zone noise limits at nearest receptors: day**

Receptor Name	Daytime rating level limit for whole site normal operation dB L <sub>Ar,Tr</sub> (free-field)	Build-zone noise limits at the nearest receptors: daytime, normal operation dB L <sub>Ar,Tr</sub> (free-field)							
		BZ A	BZ B	BZ C	BZ D	BZ E	BZ F	BZ G	BZ H
1-6 St. Mary's Lane	45	35	35	40	35	40	30	35	30
Ladyville Lodge Care Home	46	37	37	37	37	37	33	41	36
Property North of Top Meadow Golf Club	45	35	35	37	35	37	32	41	30
Corner Farm Cottage	40	30	32	36	30	32	26	30	26
Home Farm Estate	39	31	35	31	29	29	24	29	26
Fen Farm Cottages	38	30	30	30	25	25	25	25	34
Lamorna, Dunnings Lane	38	29	29	29	29	29	25	29	32

### Emergency Operating Conditions

11.15 Operational noise from each Build Zone during the emergency operating condition<sup>4</sup> for the daytime (07:00 – 23:00 hours) and night-time (23:00 – 07:00) shall be controlled at the closest residential receptors to not exceed the limits set out in Table 1.4 and 1.5 respectively.

11.16 The Environmental Health Service at the Council shall be notified should emergency, power back-up generators need to operate for more than 72 hours consecutively.

<sup>3</sup> Normal operating conditions is assumed to include a small number of data-centre generators under maintenance test during the day-time.

<sup>4</sup> Defined as the operational condition such as power failure when large quantities of power back-up generators would operate.

**Table 1.3: Build-zone noise limits at nearest receptors: night**

Receptor Name	Daytime rating level limit for whole site normal operation dB L <sub>Ar,Tr</sub> (free-field)	Build-zone noise limits at the nearest receptors: daytime, normal operation dB L <sub>Ar,Tr</sub> (free-field)							
		BZ A	BZ B	BZ C	BZ D	BZ E	BZ F	BZ G	BZ H
1-6 St. Mary's Lane	40	30	30	35	30	35	25	30	25
Ladyville Lodge Care Home	42	33	33	33	33	33	29	37	33
Property North of Top Meadow Golf Club	41	31	31	33	31	33	28	37	26
Corner Farm Cottage	35	25	27	31	25	27	21	25	21
Home Farm Estate	35	27	31	27	25	25	20	25	22
Fen Farm Cottages	35	27	27	27	22	22	22	22	31
Lamorna, Dunnings Lane	35	26	26	26	26	26	22	26	29

**Table 1.4: Build zone noise limits at the nearest receptors: day, emergency condition**

Receptor Name	Daytime rating level limit for whole site normal operation dB L <sub>Ar,Tr</sub> (free-field)	Build-zone noise limits at the nearest receptors: daytime, normal operation dB L <sub>Ar,Tr</sub> (free-field)							
		BZ A	BZ B	BZ C	BZ D	BZ E	BZ F	BZ G	BZ H
1-6 St. Mary's Lane	55	45	45	50	45	50	40	45	40
Ladyville Lodge Care Home	55	46	46	46	46	46	42	50	45
Property North of Top Meadow Golf Club	55	45	45	47	45	47	42	51	40
Corner Farm Cottage	55	45	47	51	45	47	41	45	41
Home Farm Estate	55	47	51	47	45	45	40	45	42
Fen Farm Cottages	55	47	47	47	42	42	42	42	51
Lamorna, Dunnings Lane	55	46	46	46	46	46	42	46	49

**Table 1.5: Build zone noise limits at the nearest receptors: night, emergency condition**

Receptor Name	Daytime rating level limit for whole site normal operation dB L <sub>Ar,Tr</sub> (free-field)	Build-zone noise limits at the nearest receptors: daytime, normal operation dB L <sub>Ar,Tr</sub> (free-field)							
		BZ A	BZ B	BZ C	BZ D	BZ E	BZ F	BZ G	BZ H
1-6 St. Mary's Lane	50	40	40	45	40	45	35	40	35
Ladyville Lodge Care Home	50	41	41	41	41	41	37	45	40
Property North of Top Meadow Golf Club	50	40	40	42	40	42	37	46	35
Corner Farm Cottage	50	40	42	46	40	42	36	40	36
Home Farm Estate	50	42	46	42	40	40	35	40	37
Fen Farm Cottages	50	42	42	42	37	37	37	37	46
Lamorna, Dunnings Lane	50	41	41	41	41	41	37	41	44

### Typical Noise Mitigation Measures for Data Centres

11.17 Noise mitigation measures shall be incorporated into the technical design where Build Zone noise limits are shown to be otherwise exceeded.

11.18 Mitigation measures that are likely to be required for data centres to control noise to acceptable levels are set out below:

#### Layout and Screening Requirements

- where plant is located within a gantry area, the gantry area should be screened on all four sides either by a data centre building or by a purpose-built acoustic screening (imperforate screen of minimum mass 15 kg/m<sup>2</sup>, or acoustic louvre of appropriate area and specification). Where required, the height of the screen shall be the same height as the data centre building, and at least 1m above the top of the noise-generating gantry plant item.
- where airflow is required to part of the gantry, it should be provided via an acoustic louvre of appropriate specification (depending on location and area required).
- where plant is located within a roof plant area, the roof plant area should be surrounded by acoustic screening (imperforate screen of minimum mass 15 kg/m<sup>2</sup>, or acoustic louvre screen of appropriate specification). The height of the acoustic screening, where required, shall be 1m above the top edge of the data centre roof noise-sources.
- where located adjacent to the boundary of a Build Zone, generator enclosures shall be positioned as far away from the site boundary as feasible so that there is no line of sight between the receptor and the enclosure either through the positioning of the generator behind the data centre massing or through provision of purpose-built acoustic screening (as above).

### Noise Controls for Operation Plant

- Plant shall be selected and operated in a manner that would not result in tonal or impulsive sound features at the nearest noise-sensitive receptors. Where this is not possible, Build Zone noise emissions shall be reduced by the forecast acoustic feature penalty using the BS4142:2014+A1:2019 subjective method (e.g. by 4 dB where tonal features are expected to be clearly perceptible at the receptor).
- A night-time “low-noise” mode should be implemented on the most significant noise sources, achieving a minimum reduction in total noise emissions of 5 dB(A) versus daytime operating mode.
- All data centre cooling plant (e.g. adiabatic air-cooled condensers) shall be provided with acoustic attenuation packages appropriate to the quantity of plant, positioning and orientation and type of equipment.
- All louvres and grilles shall have attenuators where necessary to achieve the appropriate sound pressure level limits. Limits are to be defined by the Build Zone developer as part of their operational noise assessment. These positions shall then be used for commissioning testing of noise emissions.

### Noise Controls for back-up Generators

- Simultaneous daytime maintenance testing of generators shall be limited to the minimum required to maintain normal operations.
- No maintenance testing of generators shall be carried out at night (23:00-07:00).

## 1J: Plot Access, Parking and Servicing

1J.1 The following design standards shall apply to the construction of roads within build zones, on-plot vehicle parking and servicing.

### Plot Access

1J.2 All roads within Build Zones shall be 6.5m wide up to the plot threshold except where it is demonstrated through vehicle tracking that localised widening to a maximum of 7.3m required is required to accommodate two-way HGV movements.

1J.3 Vehicular access to individual plots shall be:

- a minimum of 45m apart measured from the centre line of the junction when on the same side of the road to prevent queuing of vehicles.
- a minimum of 20m measured from the centre line of the junction from a vehicle access to plots on the opposite side of the road.

1J.4 The design of plot access shall comply with the standards for access visibility set out in the Design Manual for Roads and Bridges (DMRB).

1J.5 To meet health, safety and security requirements on development plots, the shared footway and cycleway shall be terminated at the plot threshold and internal plot layouts shall be designed to accommodate individual occupier requirements whilst maintaining safe routes to the buildings for pedestrians.

1J.6 Security fences or gates shall not obscure sight lines of plot access and egress.

### **Gatehouses**

1J.7 Security gatehouses and/or security gates shall be designed to accommodate incoming vehicles and shall be sufficiently set back from the access road to ensure that an articulated vehicle (or queue of vehicles) can be accommodated off the access road while gates are being operated.

### **Plot Based Vehicle Servicing**

#### **Vehicle Servicing**

1J.8 Buildings plots shall be provided with sufficient service bays and turning areas to allow access and egress in a forward gear (including by HGVs where access is required).

1J.9 Plots shall be designed to allow free flowing circulation to all external areas of the building required by the unit operator.

1J.10 Refuse and storage areas shall ideally be located to the rear of the building.

#### **Perimeter Access for fire and service vehicles**

1J.11 Full site circulation and perimeter access for fire and service vehicles shall comply with The Building Regulations 2010, Fire Safety Approved Doc B or as subsequently amended.

### **Parking Standards**

1J.12 Dedicated and conveniently located parking spaces with facilities for the charging of electric vehicles shall be provided on each plot. Dedicated spaces to encourage car sharing shall be provided.

1J.13 Car parking on each plot shall not exceed the maximum parking standards set out in Tables 1.7 – 1.9. Standards for electric vehicles, cycle and blue badge holders are minimum standards.

1J.14 All produce workers employed by horticulture business(es) shall be transported to the site by coach.

1J.15 Minimum cycle standards are set out in Table 1.8.

1J.16 Minimum parking standards for blue badge holders, enlarged spaces and active and passive EV are set out in Table 1.9.

1J.17 The design of active and passive EV charging spaces shall be in accordance with PAS1899:2022 and Approved Document S of the Building Regulations 2010 or as subsequently amended. Passive charging spaces shall be activated in line with occupier demand having regard to the use of car parking spaces dedicated for electric vehicle parking which is to be surveyed and reported in the annual survey in line with the Travel Plan.

1J.18 There shall be no parking on any roads within the data centre campus other than where occasional deliveries by HGV are required for maintenance purposes that cannot otherwise be accommodated on plot. In this case, parking on roads within the campus would be permitted under the supervision of the estates management team.

**Table 1.7 – Maximum Car Parking Standards**

Use	Car parking (maximum)	Service Bays (LGV/HGV)
Data Centre	Up to 249,999 m <sup>2</sup> (GIA): maximum of 1 space per 1750 m <sup>2</sup> (GIA)  Between 250,000 m <sup>2</sup> and 299,999 m <sup>2</sup> (GIA): maximum of 1 space per 2,200 m <sup>2</sup> (GIA)  Between 300,000 m <sup>2</sup> and 329,800 m <sup>2</sup> (GIA): maximum of 1 space per 2,600 m <sup>2</sup> (GIA)	Maximum of 1 service bay per 25,000m <sup>2</sup> (GEA) subject to provision of a minimum of 2 LGV spaces and 1 HGV space per plot.
Electrical Infrastructure/ District Heating Energy Centre (eg. sub stations)	-	Minimum of 1 LGV space per plot.
Horticulture	Minimum of at least 4 spaces and maximum of 6 spaces for management staff.	Minimum of 1 LGV space and 1 HGV space per plot and a minimum of 2 spaces for coaches.
Visitor Centre/ Ecology Park	Maximum of 51 spaces Overflow provision (temporary use only) – to accommodate up 25 spaces.	Minimum of 1 LGV space and a maximum of 5 LGV spaces Minimum of 2 spaces for coaches.

**Table 1.8: Minimum Cycle standards**

Use	Long Stay	Short Stay
Data Centre	Minimum 1 space per 10 staff (based on the anticipated maximum number of staff per shift).	Minimum 1 space per 20 staff (based on the anticipated maximum number of staff per shift).
Electrical Infrastructure (eg. sub stations)	-	-
Horticulture	A minimum of 6 spaces.	-
Visitor Centre	Minimum 1 space per 10 staff (based on the anticipated maximum number of staff per shift).	Minimum 20 spaces.

**Table 1.9: Minimum Parking Standards for Blue Badge Holders, Enlarged Spaces and Active and Passive EV**

Type	Definition	Requirement
Blue Badge	Spaces which are specified for use by disabled people (as per BS8300-1:2018).	Minimum 5% of total staff/visitor parking provision for data centres and indoor horticulture. Minimum 6% of total staff/visitor parking provision for the visitor centre / ecology park.
Enlarged	Spaces which are 'large enough to become disabled persons parking bays quickly and easily via the marking up of appropriate hatchings and the provision of signage, if required'.	Minimum 5% of total staff/visitor parking provision for data centres and indoor horticulture, subject to provision of at least one enlarged space per plot.  Minimum 4% of total staff/visitor parking provision for the visitor centre / ecology park.
Active EV	Spaces which are provided with an active EV charging point.	Minimum 10% of total staff/visitor parking provision (including 10% of blue badge bays) for data centres and indoor horticulture (slow-charging, minimum 3kw). Minimum 10% of total staff/visitor parking provision for visitors centre / ecology park (rapid charging). All operational spaces for taxis and vehicles based on-site (e.g. minibuses). At least 1 active EV charging space for each operational parking area across the site.
Passive EV	Spaces which are provided with necessary infrastructure to enable the installation of an EV charging point in future, should need arise.	Minimum 20% of remaining staff/visitor provision without active EV charging).
Car sharing	Spaces which are provided for car with more than one occupant	Minimum 5% of spaces to dedicated as priority for car sharing, in convenient locations close to main building entrances

**Table 1.10: Parking Dimensions**

Type	Minimum Dimensions
Standard	2.5m x 5m
LGVs	3.0m x 10m
Rigid HGVs	3.5m x 12m
Articulated HGVs	3.5m x 18m
Mini bus	3.5 x 8m
Coach (60 seater)	5m x 15m
Disabled	3.7m x 6.2m plus 1.2m accessibility strip on side and at rear of bays.

## Car Parking Layouts

1J.19 The width of standard parking bays with end bays adjacent to solid structures shall be increased by 0.5m to allow for manoeuvrability on entry/exit to and from the vehicle.

1J.20 A minimum aisle width of 6m is required for vehicles. Dedicated pedestrian routes with a minimum width of 1.2m (preferably no less than 1.5m), shall be provided. If pedestrian routes are provided in the aisles, the required widths specified above will need to be provided in addition to the 6m aisle width for vehicles.

1J.21 Parking layout may comprise 90-degree square parking, 45- or 70-degree angled parking or mixed parking provision to meet operational requirements.

1J.22 Clear directional marking signs such as exit signs shall be set out using suitable signs and surface arrows.

1J.23 Car parks shall have a clearly demarked boundary.

1J.24 Design of disabled and enlarged car parking spaces shall be in accordance with BS8300-1:2018 and Approved Document M of the Building Regulations 2010 or as subsequently amended. Space for people with disabilities shall be located adjacent to entrances and shall be marked with lines and the International Symbol for Access. Dropped kerbs shall be provided.

1J.25 Space shall be available to enable a disabled motorist or passenger to open the car door fully, to get in or out of the vehicle, and to manoeuvre around vehicles that are parked perpendicular to the carriageway. A zone of 1200 mm wide shall be provided between designated accessible parking spaces and between the designated spaces and a roadway (without reducing the width of the roadway) to enable a disabled driver or passenger to get in or out of a vehicle and access safely the boot, rear hoist or rear access ramp. These zones shall be marked with durable markings contrasting visually with the surface to which they are applied.

1J.26 Should payment be required in the visitor's centre car park, payment machines shall be positioned in the busiest areas of the car park and close to desire lines to building access points.

1J.27 Pedestrian routes and crossing points shall be clearly demarked through car parks by raised footways, the use of tactile paving or shall comprise a textured, antiskid surface and be a high contrasting colour with the surrounding area. Tactile paving shall comply with the Department of Transport Guidance on the User of Tactile Paving Surfaces December 2021 (or as otherwise updated) and the standards adopted by the Highway Authority.

1J.28 Step-free access to building entrances shall be provided.

## Cycle Parking

1J.29 Where cycle parking is not provided within a building, cycle parking shall be covered, lit and positioned adjacent to building entrances accessible from roads and/or cycleways. It shall not be located so as to obstruct pedestrian and cycle routes.

1J.30 A minimum of 10% of spaces shall be available for e-bike charging.

1J.31 Provision shall be made for lockers, changing and shower facilities in accordance with relevant BREEAM standards.

1J.32 The provision of cycle parking and associated cycling infrastructure shall comply with the requirements of the Department of Transport's Local Transport Note (LTN) 1/20 Cycle Infrastructure Design July 2020 or as subsequently updated; and with Transport for London's Cycling Design Standards (2014) (as subsequently amended).

1J.33 Cycle stands shall be manufactured in galvanized steel or brushed grade 316 stainless steel and root fixed below ground. They may include a horizontal bar for additional strength and security and should allow for two bikes per unit and be of hooped form.



1J.34 Cycle shelters shall be manufactured using a galvanized steel frame with galvanized steel, powder coated steel, laminated or tempered safety glass or FSC timber infill and roof.



1J.35 A minimum of 5% of the cycle parking spaces shall be provided for non-standard cycles and to accommodate people with mobility impairments.

1J.36 Cycle parking shall be at the same level as the cycle route wherever possible, if unavoidable, dropped curbs shall be provided.

### Standards for Footways and Cycleways

1J.37 A shared footway and cycleway with a minimum width of 3 m shall be provided as a minimum along one side of all roads within Build Zones up to the plot threshold.

1J.38 Clear, demarked, dedicated routes to building entrances for pedestrians and cyclists shall be provided.

### Materials

1J.39 Appropriate materials for car parks and access routes shall be as follows:

- Roads: bituminous materials compliant with the appropriate British Standard or other relevant specification;
- Standard profile kerbs: precast concrete/stone adjacent to footway / cycleways and within car parking areas;

- Shared footway and cycleway: resin or bitumen bound aggregate.
- Car Parks: permeable block pavers, with demarcation provided through blocks of a distinctly different colour. The overflow car parking for the visitor's centre shall be grasscrete or similar.

## 1K Lighting

### General Considerations

1K.1 The lighting design shall be carried out by a competent person governed by the Institution of Lighting Professionals.

1K.2 To minimise effects of obtrusive light, lighting installations shall meet the requirements outlined by the Institution of Lighting Professionals (ILP) Guidance Note 1 for the reduction of obtrusive light GN01:2021 and the International Commission on Illumination (CIE) Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations CIE 150:2017 (or as subsequently modified).

1K.3 Lighting installations shall not exceed the level of light intrusion, sky glow and luminaire intensity (glare) as defined for an Environmental Zone E2 as shown in Table 1.11. An exception will be made where lighting is required for safety reasons to meet UKPN's operational substation requirements.

1K.4 Pre- curfew is defined as after 7am and post-curfew is after 11pm.

**Table 1.11: ILP Environmental Zone E2 Criteria**

Environmental zone	Sky Glow		Light Spill		Glare	
	Upward Light Ratio (ULR <sup>a</sup> )	Upward Flux Ratio (UFR <sup>b</sup> )	Vertical Illuminance <sup>c</sup>		Luminous Intensity <sup>d</sup>	
		Road/Amenity	Pre-curfew	Post-curfew	Pre-curfew	Post-curfew
E2	2.5%	5% / 6%	5 lux	1 lux	7,500 cd	500 cd

(a) Upward light ratio (ULR) of the installation is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.

(b) Upward flux ratio (UFR) provides the effect of both direct and reflected upward components of the whole installation, including ground and building surface reflections.

(c) Vertical illuminance measured flat at the site boundary or on surrounding premises.

(d) Luminous intensity of bright luminaires in the field of view between an observer (at a residence/receptor location) and a light source.

1K.5 Luminaires shall be either DarkSky-approved fixtures certified by the International DarkSky Association or luminaires that meet recognised dark sky friendly performance criteria. Appendix 1 includes examples of luminaires that are considered dark sky friendly. Mounting height and aiming shall align with the requirements of ILP GN01 and CIE 150.

1K.6 The design shall ensure the luminaire mounting heights employed are the minimum necessary to achieve the lighting performance requirements.

1K.7 All external lighting shall meet standards within BREEAM UK New Construction manual. Relevant criteria are listed in Table 1.12.

**Table 1.12**

Category	Parameter	Description
Ene03	External lighting	<p>To reduce energy consumption through the specification of energy efficient light fittings for external areas of the development, external light is to comply with:</p> <p>2a: Average initial luminous efficacy of not less than 70 luminaire lumens per circuit-watt                      2b: Automatic control to prevent operation during daylight hours                      2c: Presence detection in areas of intermittent pedestrian traffic.</p>
Pol 4	Reduction of nighttime light pollution	<p>The external lighting design must be designed in compliance with Table 2 (and its accompanying notes) within the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light, 2021.</p> <p>All external lighting (except for safety and security lighting) shall be automatically switched off between 23:00 and 07:00.</p> <p>If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system shall comply with the lower levels of lighting recommended during these hours in Table 2 of the ILP guidance notes.</p> <p><b>Note:</b> 'external lighting' includes both lighting mounted externally, and lighting mounted inside a building that is primarily intended to enhance its external appearance, or light external spaces, after dark.</p>

1K.8 Illuminance levels from lighting within the Data Centre Campus shall not exceed 1 lux at the Data Centre Campus boundary or 0.1 lux at 25m from the Data Centre Campus boundary.

1K.9 Lighting shall adhere to the guidance as set out by the Bat Conservation Trust (BCT) and ILP GN08/23 'Bats and artificial lighting at night' (or as updated) which requires:

- Illuminance to vegetated boundaries shall be minimised with the utilisation of a warmer colour temperature of 2700 Kelvin;
- Directing lighting including the use of hoods, cowls, shields etc. to avoid spillage onto sensitive areas; and
- Movement sensors or timers on security lighting.

1K.10 The following measures shall also be applied:

- Asymmetric reflectors shall be installed on the boundary of the Data Centre Campus, adjacent to existing ponds to restrict back throw lighting.
- Only lighting areas which need to be lit, and using the minimal level of lighting required to comply with building regulations; and

- Use of lamps greater than 150 W shall be avoided.

1K.11 Lighting controls shall be adopted which allow all luminaires to be dimmed or switched off in defined areas, subject to health and safety requirements.

1K.12 A drawing showing Isolux contours shall accompany all prior notification submissions for development which includes lighting.

### Power Distribution

1K.13 All lighting columns shall have a direct Distribution Network Operator (DNO) electricity power supply.

1K.14 Where lighting units are mounted on walls of buildings, cabling shall be installed within corrosion and impact resistant conduit or trunking.

1K.15 Columns on circulatory roads shall be mounted a safe distance from the carriageway for maintenance access, free pedestrian and cycle passage and to reduce collisions in accordance with the requirements of the Design Manual for Roads and Bridges (DMRB).

1K.16 Back-up power (UPS or generator) must be provided to maintain illumination during outages to the shared footway and cycleway.

### Lighting Classes

1K.17 External lighting shall be designed in accordance with the following standards (or as subsequently updated):

- BS 5489-1:2020 Code of practice for the design of road lighting. Lighting of roads and public amenity areas.
- BS EN 13201: 2015 Road lighting – Energy performance indicators.
- BS EN 12464-2:2024 –Light and lighting – lighting of workplaces. Outdoor workplaces.
- Additional standards relevant to UKPN substation:
  - o BS EN 60529 – degrees of protection (IP rating).
  - o HSG38 – lighting at work.
  - o BS EN IEC 60598-1 – general requirement for luminaires.

### Roads

1K.18 Lighting on roads shall be designed to lighting class C5 as defined in BS EN 13201-2. Light fixtures shall meet the requirements as detailed in Table 1.13.

**Table 1.13**

Equipment	Mounting height	Installation details	Average Illuminance	Uniformity	CRI	Colour temperature
Lighting column	6-8m	0° tilt	7.5 lux	0.40	>70	≤3000K

1K.19 Lighting columns shall be positioned to avoid significant tree pruning as trees reach full maturity. Where planting is proposed, lighting design shall be coordinated with the approved landscaping scheme.

1K.20 Luminaries shall have shields or internal baffles fitted to prevent back/ sideways spill of light.

### On Plot Parking Areas

1K.21 Lighting of on-plot parking areas shall meet the requirements of Table 5 of BS 5489-1 for outdoor car parks with low traffic. Light fixtures shall meet the requirements as detailed in Table 1.14.

**Table 1.14**

Equipment	Mounting height	Installation details*	Average Illuminance	Uniformity	CRI	Colour temperature
Lighting column	6-8m	0° tilt	5 lux	0.25	>70	≤2700K
Wall mounted luminaire	2-4m	0° tilt	5 lux	0.25	>70	≤2700K

\*ULR is upward light ratio

### Pedestrian Pathways

1K.22 Lighting of on plot pedestrian footways / designated access routes around buildings shall meet the requirements of Table 5 of BS EN 12464-2. Light fixtures shall meet the requirements as detailed in Table 1.15.

**Table 1.15**

Equipment	Mounting height	Installation details*	Average Illuminance	Uniformity	CRI	Colour temperature
Lighting column	3-4m	0° tilt	5 lux	0.25	>70	2700K
Wall mounted luminaire	2-4m	≤5° tilt < 2.5% ULR	5 lux	0.25	>70	2700K

\*ULR is upward light ratio

1K.23 Any perimeter or general building lighting shall be carefully designed to ensure that the resulting façade luminance, considering the final cladding finish and its reflectance, remains within the limits specified in the ILP GN01 guidance for Environmental Zone E2.

### Building façades and signs

1K.24 Care must be taken to avoid over-lighting building façades. For Environmental Zone E2, the luminance limit for building façade lighting is 5 cd/m<sup>2</sup>, and the limit for sign luminance is 400 cd/m<sup>2</sup>. These values apply both before and after curfew.

**Shared Footway/Cycleway**

1K.25 Lighting of the 3m wide shared footway/cycleway and on plot shared access routes shall be increased from pedestrian-only requirements, with performance to meet targets outlined in Table 1.16.

**Table 1.16**

Equipment	Mounting height	Installation details*	Average Illuminance	Uniformity	CRI	Colour temperature
Lighting column	3-4m	0° tilt	10 lux	0.40	>70	2700K
Wall mounted luminaire	2-4m	≤ 5° tilt < 2.5% ULR	10 lux	0.40	>70	2700K

\*ULR is upward light ratio

**Campus Security Building**

1K.26 The campus security building at the main entrance shall be lit to an average illuminance of 100 lux at ground level with a vertical illuminance at the level of the driver. Security lighting for the Campus Security Building shall be in accordance with the recommendations provided in section 3.2.4 of CIBSE SLL Lighting Handbook (2018) or as updated.

1K.27 The site entrance must be lit using multiple luminaires so that the failure of any single unit does not significantly reduce the lighting required by the guard on duty. The lighting layout shall ensure that guards and CCTV systems can clearly view the number plates of vehicles approaching the gate.

1K.28 Vertical lighting sufficient for facial recognition shall be provided at security entrances. Lighting must be positioned to maintain even illumination without placing luminaires within the camera’s field of view.

**Security Gatehouses**

1K.29 Security gatehouses at individual data centre entrances where required shall be lit to an average illuminance of 50 lux at ground level with appropriate vertical illuminance at a person’s eye level to enable clear facial recognition. Lighting should be uniform, and low glare, avoiding strong contrasts that impede CCTV performance or overshadow the guard’s view.

1K.30 Multiple luminaires shall be used so that failure of a single unit does not compromise security visibility.

1K.31 Column-mounted or building-mounted luminaires with cut-off or full-shielded optics shall be used to control spill light, and the design should comply with ILP GN01 limits for the Environmental Zone.

**Plot Boundary Security Lighting**

1K.32 Where required, security lighting shall ensure that horizontal illuminance levels beyond the perimeter plot site boundary shall not exceed 5.0 lux pre-curfew and 1.0 lux post-curfew.

**UKPN Substation**

1K.33 External lighting shall allow for safe access, visibility of equipment during inspection and operational activities and security around substation buildings and compounds.

1K.34 Illumination levels shall meet the values detailed in Table 1.17.

**Table 1.17**

Area	Requirement	Luminance (Lux <sup>1</sup> )	
		Average	Minimum
Grid compound	Floodlights	150	20 <sup>2</sup>
Other external	Bulkhead luminaire above all exit doors <sup>3</sup> Activated in accordance with 1K.37	10	5
Roads and Pedestrian walkways <sup>4</sup>	Activated in accordance with 1K.37	10	5

<sup>1</sup> These values are based on HSG38 guidance for 'work requiring a limited perception of detail'.

<sup>2</sup> Where achieving minimum lux levels would require excessive fittings or compromise safety clearances, the design shall prioritise uniformity and safe access over strict compliance with minimum lux values.

<sup>3</sup> Bulkhead luminaires shall be compliant with 1K.5 (dark sky compliant).

<sup>4</sup> Lighting levels for operational areas (e.g. transformer bays, compounds) shall take precedence over walkway levels where overlap occurs.

1K.35 Floodlights shall be mounted on foldable or galvanised steel raise-and-lower columns (5m height, base plate mounted) to allow lamp replacement from ground level and be positioned to maintain a minimum clearance of 3.5m from all live equipment.

1K.36 Floodlights shall only be switched on when maintenance and other activities are required to take place within the compound overnight in an emergency situation (which is defined as an unforeseen event resulting in equipment failure including as a result of severe weather damage) or when lighting is required for the safety of operatives working during the day (such as when weather conditions are poor).

### Lighting Controls

1K.37 Lighting controls shall incorporate use of both a photocell and time switch (with sensors set for dusk and dawn) and allow for manual override switching facility by standard switch and via a site Energy Management System (EMS).

1K.38 In normal operation exterior lights will only be switched on if required between 7am and 11pm. After 11pm, all lighting, will be switched off apart from safety and security lighting.

1K.39 Presence detectors shall be used to allow for lighting to be dimmed or turned off in areas with little to low space use.

1K.40 Car park lighting shall be zoned on a timer to allow for dimming earlier in the evening, when no movement is detected. Presence detection shall be used to activate lighting to full operation when and where it is needed.

1K.41 Wall mounted lighting installed on walkways / escape routes along the sides and rear of the buildings shall also use presence detection to activate as needed.

### Emergency Operations

1K.42 Lighting required for emergency operation shall be battery operated activating independently during a power failure. It should include a minimum 3-hour duration battery packs with automatic network testing capability. Emergency lighting shall comply with appropriate standards BS 5266, BS EN 1838, BS EN 62034 and BS EN IEC 60598-2-22.

## 1L: Landscaping

### Boundary Treatment

1L.1 Fencing to individual development plots, where required, shall be:

- BS1722-12 Steel Palisade Fencing; or
- BS1722-14 Open Mesh Steel Panel Fencing Category 1 (General Purpose).

1L.2 Perimeter security fencing (except around the UKPN substation on Build Zone F) shall be between 2.4m and 3m in height with up to 1m anti climb topping if required, secured with concrete foundations. It shall, as a minimum, be Loss Prevention Standard (LPS) 1175 SR2 rated in line with Secured by Design (SPD) commercial guidance.

1L.3 All fencing shall accord with the following colour palette in Figure 1.14.

**Figure 1.14 Fence Colour Palette**



1L.4 Security gates shall match the design and height of the security fence and shall be automated.

1L.5 Indicative fence types are shown below:



1L.6 A strip comprising either gravel, concrete block paving, tarmac or mown grass shall be incorporated adjacent to the perimeter fence of each plot to allow access for maintenance.

### UKPN Compound

1L.7 Security fencing around the UKPN compound on Build Zone F shall comprise high palisade or 358 weldmesh fence panels, 3000mm high (with or without spinners) or 2400mm high (with spinners) with an all-round 750mm x 350mm concrete kerb beam.

### Data Centre Campus Perimeter Security Fence

1L.8 Design standards for the Data Centre Campus perimeter security fence are set out in Part 2, Section G.

### Other boundary demarcation

1L.9 Other boundary demarcation requirements shall be determined in response to the individual needs of each plot. Typical systems to be used across the development shall include:

- Wooden knee rail fencing;
- Car park barrier controls;
- Galvanised steel pedestrian barriers;
- Automated sliding gate systems;
- Timber demarcation bollards;
- Timber post and wire fencing;
- Timber post and rail fencing;
- Timber post and featherboard fencing (i.e. acoustic fencing).

1L.10 Appropriate boundary treatments for the visitors centre shall also include hedgerows and grass verges or mounds.

1L.11 All timber elements shall be FSC certified.

1L.12 All fencing shall be a minimum distance of 2m from any tree canopy, video surveillance columns and light columns.

1L.13 Plant compounds shall be screened for example as shown below.

#### Screening Examples



### Soft Landscaping

1L.14 The on plot soft landscape scheme within the designated buffer zones shown on Figure 1.5 shall incorporate neutral grassland and shrub planting.

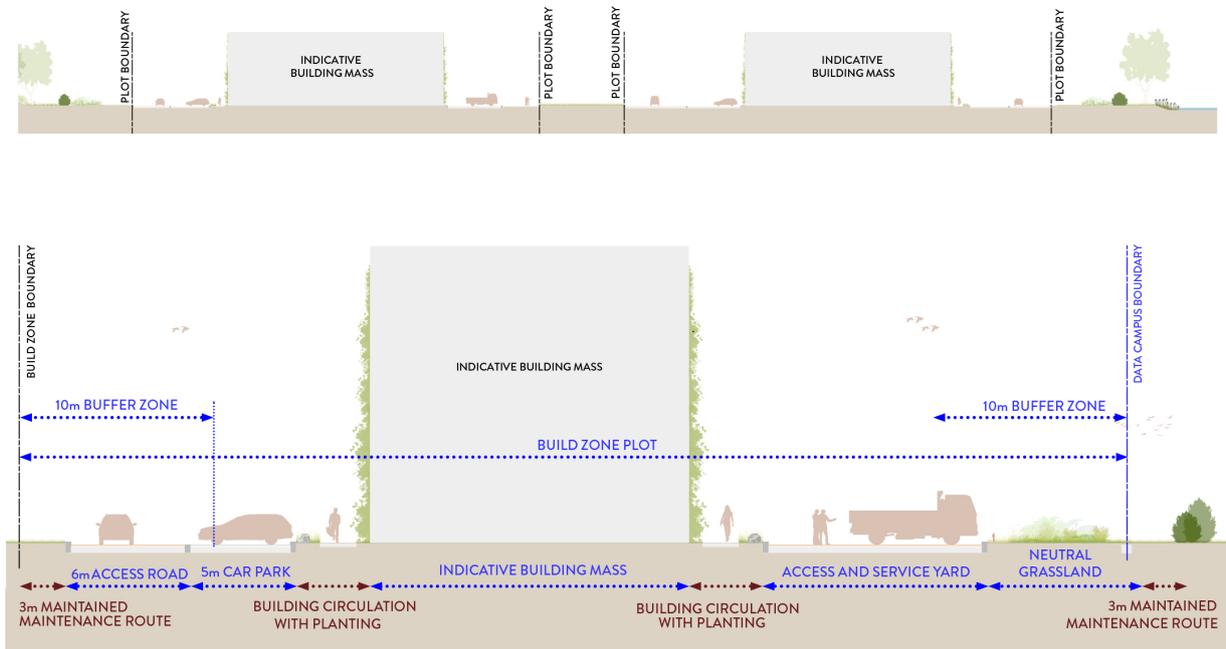
1L.15 The cross section in Figure 1.15 shows typical soft planting requirements for a data centre compound.

1L.16 On plot tree and shrub planting shall be incorporated at the entrance to buildings and within car parks where operational requirements permit.

1L.17 Planting around the visitor centre and the visitor centre car park shall be primarily ornamental with a mix of herbaceous plants, shrubs and mixed native hedgerows. Rain gardens shall be incorporated to capture, treat and infiltrate surface water runoff.

1L.18 Planting schemes shall ensure that the required visibility for drivers, cyclists and pedestrians is not compromised.

**Figure 1.15: Typical Data Campus Soft Planting Requirements**



1L.19 The soft landscaping scheme for each plot shall be implemented within the first planting season after building completion. Topsoil shall be maintained to eradicate weed establishment until soft landscaping is completed.

1L.20 All planting shall be in accordance with the detailed soft landscaping specification as set out in Appendix 2.

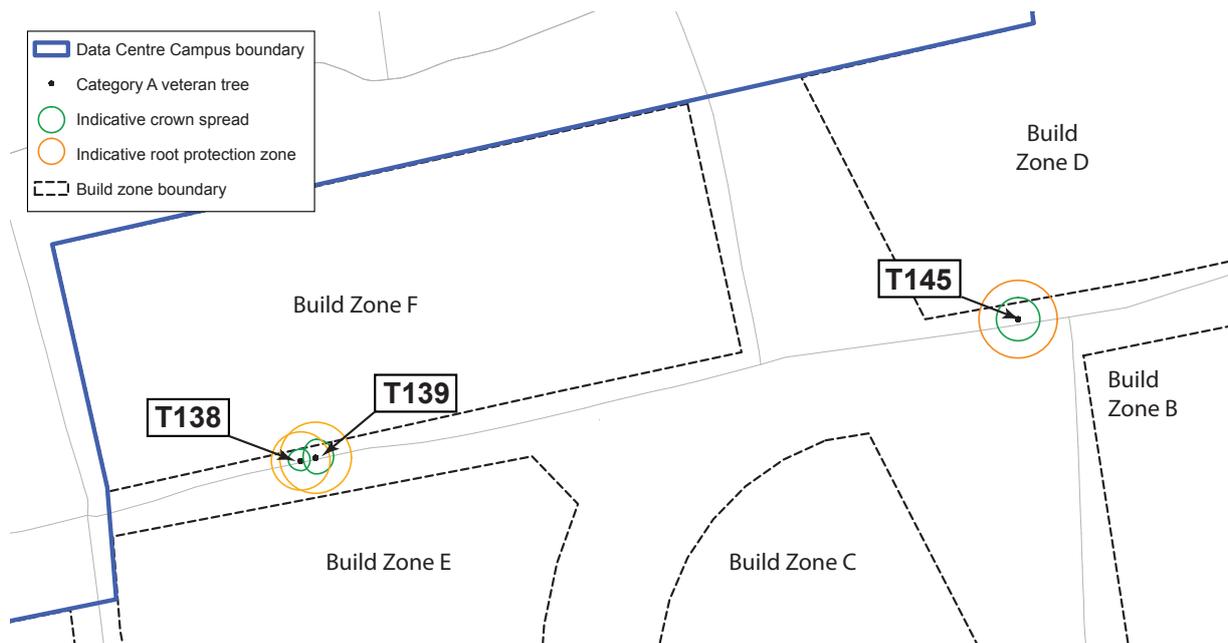
**Temporary planting treatment**

1L.21 Where a serviced development plot has been prepared (levelled post earthworks) and further development is not proposed within the next 6 months, the plot shall be seeded with a legume rich herbal ley (level 4 Habitat Classification c1b6) to improve soil structure and nitrogen fixation. Temporary planting shall be managed through annual silage cuts and shall be reseeded every three years, as necessary, until development recommences at which time vegetation may be removed.

**Tree Protection Measures**

1L.22 Development shall be designed in accordance with BS 5837:2012 – Trees in Relation to Design, Demolition and Construction or as subsequently amended.

1L.23 There shall be no development within the root protection area (RPA) of veteran trees as identified on the Tree Protection Schedule and Tree Protection Plans at Appendix 4 and shown on Figure 1.16. The RPA is defined as either a minimum of 15 times larger than the diameter of the tree or 5 meters from the edge of the tree’s canopy, whichever is greater.

**Figure 1.16: Veteran Tree Root Protection Zone**

### Soft Landscape Management

1L.24 A coherent, strategic and integrated approach to the management and maintenance of the soft landscape components associated with the development, shall be adopted in accordance with the Landscape and Ecological Management and Monitoring Plan (LEMMP) to ensure the successful establishment of vegetation and overall integration within the surrounding landscape.

### Street Furniture

1L.25 Street furniture shall be selected to provide visual interest and respond to the individual needs of each occupier.

1L.26 Street furniture (i.e. seating, cycle storage) shall be grouped together and located in close proximity to key building entrances.

1L.27 Seating shall be provided with adequate space at the side for a wheelchair user to sidle and transfer onto the seat and shall not obstruct the pavement.

1L.28 Street furniture products shall be applied in families which are complementary to one another.

### Finishes

1L.29 All street furniture items shall confirm to the following finishes:

- Timber elements: FSC certified hardwood.
- Stainless steel elements: Grade 316 stainless steel (satin polished or brushed finish).
- Galvanised elements: Hot dip galvanised to BS EN ISO 146.
- Concrete elements: White / light grey smooth finish.
- Powder coated galvanised mild steel elements: RAL 7016 Anthracite Grey.

**Bollards**

- Shall be manufactured in galvanised steel or brushed grade 316 stainless steel.
- Shall be heavy duty and set in a mass concrete surround (Grade ST4) in areas of HGV use e.g. Broxap ‘Manchester’ cast iron or similar.
- Shall be tubular with a flat or domed top or square with a flat top.
- May vary in height from 900-1200mm and in section from 76mm to 204mm diameter depending on their intended use.
- May include reflective banding, recessed banding, internal luminaries and other such accessories.
- May be fixed, collapsible, telescopic, retracting or removable depending on their intended use.
- Unless required to do otherwise all bollards will be root fixed below ground.



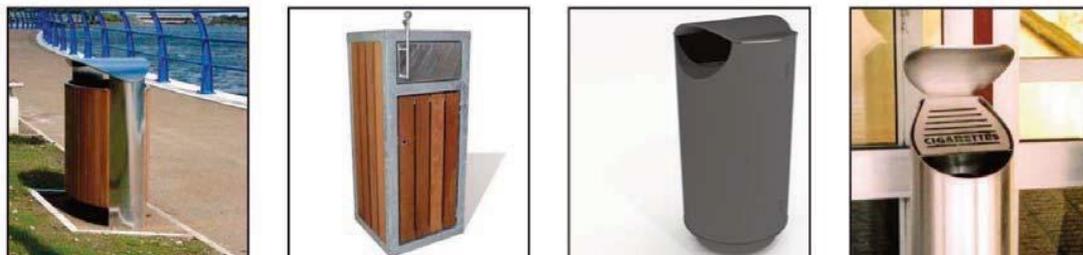
**Seating**

- FSC hardwood timber; or pre-cast smooth finished concrete.
- May include backrests, armrests, centre armrests and anti-skateboard devices.
- Shall be root fixed below ground where manufactured in composite steel and timber.
- Concrete seating units will be of sufficient weight to resist movement.



**Litter Bins / Cigarette Ash Waste Bins**

- Shall be manufactured in galvanised steel or brushed grade 316 stainless steel and may include areas of FSC hardwood timber.
- Shall be root fixed below ground.
- Shall have side apertures to minimise rainwater ingress.
- Shall be powder coated galvanised steel in RAL 7016 Anthracite Grey.
- Maintenance access entry points shall be fitted with secure locking devices.



1L.30 Additional street furniture items may be incorporated into the development. Where required, selection shall compliment other street furniture items.

## 1M Ecological Creation Features

1M.1 As a minimum, the specified number of each type of ecological feature shall be provided as each Build Zone comes forward as detailed in Table 1.18.

**Table 1.18: Ecological Features**

Ecological Feature	Phase 1			Phase 2					Phase 3		
	Build Zone Ca	Build Zone D	Build Zone F	Build Zone E	Build Zone G - access road	Build Zone G	Build Zone H - access road	Build Zone H	Build Zone A	Build Zone B	Build Zone C
Bird Boxes - House Sparrow	2	5	2	5	-	5	-	8	5	5	5
Bird Boxes - Swift	2	5	2	5	-	5	-	8	5	5	5
Bird Boxes - Song Birds	2	4	3	4	3	4	2	-	3	2	2
Bird Boxes - Open Fronted	2	4	3	4	3	4	2	-	3	2	2
Bird Boxes - Barn Owl	-	-	-	1	-	-	-	1	-	-	-
Skylark Plots	-	1-	-	-	-	-	-	1	1	-	-
Bat Boxes	4	10 (2 in-built)	5 (2 in-built)	6 (1 in-built)	3	6 (2 in-built)	3	10 (3 in-built)	10 (3 in-built)	10 (2 in-built)	7
Bat Hibernation	1	2	2	2	-	2	-	2	2	2	1
Hibernaculum (amphibians, reptiles, invertebrates)	1	1	1	2	-	1	-	2	2	2	1
Invertebrate Features (Bee boxes and hotels, Bee banks, Bee posts, Stumperies and log piles)	1	2	1	-	2	2	1	2	2	2	2

1M.2 The ecological features shall be provided in accordance with the detailed specifications below.

### Bird Boxes

1M.3 The bird boxes shall be constructed using untreated wood or woodcrete. If painting the exterior, light colours shall be used to prevent overheating. The interior shall not be painted.

Bird Box Type	Location and Specification	Illustrative Images (Source: RSPB)
House Sparrow	Terraces shall be delivered in groups of three. They shall be located on buildings ideally on an east or west side, close to vegetation and approximately 2-3 metres off above ground level. The boxes shall have entrance holes of 32mm diameter.	
Swift	Terraces shall be delivered in groups of three. They shall be located on buildings ideally on an east or west side, close to vegetation. They shall be located between 5-10 metres above ground level.	
Songbirds	Small hole fronted nest box, with an entrance hole of 25mm diameter shall be located on the east or west side of trees, close to vegetation and at least 2m above ground level.	
Open Fronted	Open fronted boxes shall be located on the east or west side of trees, close to vegetation and at least 2m above ground level.	
Barn Owl	Nest boxes shall not be provided in close proximity to other bird or bat boxes. They shall not be positioned in close proximity to Fen Lane and Ockenden Road.	

**Skylark Plots**

1M.4 Skylark plots shall be provided within arable land in accordance with the requirements set out in Table 1.18 and the terms of the s106 agreement accompanying the LDO. Each plot shall comprise a bare patch of earth with a minimum area of 16m<sup>2</sup> with two plots provided per hectare. Plots shall be created in the centre of fields (ideally >5ha) at least 50m away from field edges, hedgerows or woodlands and away from overhead lines and other structures to avoid predators. Plots shall not be installed within tramlines used by farm machinery.

**Bat Boxes and Bat Hibernation Boxes**

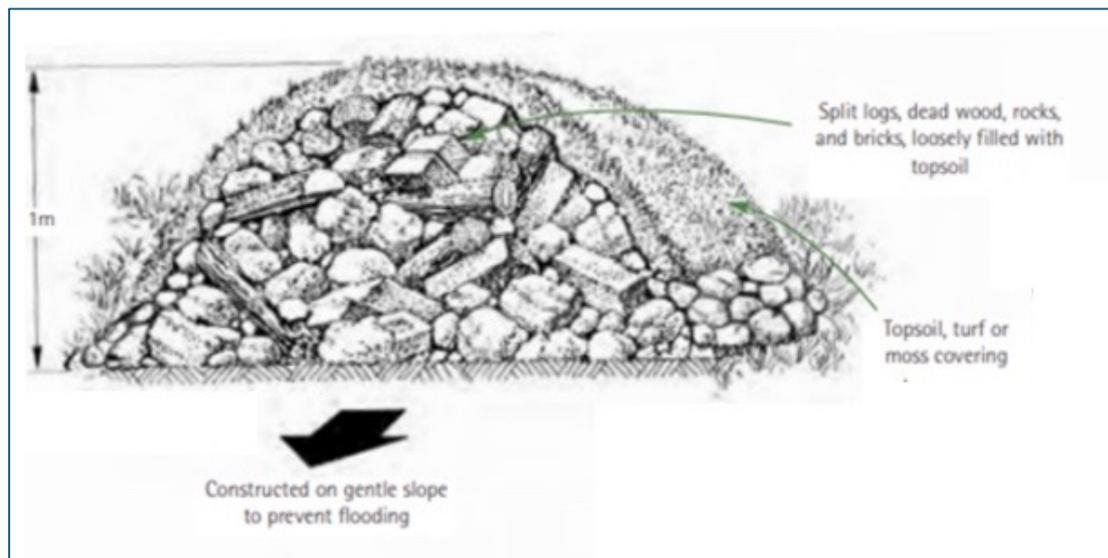
1M.5 Bat boxes shall be mounted in retained mature trees at least 3m above the ground in locations that receive 6 to 8 hours of direct sunlight daily. The boxes shall be constructed from untreated wood, with a roughened interior surface to aid bat movement and sealed to prevent water ingress. The boxes shall be designed and sited in accordance with guidance from the Bat Conservation Trust.

## Hibernacula

1M.6 The hibernacula (refugia) shall be built from stone, wood, earth, and turf and shall be suitable for both amphibians and reptiles.

1M.7 The hibernacula shall be constructed on a gentle slope to prevent flooding. The structure shall be covered with soil, forming a mound about 1 m high. Native vegetation shall be provided on top. See Figure 1.17.

**Figure 1.17 : Hibernacula**



## Invertebrate Features

1M.8 Bee banks shall be created using mounds of earth and sand covering at least 1m<sup>2</sup>. The substrate depth shall be a minimum of 0.5m to allow for tunnelling. They shall be located in places which are sheltered from strong winds and excessive moisture.

1M.9 Bee hotels can be purchased boxes or logs with holes of a variety of sizes drilled into them. They shall be positioned in sunny areas, facing south or southeast, at least 1m above the ground and be securely attached to prevent movement. Vegetation must be managed to ensure that it does not obstruct the entrances.

1M.10 Log piles shall be created within areas of woodland, grassland, scrub and hedgerow. They shall be located in partially shaded, undisturbed areas. Larger logs shall be sited at the base with smaller branches and twigs stacked on top followed by leaf litter or bark chips.

## 1N: Recycling and Waste Management

1N.1 External recycling and waste storage containers shall be easily accessible and accommodated in lit, dedicated storage areas situated on a hard surface base.

1N.2 All waste storage areas shall be fenced and/or screened with shrubs and soft landscaping.

1N.3 Waste storage areas shall be located within 30m of an external door. The distance between the point of collection and closest access point for collection vehicle shall be no more than 25m. Gradients over which containers must traverse shall not exceed 1:12. Dropped kerbs shall be in place where necessary and steps shall be avoided.

1N.4 Access shall be designed to accommodate a maximum reversing distance of 12m for refuse vehicles. A minimum working area of 3.5m width and 4m in length shall be available for the emptying of waste storage containers.

1N.5 Communal waste storage compounds shall have:

- a 2m minimum working height where the compound is covered;
- a 2m minimum width of access threshold to the compound to allow for removal and return of containers whilst servicing; and
- a layout such that any one container may be removed without the need to move any other with at least 150mm clearance space between the containers;
- adequate ventilation (e.g. through the provision of louvre doors).

1N.6 Separate provision shall be made for the storage of the following waste streams:

- Dry recyclables: – mixed plastics, cans, paper and card;
- Cardboard;
- Food Waste;
- Glass;
- Residual general waste;
- Metal (if applicable).

1N.7 Waste from Electrical and Electronic Equipment (WEEE) shall be managed in accordance with the WEEE Regulations 2013 (or as subsequently amended).

1N.8 Appropriate provision shall be made to ensure a minimum of 65% commercial and industrial waste and 75% of business waste can be recycled up to 2030 and thereafter in accordance with updated GLA guidance.

## 10: On Plot Drainage Standards

### Foul Water Drainage

10.1 Foul flows from plots shall be conveyed via a combination of gravity-based systems and pumped solutions to the site-wide foul sewer network (see Part 2, Section X).

### On Plot Attenuation

10.2 On plot surface water management shall be provided within Build Zones A, B, C, E, F and G and the southern half of Build Zone D with surface water discharge limited to the greenfield runoff rate of 3.62 l/s/ha calculated using HR Wallingford greenfield runoff tool up to and including the 1 in 100 year plus 40% climate change event.

10.3 The northern half of Build Zone D shall drain freely to attenuation ponds 1 and 2. Build Zone H shall drain freely to attenuation pond 3.

10.4 The surface water drainage for each plot shall be designed in line with Building Regulations Approved Document H, BS EN752, 'Design and Construction Guidance (DCG) for foul and surface water sewers offered for adoption under the Code for adoption agreements for water and sewerage companies operating wholly or mainly in England' (Version 2.3, November 2023), C635: Designing for exceedance in urban drainage, (or latest equivalent guidance) and best practice guidance to pass the 1 in 2 year flow without surcharge in the system.

10.5 Sustainable methods of surface water collection, conveyance, disposal and attenuation shall be implemented on each plot wherever practicable to CIRIA 753: The SuDS Manual, CIRIA 768: Guidance on the construction of SuDS (or latest equivalent guidance) and DEFRA's Non-statutory standards for the design, maintenance and operation of surface water drainage systems in England<sup>5</sup>.

10.6 Design Standards for the site-wide attenuation strategy are set out in Part 2 Section x.

## Pollution Control

10.7 A Pollution Prevention Plan (PPP), in accordance with 'Containment systems for the prevention of pollution' CIRIA 736F (2014), or as subsequently amended, shall be prepared for each plot by the occupier. The PPP shall have regard to the processes and local risks associated with the proposed business activities and this shall be made available for inspection at any time. Provision shall be made as part of the PPP to minimise the risk of remobilisation of, and washout of any pollutants such as sediment. Equipment to contain spillages and soluble pollutants, shall be made readily available.

10.8 Suitable surface water quality treatment measures (such as a fuel separator, vortex separator, filter, or green feature, such as a swale or filter strip, or similar approved measure) shall be in place to treat hydrocarbon runoff and potential fuel spillages within the Build Zones to ensure that surface water is well treated, prior to discharge into the main drainage system. Generator refuelling areas shall be located away from surface watercourses and drains to prevent pollution. Other equipment to contain spillages, including oil booms, drain blockers and dams to contain soluble pollutants shall be made readily available.

10.9 Any oil, fuel or chemical storage tanks, ancillary handling facilities, filling, drawing and overflow pipes shall be enclosed within an impervious bunded area, of at least 110% of the capacity of the largest enclosed tank within the bund, and the bunded area shall be fully constructed in accordance with current Oil Storage Regulations before the relevant part of the development to which it first relates is first occupied or brought into use.

10.10 Measures in accordance with CIRIA report C736F would also be taken to prevent any fire water from the data centre's fire suppression systems from discharging into the wider site drainage network. These measures shall include the installation of a specialised and dedicated sprinkler drainage capture system in high-risk areas within data centre buildings to capture contaminated sprinkler water. The system should be equipped with holding tanks sized to contain fire water for a minimum of 60 minutes.

## 1P: External Building and Site Signage

1P.1 All signage and advertisements on the site shall be subject to the Town and Country Planning (Control of Advertisements) (England) Regulations 2007 as amended and is not permitted by this Order.

<sup>5</sup> DEFRA, June 2025, National standards for sustainable drainage systems. Available at: <https://www.gov.uk/government/publications/national-standards-for-sustainable-drainage-systems>

## 1Q Utility Infrastructure

### Installation of Services and Utilities

1Q.1 All underground services and utilities shall, wherever feasible, be confined to the shared footway and cycle path and soft verges on plot to avoid disruption to traffic during maintenance.

### Works and Development near National Grid Electrical Assets

1Q.2 All development near National Grid electrical assets shall comply with the National Grid's 'Third-party guidance for working near National Grid Electricity Transmission Equipment', Technical Guidance Note 287 or as subsequently amended.

1Q.3 Development shall only be carried out in close proximity to live overhead power lines when there is no alternative, and only when the risks are acceptable and can be properly controlled. Statutory clearances exist which must be maintained, as prescribed by the Electricity Safety, Quality and Continuity Regulations 2002. The minimum clearance between the conductors of an overhead line and the ground is 7.3m at maximum sag. The required clearance from the point where a person can stand to the conductors is 5.3m.

# **Part 2:**

# **Infrastructure Standards**

# **(excluding the ecology park)**

## 2A Site Road Design Standards

2A.1 These design standards apply to construction of all roads outside of Build Zones and includes design standards for the road layout at the main security entrance within Build Zone C (see Figure 2.10).

2A.2 All roads shall comply with the standards set out in the Design Manual for Roads and Bridges (DMRB), Manual for Streets (DfT) and Local Transport Note 1/20: Cycle Infrastructure Design prepared by the Department for Transport or as subsequently amended.

2A.3 The speed limit on all new roads permitted by this LDO shall be limited to 20mph.

### Development Access

2A.4 Vehicle access to the development shall be from the three main access points along Fen Lane comprising the primary site access, the western access and the eastern access as shown on the Spatial Development Framework plan in Part 1 Figure 1.1.

2A.5 Detailed designs of all vehicular junctions onto the public highway must be submitted to the Local Planning Authority for approval pursuant to condition 16 in Schedule 2 of the LDO. All submitted drawings shall show vehicular tracking for the largest vehicle.

2A.6 Security fences or gates shall not obscure sight lines from any junction onto the public highway.

### Primary Infrastructure Corridor

2A.7 The primary infrastructure corridor accommodating the spine road, a shared footway and cycleway, drainage infrastructure and utilities and services shall be in general accordance with the arrangements shown on Figure 2.1 and the indicative cross section at Figure 2.2.

2A.8 The spine road north of the main security entrance shall be 6.5m wide except where it is demonstrated through vehicle tracking that localised widening to a maximum of 7.3m required is required to accommodate two-way HGV movements including at the junction with the public highway.

2A.9 Paragraph 2G.23 sets out protection measures for veteran tree 145 shown on Figure 2.1.

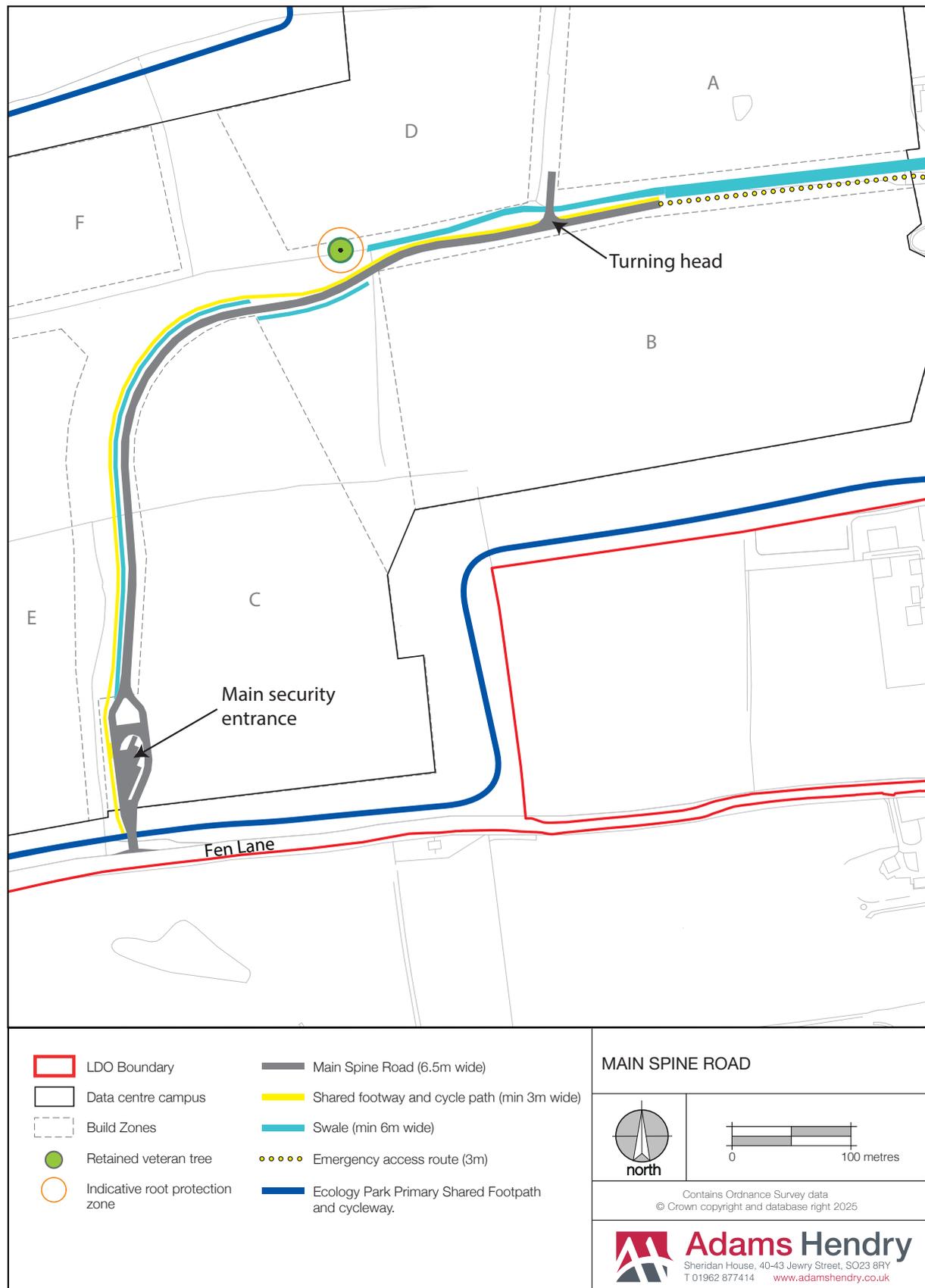
### Turning Head

2A.10 A turning head suitable for a 16.5m vehicle shall be provided in the general location shown on Figure 2.3.

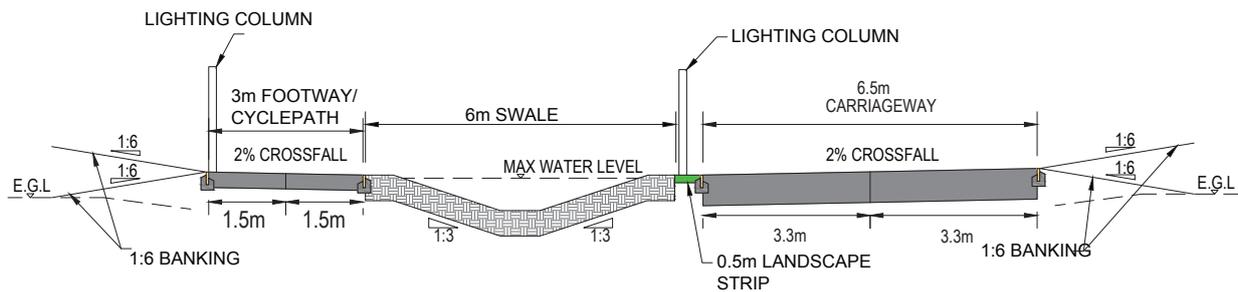
2A.11 Swept path analysis shall be required to demonstrate that a 16.5m vehicle can be accommodated without putting pedestrians in danger, damaging highway infrastructure, or coming into conflict with other vehicles. Radii of the turning head shall be minimised to reduce turning speeds and allow for easier pedestrian/cycle crossing.

2A.12 Due to the conflict with the footway and cycle path and the restricted visibility of articulated HGV's whilst reversing, all HGV turning manoeuvres undertaken in this location will require the use of banksman.

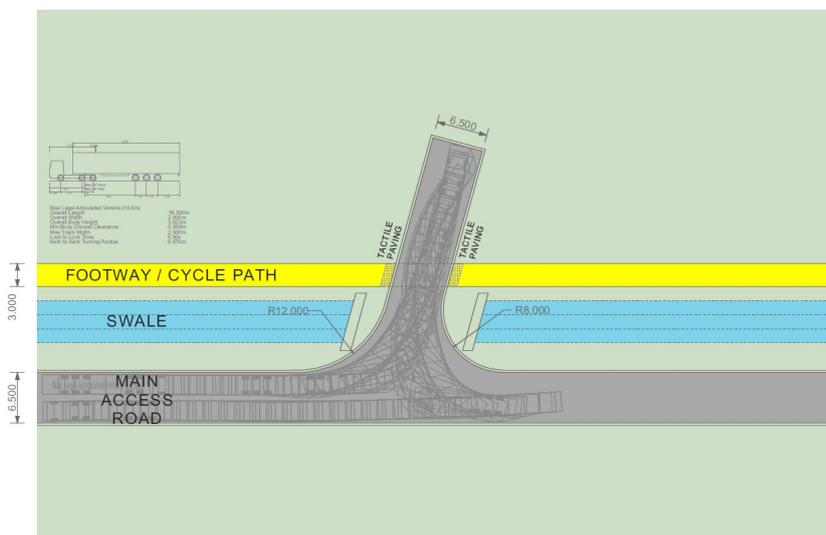
Figure 2.1: Alignment of the Primary Infrastructure Corridor



**Figure 2.2: Indicative cross section of the Spine Road**



**Figure 2.3: Indicative Turning head layout**



**Bridges**

2A.13 Structural engineering drawings for any estate road or pedestrian/cycle bridge over the swale shall be submitted to the local planning authority in accordance with condition 36 in Schedule 2 of the LDO.

**Eastern and Western Access Roads**

2A.14 The junction of the eastern access road shall be designed to accommodate two-way HGV access and egress onto the public highway and shall be no more that 7.3m. The access road shall thereafter be no more than 6.5m.

2A.15 The western access road shall be 6.5m wide except where it is demonstrated through vehicle tracking that localised widening to a maximum of 7.3m required is required to accommodate two-way HGV movements including at the junction with the public highway.

**Emergency Access**

2A.16 The emergency route shown on Figure 2.1 shall be utilised to provide an alternative access route for emergency vehicles to the data centre campus when the main site access cannot be used during an emergency scenario. Emergency vehicles are permitted to use

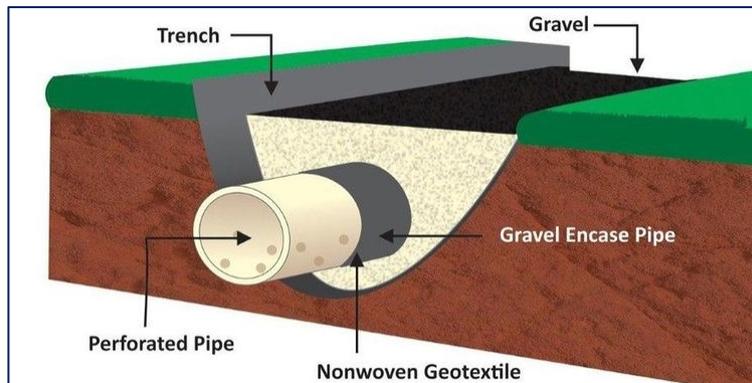
the primary shared footpath and cycleway north of the visitors centre as shown on Figure 2.1. Standards for the emergency route are set out in Part 3, Section 3B. Locked gates in the eastern perimeter security fence to the data centre campus shall provide access to the emergency route.

**Road Drainage**

2A.17 The drainage design shall be compliant with DMRB CG 501 – Design of Highway Drainage Systems and shall adopt one or more of the following systems:

**Combined surface and sub-surface drains**

An underground porous carrier pipe, bedded in a trench filled with granular material (Type A, B or C, as defined in MCHW Series 0500 [Ref 7.N]).



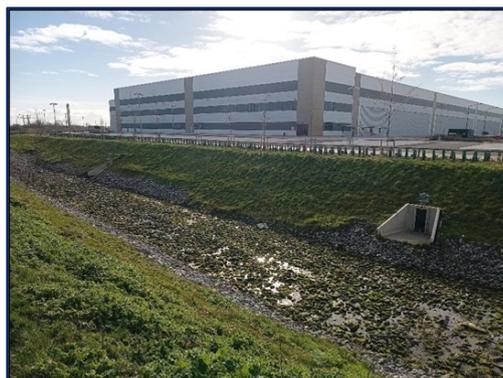
**Combined kerb and drainage channel**

Inlets on the kerb face, connected to an enclosed internal drainage channel.



**Grassed water channels (swales)**

Grassed drainage channel (swale) that runs parallel to edge of the carriageway



### Kerbs and gullies

Gullies in the carriageway connected to a longitudinal carrier drain, or pipe set, within the road verge



2A.18 The type of road drainage system will be dependent on its specific location and the characteristics of the road. Where a section of the road has:

- edges of cuttings, combined surface and sub-surface drains will be appropriate; or
- long stretches with minimal longitudinal gradients of less than 1%, combined surface and sub-surface drains, combined kerb and drainage channels, or grassed water channels (swales) will be appropriate; or
- nosings of interchanges, linear drainage channels or combined kerb and drainage channels will be appropriate; or
- areas of congested public utility services, combined surface and sub-surface drains or combined kerb and drainage channels will be appropriate; or
- areas where level restrictions create shallow outlets to the drainage system, combined kerb and drainage channels will be appropriate.

2A.19 Where a road is drained by gullies it shall be cambered and the long profile shall be between 1:20 and 1:150 to ensure adequate drainage along its length. Where the road is drained using a linear feature, such as a swale or channel, the long fall will be up to 1: 1000 with a crossfall of up to 1:40.

### Pollution Control

2A.20 Pollution risk shall be managed on site using a qualitative approach, as outlined in the CIRIA SuDS Manual C753. The likely pollution hazard levels for each road shall be assessed and SuDS components (which shall include as a minimum the swale and the three attenuation ponds) shall be designed to provide appropriate treatment.

2A.21 The eastern and western access roads which do not connect to the swale shall include a fuel interceptor or other appropriate treatment.

### Materials

2A.22 Materials for road construction shall be compliant with the appropriate British Standard or other relevant specification.

2A.23 The surface course of all roads and development plot entrances shall comprise bitumen bound aggregate in line with BS EN 13108 and MCHW SHW 912. Road marking shall be in white or yellow thermoplastic paint.

2A.24 Standard profile concrete kerbs, in accordance with BS EN 1340:2003 or as subsequently updated, (e.g. half battered and bull nose kerbs) and pin kerbs shall be used. High profile concrete kerbs shall be used at entrances used by HGVs and HGV accessible locations.

2A.25 Where there is a cross fall to an adjacent swale, a pin kerb, bull nose kerb or flush arrangement shall be used to permit overland flow to the swale.

2A.26 Car parks outside Build Zones shall be constructed from permeable block pavers and permeable sub-base.

2A.27 All service areas used by HGVs/LGVs shall comprise brushed concrete.

2A.28 Suitably recycled, locally sourced and low carbon materials shall be used where these conform to the necessary performance standards or specification.

## 2B Standards for Shared Footway and Cycle Path

2B.1 A 3m wide shared footway/cycle path shall be provided on all roads up to the Build Zone boundary. Part 1 paragraph 1J.35 sets out design standards for the shared footway/cycle path up to the plot threshold.

2B.2 The shared footway and cycleway shall be designed to the standards set out in the London Transport Note 1/20: Cycle Infrastructure Design (or as subsequently amended) prepared by the Department for Transport.

2B.3 Shared footway/cycle paths shall be constructed of resin or bitumen bound aggregate, subject to a suitable skid resistance for cyclists. The shared footway/ cycle paths shall be maintained to ensure it is kept free of hazards and surface defects.

2B.4 Tactile paving shall mark the edge of the shared footway and cycleway at all uncontrolled crossings and shall comprise a textured, antiskid surface and be of a contrasting colour. Tactile paving shall comply with the Department of Transport Guidance on the User of Tactile Paving Surfaces December 2021 (or as otherwise updated).

## 2C Signage

2C.1 All signs and road markings shall comply with Traffic Signs Regulations and General Directions 2016 (TSRGD) and the Traffic Signs Manual. All signage dimensions, colours and layouts shall meet the requirements of the 20mph road speed limit.

## 2D Campus Security Gates

### Vehicle Control Measures

2D.1 Vehicle control measures shall be implemented at the main entrance to the Data Centre Campus at the junction with Fen Lane and on the western access road to control vehicle access.

### Operational Parking Outside the Security Gate

2D.2 Parking shall be provided outside the secure campus perimeter fence up to the maximum provision set out in Table 2.1.

**Table 2.1: Parking Outside the Main Security Gate**

Type	Maximum No. of spaces	Purposes
Car	10	Temporary parking for visitors to the Data Centre Campus whilst undergoing security checks (limited to 15 min wait time)
Taxis	2	For drop-off/pick-up of any staff/visitors to the Data Centre Campus travelling by taxi
Electric Mini buses	2	To transport staff to and from Upminster railway station at shift change over.

2D.3 Spaces for minibuses shall be provided with an active EV charging point. Parking space dimensions shall be in accordance with Part 1 Section 1J and Table 1.10.

2D.4 Provision for enlarged vehicles and blue badge holders outside the main security gate shall be in accordance with the percentage requirements for data centres set out in Part 1 Section 1J.16 and Table 1.9.

2D.5 A clearly defined bus stop (capable of accommodating a coach during the construction period) shall be provided as indicatively shown in Figure 2.4. The design of the bus stop shall comply with TFL's Accessible Bus Stop design guidance.

2D.6 A shelter shall be provided with perched seating (or similar), fitted with end panels to provide protection from the weather and with a clear view of the approaching bus/coach shall be provided. It shall be appropriately lit. Raised kerbs shall be provided to create a level entry platform.

2D.7 A minimum of 10 Sheffield stands shall be provided. Cycle parking shall be covered and provided in accordance with London Transport Note 1/20: Cycle Infrastructure Design (or as subsequently amended).

2D.8 An anti-tailgating pedestrian gate shall be provided for visitors arriving by foot or cycle.

2D.9 The security gatehouse at the main entrance shall be set back by a minimum of 60m from the edge of the public highway. The material specification and colour palette for the security gatehouse is set out in Part 1 paragraph 1B.12.

2D.10 On the western access road (to Build Zone G), the security gatehouse shall be set back by a minimum of 36 m from the public highway.

2D.11 The gatehouse shall be certified to LPS 1175 SR1. Accessible glazing shall be resistant to forced entry and thrown objects and be certified to BS EN 356:2000 P1A as a minimum. Doors recessed back from the building façade shall be avoided.

2D.12 A rejection lane is required at each security point. Vehicle tracking shall demonstrate that unauthorised vehicles can turn around and exit the site safely in forward gear.

2D.13 An illustrative layout for the main entrance is shown on Figure 2.4.

## 2E Operational and Estate Management Parking Provision

### Operational Parking Inside the Security Gate

2E.1 Parking provision shall be made for management and maintenance vehicles within Build Zone C adjacent to the main campus security building within the perimeter security fence as shown on Figure 2.4.

**Table 2.2: Estate Management Parking inside the Campus**

Type	Maximum No. of spaces	Purposes
Car/LGV	10 spaces (mix of car and LGV)	To meet operational maintenance and management requirements or for light vehicles transporting staff/visitors from the gatehouse to individual plots.
Motorcycle	4 spaces	As above.

2E.2 Parking space dimensions shall be in accordance with Part 1 Section 1J and Table 1.10.

2E.3 Provision for electrical vehicles, enlarged vehicles and blue badge holders inside the main security gate shall be in accordance with the percentage requirements for data centres set out in Part 1 Section 1J and Table 1.9.

2E.4 A minimum of 10 stands providing 20 cycle parking spaces shall be provided for estate management and operational staff. Cycle parking shall be covered and provided in accordance with London Transport Note 1/20: Cycle Infrastructure Design (or as subsequently amended).

2E.5 Parking of estate management and maintenance vehicles is only permitted on roads within the campus on a temporary basis under the supervision of the estates management team.

## 2F Lighting

2F.1 General lighting considerations are set out in Part 1 Section 1K: Lighting.

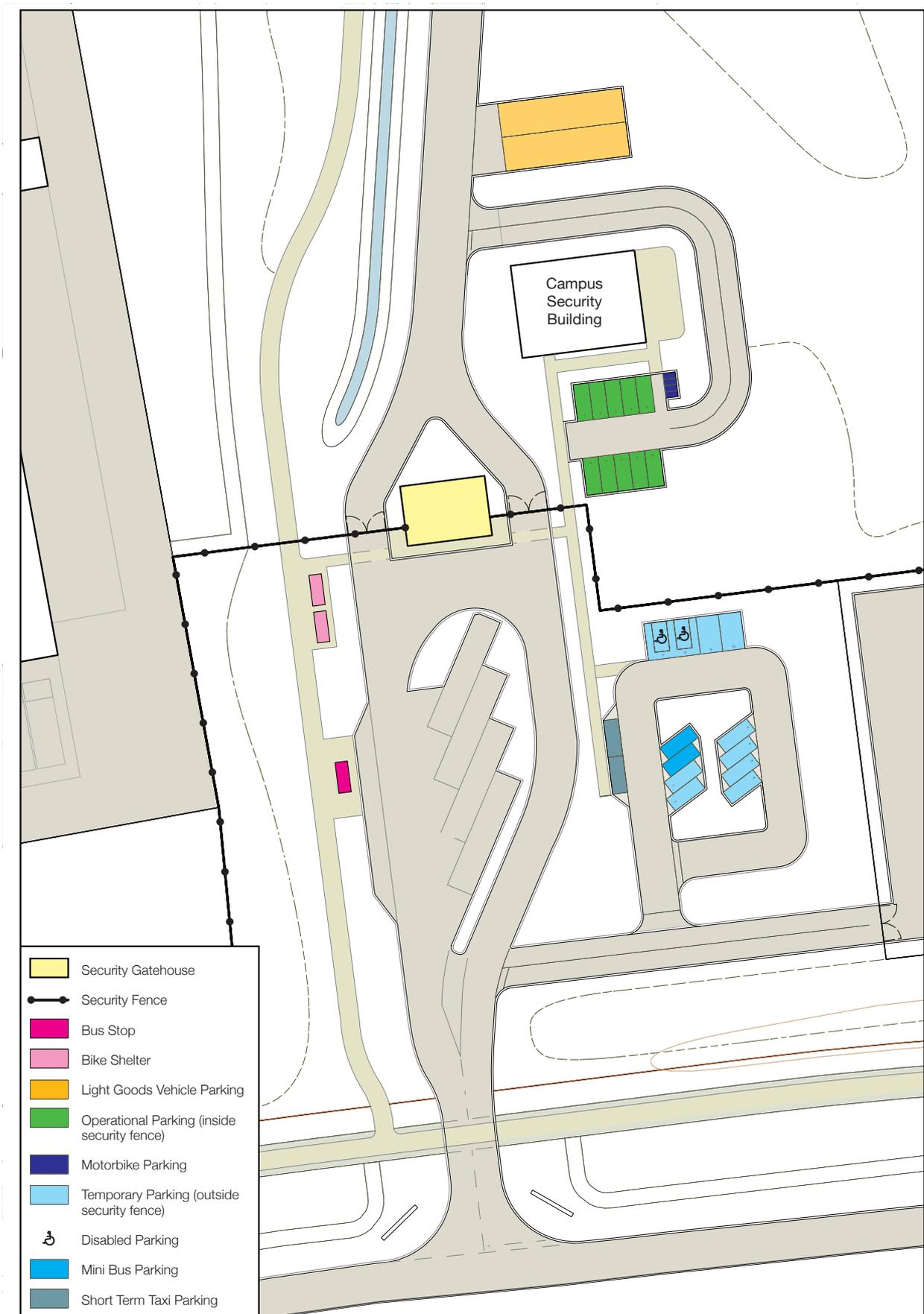
2F.2 Light columns shall be positioned to avoid the need for significant tree pruning as trees reach full maturity. Where planting is proposed, lighting design shall be coordinated with the approved landscaping scheme.

2F.3 Luminaries shall have shields or internal baffles fitted to prevent back/ sideways spill of light.

### Spine Road

2F.4 Lighting on the spine road shall be column mounted and designed to ensure it prevents upward light above the horizontal plane. Lighting shall be designed to lighting class C5 as defined in BS EN 13201-2. Light fixtures shall meet the requirements as detailed in Table 2.3.

Figure 2.4: Illustrative access and parking layout at the main security gate



**Table 2.3**

Equipment	Mounting height	Installation details	Average Illuminance	Minimum Uniformity	CRI	Colour temperature
Lighting column	6-8m	0° tilt	7.5 lux	0.40	>70	≤3000K

2F.5 Lighting columns shall be mounted a safe distance from the carriageway for maintenance access, and to reduce collisions, as recommended in BS EN 5489-1 for roads at design speeds ≤ 20 mph.

#### Eastern and Western Access Roads

2F.6 Lighting on eastern and western access roads shall be designed to lighting class P4 as defined in BS EN 13201-2. Light fixtures shall meet the requirements as detailed in Table 2.4.

**Table 2.4**

Equipment	Mounting height	Installation details	Average Illuminance	Minimum Illuminance	CRI	Colour temperature
Lighting column	6-8m	0° tilt	5 lux	1 lux	>70	≤2700K

2F.7 Columns on the eastern and western access roads shall be mounted a safe distance from the carriageway for maintenance access, and to reduce collisions, as recommended in BS EN 5489-1 for roads at design speeds ≤ 20 mph.

#### Operational Parking Areas

2F.8 Lighting of operational parking areas shall meet the requirements of Table 5 of BS 5489-1 for outdoor car parks with medium traffic. The performance is as detailed below in Table 2.5.

**Table 2.5**

Equipment	Mounting height	Installation details	Average Illuminance	Uniformity	CRI	Colour temperature
Lighting column	6-8m	0° tilt	10 lux	0.25	>70	≤2700K
Wall mounted luminaire	2-4m	0° tilt	10 lux	0.25	>70	≤2700K

#### Shared footway/cycleways

2F.9 Lighting of the shared footway/cycleway around the campus shall meet the requirements detailed in Table 2.6.

**Table 2.6**

Equipment	Mounting height	Installation details	Average Illuminance	Uniformity	CRI	Colour temperature
Lighting column	3-4m	0° tilt	10 lux	0.40	>70	≤2700K

## 2G Landscaping

### Boundary Treatment

2G.1 The Data Centre Campus shall be enclosed within a perimeter security fence of a uniform style and height rated to Loss Prevention Standard 1175 Issue 7 SR1 or higher and shall be between 2.4m and 3m high with up to 1m anti-climb topping. The perimeter fence shall be fitted with a perimeter intruder detection system.

2G.2 Fencing shall typically be:

- BS1722-12 Steel Palisade Fencing; and
- BS1722-14 Open Mesh Steel Panel Fencing Category 2 (security fencing).

2G.3 All fencing accord with the following colour palette in Part 1, Section 1L Figure 1.14.

2G.4 Illustrative examples of fencing are shown below:



2G.5 The fencing shall be designed to eliminate recesses and concealed corners.

2G.6 Gates in the Data Centre Campus perimeter security fence shall be the same height as the fence and automated.

2G.7 A wooden field gate that can be locked shall be provided at the entrance to the visitor centre car park in Build Zone H.

2G.8 All fencing shall be a minimum distance of 2m from any tree canopy, video surveillance columns and light columns.

2G.9 The perimeter security fence shall be erected in line with the development phases as shown in Figure 2.5. The interim fencing shall be to the same standard as the permanent fence.

### Soft Landscaping

2G.10 The soft landscape scheme within the primary infrastructure corridor, along the western access road and in other parts of the data centre campus outside Build Zones shall be phased as shown in Figure 2.6.

Figure 2.5: Security Fencing Phasing

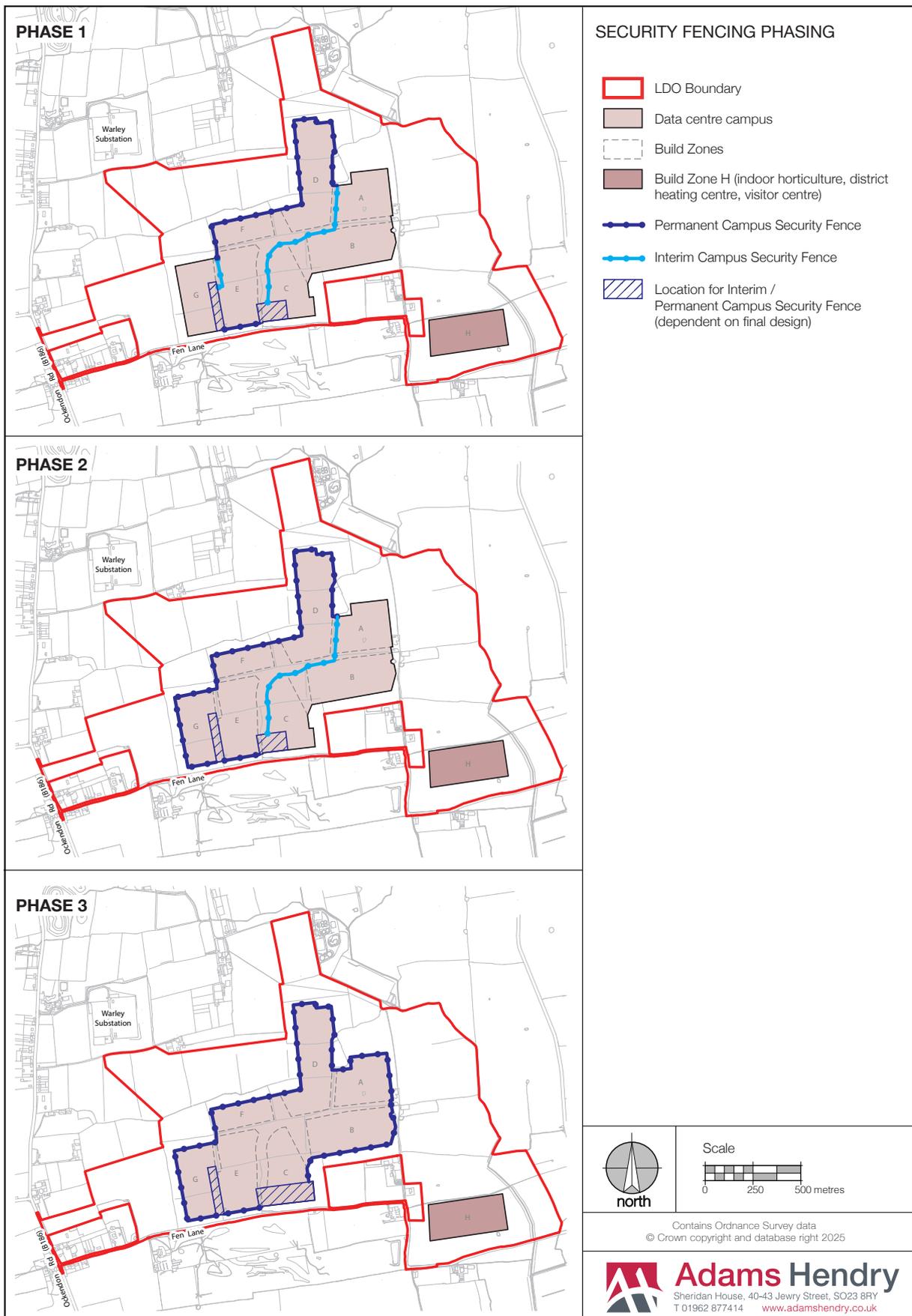
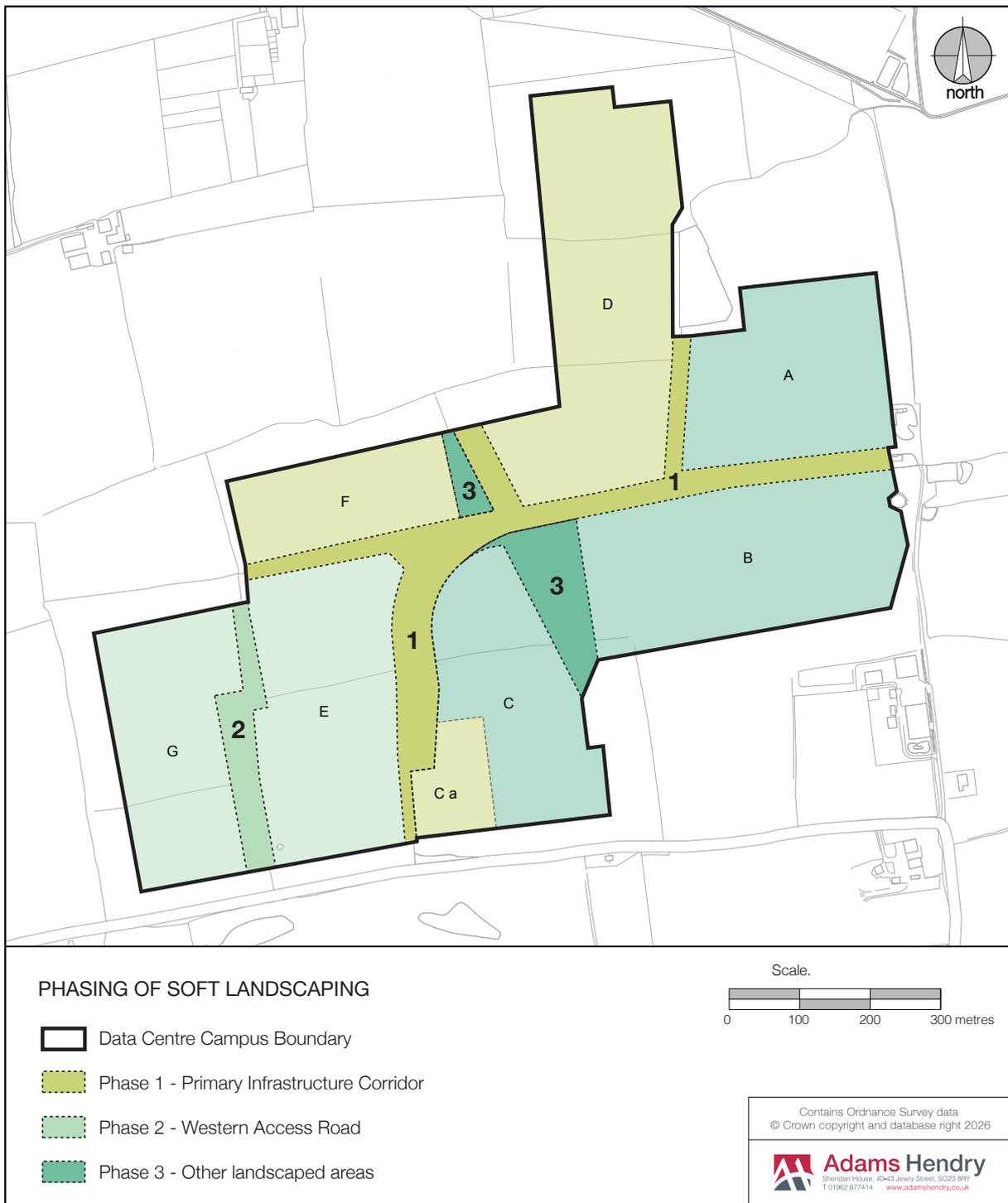


Figure 2.6: Phasing of Soft Landscaping



2G.11 Planting shall comprise primarily neutral grassland as shown on Figure 3.1: Habitat Plan (See Part 3).

2G.12 The minimum area of neutral grassland provided within the Data Centre Campus during each development phase shall be as shown in Table 2.7.

**Table 2.7: Minimum Area of Neutral Grassland per Development Phase**

	Phase 1	Phase 2	Phase 3	Phase 4
Neutral Grassland	5.8 ha	1.9 ha	2.7 ha	10.4 ha

2G.13 Existing mixed native hedgerows shall be retained as indicated on Figure 3.1: Habitat Plan (See Part 3).

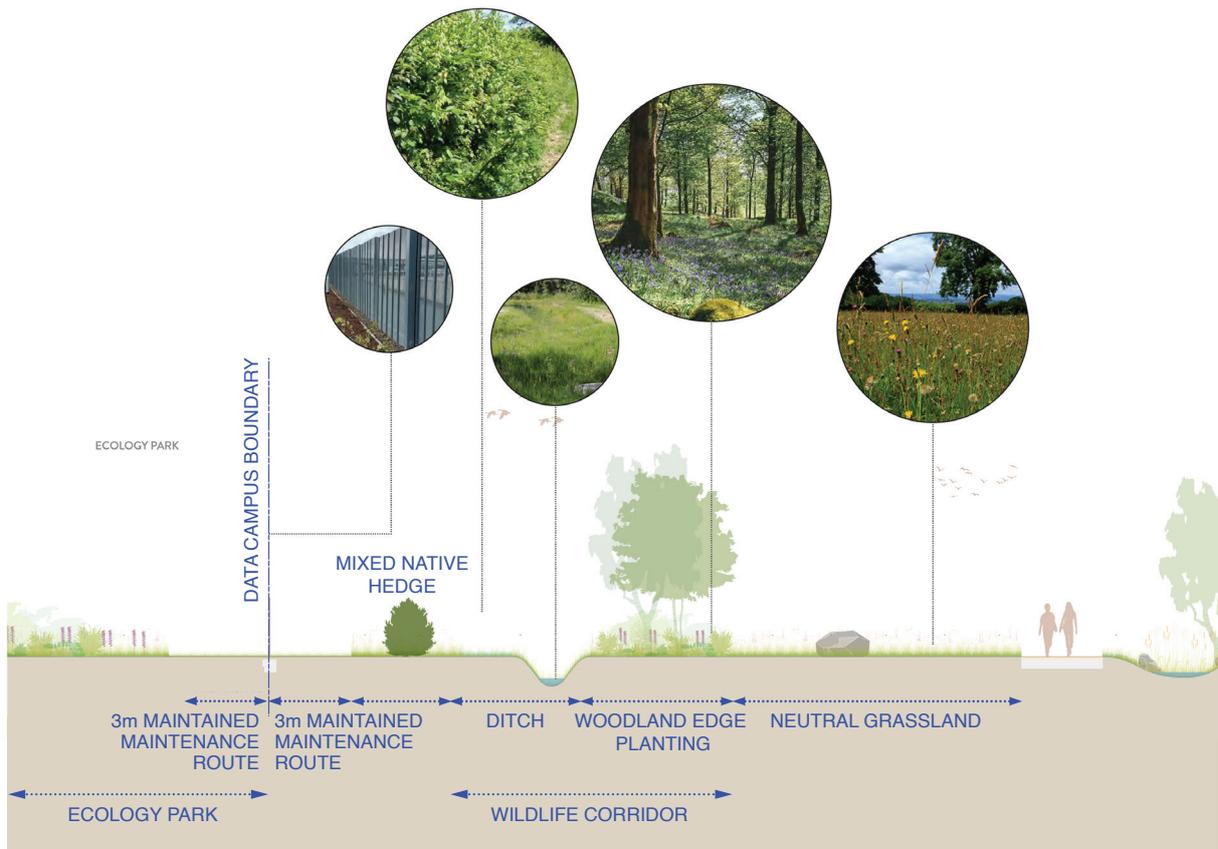
2G.14 Copses of trees with woodland understorey planting shall be provided within areas of neutral grassland. A typical section is shown in Figure 2.7.

**Figure 2.7 Typical Landscaping within Neutral Grassland**

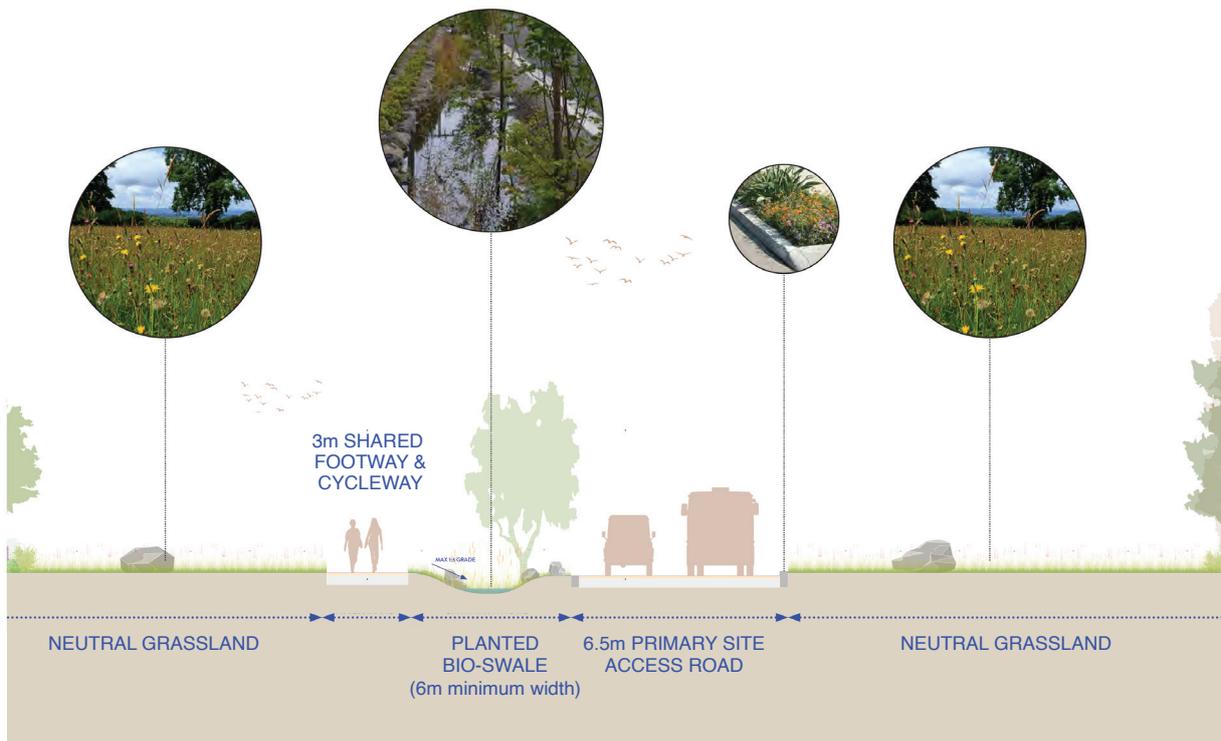


2G.15 Filtered tree planting with woodland understory and shrub planting with wildflower verges shall be provided along ditches, swales, hedgerows, roads and the shared footway and cycle path. Typical cross sections are shown in Figure 2.8 and Figure 2.9.

**Figure 2.8 Typical landscaping along ditches and hedgerows**



**Figure 2.9 Typical landscaping along the shared walkway and cycleway**



2G.16 A strip comprising either gravel, concrete block paving, tarmac or mown grass shall be incorporated adjacent to the perimeter fence to allow access for maintenance.

2G.17 The attenuation ponds and swales shall contain a combination of planting treatments with variation achieved along their length. The composition of the plants shall include species that are able to thrive in drier conditions at the upper margins of wetlands and damp tolerant varieties capable of establishing on the lower slopes.

2G.18 The planting scheme shall discourage public access to the swales. Timber knee rails shall be installed as a guide to pedestrians where planting is not otherwise available.

2G.19 All planting shall be in accordance with the detailed soft landscaping specification as set out in Appendix 2.

### Tree Planting

2G.20 Tree planting shall achieve a 5% coverage within the total neutral grassland area in accordance with the requirements set out in Table 2.8.

**Table 2.8: Tree Planting Densities**

Tree planting	Phase 1	Phase 2A	Phase 3	Total
Area	0.28 ha @5%	0.09 ha @ %	0.13 ha %5%	0.5 ha @ 5%
Whips @50%	175	57	81	313
Standard Trees @30%	28	9	13	50
Semi Mature Trees @ 20%	7	2	4	13
Total	210	68	98	376

### Tree Protection Measures

2G.21 The tree protection measures in Part 1, Section 1L.22 - 23 shall apply.

#### Veteran trees

2G.22 A knee rail or post and rail fence beyond the perimeter of the crown (or larger area where available) shall be implemented around veteran tree 138, 139 and 145 to restrict public access.

### Landscape Management

2G.23 The management and maintenance of the soft landscape components associated with the development shall be in accordance with Part 1, Section 1L.

### Street Furniture

2G.24 The design standards for street furniture are set out in Part 1, Section 1L.25 – 1L.30

## 2H Ecological Creation Features

2H.1 As a minimum, the specified number of each type of ecological feature shall be provided at the development stage as detailed in Table 2.9.

**Table 2.9: Ecological Features**

<b>Ecological Feature</b>	<b>Phase 1</b> Primary Infrastructure Corridor
Bird Boxes - House Sparrow	-
Bird Boxes - Swift	-
Bird Boxes - Song Birds	2
Bird Boxes – Open Fronted	2
Bird Boxes – Barn Owl	1
Sky Lark Plots	1
Bat Boxes	4
Bat Hibernation Boxes	-
Hibernaculum (amphibians, reptiles, invertebrates)	1
Invertebrate Features (Bee boxes and hotels, Bee banks, Bee posts, Stumperies and log piles)	2

2H.2 The ecological features shall be provided in accordance with the detailed specifications as set out in Section 1M of Part 1.

## 2I Drainage Standards

### Site Wide Surface Water Drainage

2I.1 The surface water strategy shall discharge the site's surface water runoff, during storm events with up to and including a 1 in 100 annual probability (with an appropriate 40% climate change allowance or the equivalent updated requirement), into the River Mardyke on the eastern boundary of the site. Discharge to the River Mardyke, via either existing or proposed drainage ditches, shall be limited at the greenfield runoff rate as shown in Table 2.10.

2I.2 The site discharge shall be attenuated by three attenuation ponds. The attenuation ponds shall be sized to manage surface water runoff to existing drainage infrastructure from the proposed Build Zones, all estate roads and footways and cycleway at controlled rates as shown in Table 2.10. The maximum depth of the three attenuation ponds below existing ground level shall be 1.2 m with a maximum slope gradient of 1:3. The attenuation ponds shall be outside of areas at risk of fluvial flooding.

2I.3 Flows currently managed by on-site ditches within the data centre campus that do not serve off-site catchment areas shall be wholly replaced by the proposed drainage network. All ditches which convey surface water runoff from catchments external to the site shall be maintained or diverted within the site. Figure 2.10 shows the extent of the respective catchment areas for each of the attenuation ponds and the indicative location of ditches to be retained and relocated and new ditches and swales that will be required subject to detailed design pursuant to condition 26 in Schedule 2 of the LDO.

2I.4 A below ground surface water network of pipes within the spine road would discharge surface water runoff from individual development plots into Pond 2. On plot methods of surface

**Table 2.10: Design Parameters for Attenuation Ponds and Discharge Rates to the Mardyke**

<b>Attenuation Feature</b>	<b>Maximum Attenuation Volume m<sup>3</sup></b>	<b>Maximum Discharge Rate to Mardyke (l/s)</b>
Pond 1	6,075	25.2
Pond 2	17,620	217.7
Pond 3	8,224	33.7
Total	31,919	276.6

water management and discharge rates to the piped network shall be in accordance with the standards set out in Part 1, Section 10.

21.5 All drainage services shall be designed in accordance with BS 5837:2012 – Trees in Relation to Design, Demolition and Construction. Drainage services shall be located to avoid root protection areas of retained trees and groups of trees as shown on the tree protection plans in Appendix 4 unless otherwise demonstrated that this is not feasible.

21.6 Details of the final design of the surface water drainage scheme shall be submitted to the local planning authority pursuant to condition 26 in Schedule 2 of the LDO.

### Swale

21.7 A swale designed with an appropriate 40% climate change allowance or to the equivalent requirement if updated by the Environment Agency shall be in place along the primary infrastructure corridor for the conveyance of storm water run-off from main spine road, shared footway and cycle way and other estate roads (outside of the Build Zones) to the attenuation ponds. The swale shall have a minimum width of 6m wherever feasible).

21.8 Steps shall be incorporated into attenuation ponds and drainage swales to allow access for maintenance and safety.

21.9 Slopes within swales shall not exceed a maximum gradient of 1:2.5.

21.10 For safety, where stepped access is not otherwise provided, water bodies shall be designed with safe access and egress areas where the maximum gradient does not exceed a slope of 1:5.

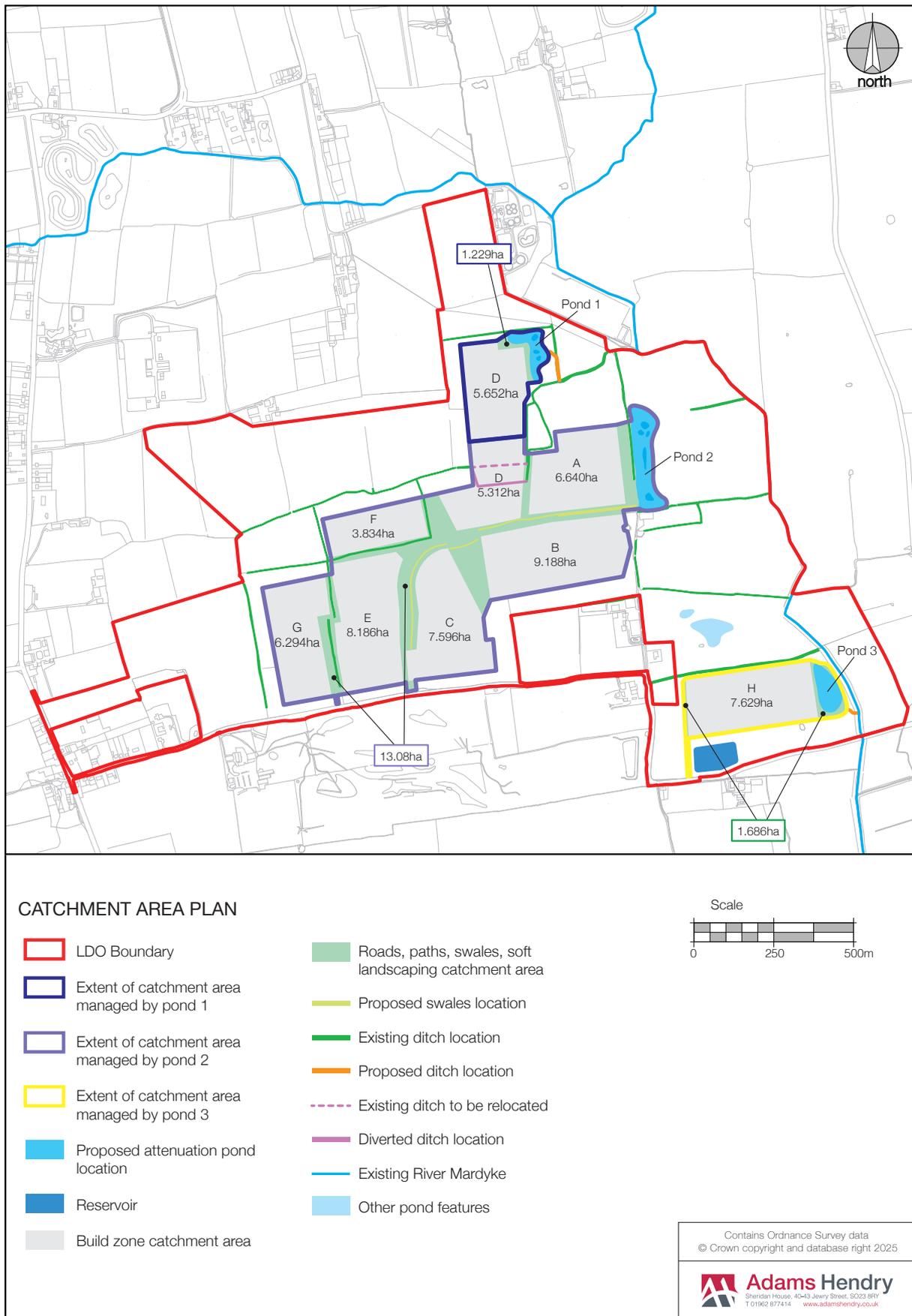
21.11 Culverts shall be used at road crossings and entrances to plots.

### Pollution Control

21.12 The swale in the downstream ditch(es) of the attenuation ponds shall be inspected for signs of pollution in accordance with the maintenance regime to be agreed with local planning authority pursuant to condition 26 in Schedule 2 of the LDO. Where pollution is evident, appropriate clean-up measures, such as absorbent booms shall be used to remove it. Oil booms shall be removed on completion of the clean-up to avoid re-release of oil or potential blockages.

21.13 SuDS performance capacities shall meet or exceed the pollution hazard indices in accordance with the SuDS Manual C753 (or as subsequently amended).

Figure 2.10: Catchment Areas



## Foul Water Drainage

2I.14 Foul flows from individual Build Zones shall be conveyed via a combination of gravity-based systems and pumped solutions to connect to the existing Anglian Water public foul sewer to the north of the site.

2I.15 Pumping stations shall be underground and be situated within a compound, in accordance with DCG 2.3 (November 2023).

2I.16 Appropriate storage must be provided on site to accommodate flows from a 24-hour period in the event of pump/power outage.

## 2J Service Infrastructure

2J.1 Power shall be supplied via a cable connection(s) between Warley GSP and the proposed UKPN substation on Build Zone F as shown in Part 1, Figure 1.1.

2J.2 Utility connections (power, fibre and water) to individual plots should be located within service corridors located under footways/cycle paths or within landscape strips adjacent to roads.

### District Heating Primary Network Circuit and Export Connection

2J.3 The waste heat pipework shall be installed from the data centre cooling system offtake to a plate heat exchanger plant room in the district heating energy centre. The pipe route shall be cognisant of the installation and replacement requirements and shall be operated and maintained at all times.

2J.4 An export connection(s) at the LDO site boundary on Fen Lane or Ockendon Road shall be provided to enable a third party to connect and supply heat to a downstream energy centre/heat network in the future.

### Works and Development near National Grid Electrical Assets

2J.5 Part 1 Section 1Q applies to all works and development near National Grid electrical assets.

### Works and Development near the LHP gas pipeline

2J.6 A 3m wide easement shall be maintained either side of the LHP gas main.

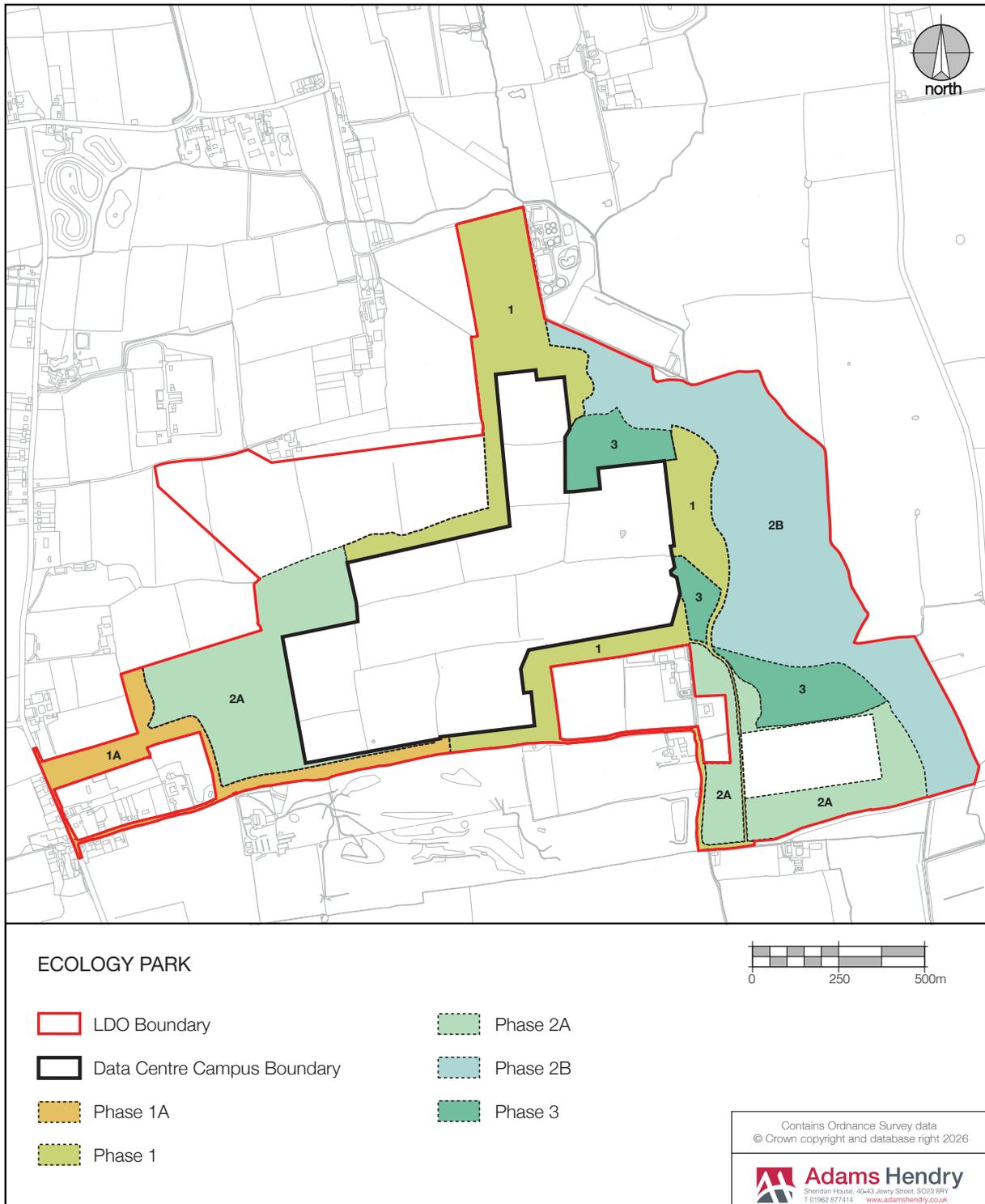
# Part 3: Ecology Park

### 3A Soft Landscaping

#### General Requirements

3A.1 The Ecology Park shall be delivered in phases as shown in Figure 3.1 and include all habitat types as shown on Figure 3.2.

**Figure 3.1: Ecology Park Phased Delivery**



3A.2 The habitat shall be delivered in accordance with the minimum requirements set out in Table 3.1 for each phase of development.

**Table 3.1: Habitat Creation**

Habitat Type	Phase 1A	Phase 1	Phase 2A	Phase 2B	Phase 3	Total
<b>Minimum Area (hectares)</b>						
Broadleaf Woodland	1.7	2.2	5.6	-	2.7	12.2
Wet Woodland	-	0.4	-	6.6	0.7	7.7
Woodland Buffer	-	9.1	2.5	-	0.8	12.4
Meadow	3.4	11.1	23.6	-	7.7	45.8
Seasonally Wet Grassland	-	5.5	29.6	-	4.5	
Ponds and Standing Water – attenuation ponds	-	1.45	0.5	-	-	
Ponds and Standing Water – other ponds	-	-	-	-	0.35	0.35
Reservoir	-	-	1.0	-	-	1.0
Ditches	-	-	-	-	2.4	2.4
<b>Minimum Provision (km)</b>						
New Mixed Native Hedgerows	0.9	3.5	1.7	2.0	1.0	9.1

3A.3 Planting for each habitat type shall be in accordance with the relevant soft landscaping specification in Appendix 2 and include all species from that specification to meet the habitat classifications set out in Appendix 1 of the LEMMP.

3A.4 All trees and plants shall be certified as UK provenance (propagated and grown) and locally sourced where possible. Guidance in the Landscape Institute’s Technical Guidance Note (TGN) 01/19 – Plant Health and Biosecurity: The Landscape Consultant’s Toolkit (or as subsequently amended) shall be followed to identify and mitigate risks from pests and disease.

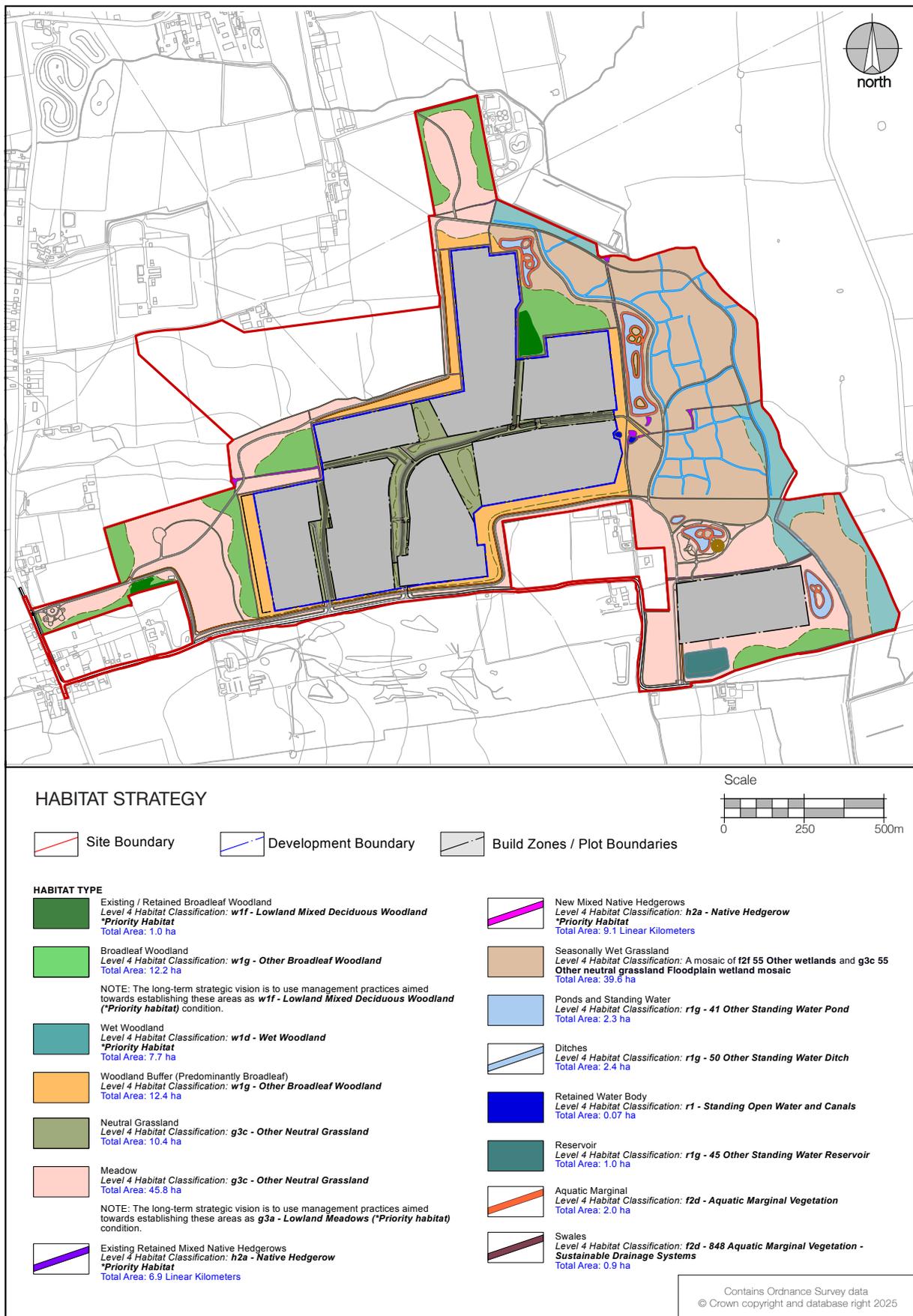
3A.5 Planting shall be undertaken in the appropriate season as detailed in Table 3.2.

**Table 3.2: Planting Season**

Habitat Types	Season											
	J	F	M	A	M	J	J	A	S	O	N	D
Broadleaf Woodland												
Neutral Grassland/Meadow												
New Mixed Native Hedgerows												
Seasonally Wet Grasslands												
Meadow												
Wet Woodland												
Ponds and Standing Water												
Ditches												

3A.6 Any invasive species noted during planting shall immediately be removed and appropriately disposed of.

Figure 3.2: Habitat Strategy



## Trees

3A.7 Tree planting shall be carried out in accordance with the planting densities set out in Table 3.3. Trees shall be planted in naturalistic formations and not in rows.

**Table 3.3: Tree Planting Requirements**

Tree Planting	Phase 1A	Phase 1	Phase 2A	Phase 2B	Phase 3	Total
<b>Broadleaf Woodland</b>						
Area	1.7ha	2.2ha	5.6ha	-	2.7ha	12.2ha
Whips @80%	2720	3520	8960	-	4320	19520
Standard Trees @20%	75	97	247	-	118	537
Total	2795	3617	9207	-	4438	20057
<b>Wet Woodland</b>						
Area	-	0.4ha	-	6.6ha	0.7ha	7.7ha
Whips @80%	-	640	-	10560	1120	12320
Standard Trees @20%	-	18	-	291	30	339
Total	-	658	-	10851	1150	12659
<b>Woodland Buffer</b>						
Area	-	9.1ha	2.5ha	-	0.8ha	12.4ha
Whips @80%	-	14560	4000	-	1280	19840
Standard Trees @20%	-	400	110	-	35	545
Total	-	14960	4110	-	1315	20385
<b>Meadow</b>						
Area	0.16 ha @5%	0.56 ha @5%	1.2 ha @5%	-	0.38 ha @5%	2.3 ha @5%
Whips @50%	100	349	748	-	236	1433
Standard Trees @30%	16	55	118	-	38	227
Semi Mature Trees @ 20%	4	14	29	-	9	56
Total	120	418	895	-	283	1716
<b>Seasonally Wet Grassland</b>						
Area	-	0.28 ha @5%	1.48 ha @5%	-	0.24 ha @5%	2 ha @5%
Whips @50%	-	175	923	-	149	1247
Standard Trees @30%	-	28	147	-	23	198
Semi Mature Trees @ 20%	-	7	36	-	6	49
Total	-	210	1106	-	178	1494

3A.8 Coniferous species shall be included within the Woodland Buffer comprising no more than 15% of the total tree planting in these areas.

3A.9 The following tree protection measures shall be implemented:

- **Whip planting**

3A.10 Biodegradable tree guards shall be provided at the time of planting and removed 5 years post-establishment or when no longer needed. Plastic tree guards shall be avoided wherever possible. Where plastic guards are unavoidable, these shall be checked on a regular basis (at least once a year) and removed and disposed of responsibly once no longer needed, or at the latest 5 years post establishment.

- **Semi-Mature and Standard trees**

3A.11 Post and rail fencing shall be utilised at the time of planting where single trees or group trees are planted. This shall be a minimum height of 1.5m.

- **Tree Paddocks**

3A.12 A minimum area of 10% (3.2ha) of woodland planting on each phase shall be protected by deer fencing in 0.2ha paddocks as set out in Table 3.4.

**Table 3.4: Tree Paddocks**

Habitat Type	Minimum Paddock Area (ha)				
	Phase 1A	Phase 1	Phase 2		Phase 3
	Ecology Part 1A	Ecology Part 1	Ecology Part 2	Ecology Part 4	Ecology Part 3
Broadleaf Woodland	0.2	0.2	0.4	-	0.4
Wet Woodland	-	-	-	0.6	0.2
Buffer Woodland	-	1.2	-	-	-

3A.13 Deer fencing shall remain in place for 20 years. The fencing shall be 1.8m high and comprise wooden posts and mesh.

**Examples of tree protection measures**



3A.14 A knee rail or post and rail fence beyond the perimeter of the crown (or larger area where available) shall be implemented around veteran tree T75 to restrict public access (See Appendix 4 – Tree Protection Plan 22).

3A.15 Only trees identified for removal on the tree protection schedule at Appendix 4 shall be felled unless otherwise agreed in writing with the Local Planning Authority in advance.

## Hedgerows

3A.16 Hedgerows shall be maintained to a maximum height of four metres. Reasonable steps shall be taken to establish vegetation cover on land within two metres of a hedgerow.

3A.17 The following minimum separation distances apply when planting hedgerows:

- 3m between hedgerow and the Data Centre Campus perimeter security fence.
- 2m between hedgerow and edge of a ditch or pond.

3A.18 Hedgerows within 3m of the existing LHP gas main as shown on Figure 1.1 in Part 1 shall only be planted to demarcate boundaries or provide screening. If a hedgerow is required, the species shall be shallow rooted or alternatively an underground root barrier membrane installed to prevent the spread of roots.

## Ditches and Ponds (excluding attenuation ponds and reservoir)

3A.19 Design standards for attenuation ponds, new reservoir and swales are set out in Part 2, Section 2I.

3A.20 Existing ditches as shown on Figure 2.10 shall be retained.

3A.21 The water bodies to be retained are shown on Figure 3.2.

3A.22 New ditches and ponds shall be created as shown on Figure 3.2 and in accordance with the relevant requirements in Table 3.1.

3A.23 All new ditches and ponds shall be approximately 1 metre in depth.

3A.24 The internal ditch slopes shall have a gradient of 1:1 - 1:2 where in open landscape and a gradient of 1:3 where adjacent to pedestrian routes as illustrated on Figure 3.3.

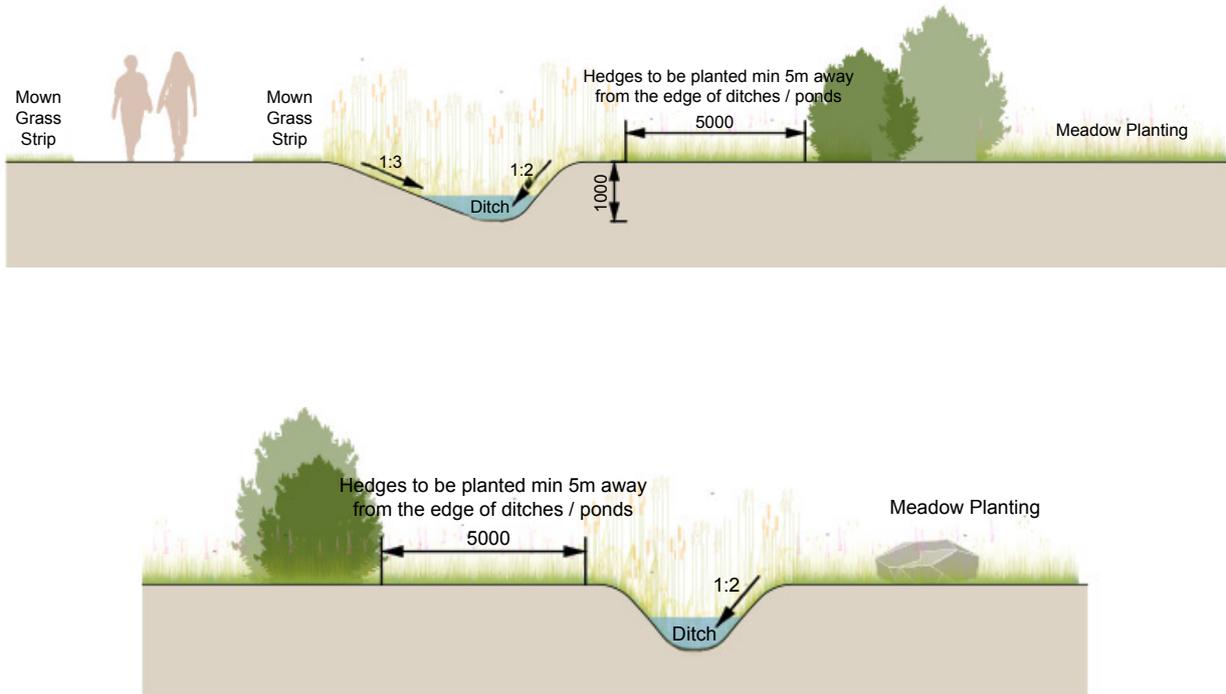
3A.25 Where a level shelf is created, the internal ditch slope shall have a gradient of approximately 1:3 to a depth of 0.5 metres. It shall then have a gradient of approximately 1:2 from the level of the shelf to a depth of 1 metre.

3A.26 The internal pond slopes shall have a gradient of 1:2 where in open landscape and away from public access as illustrated on Figure 3.4.

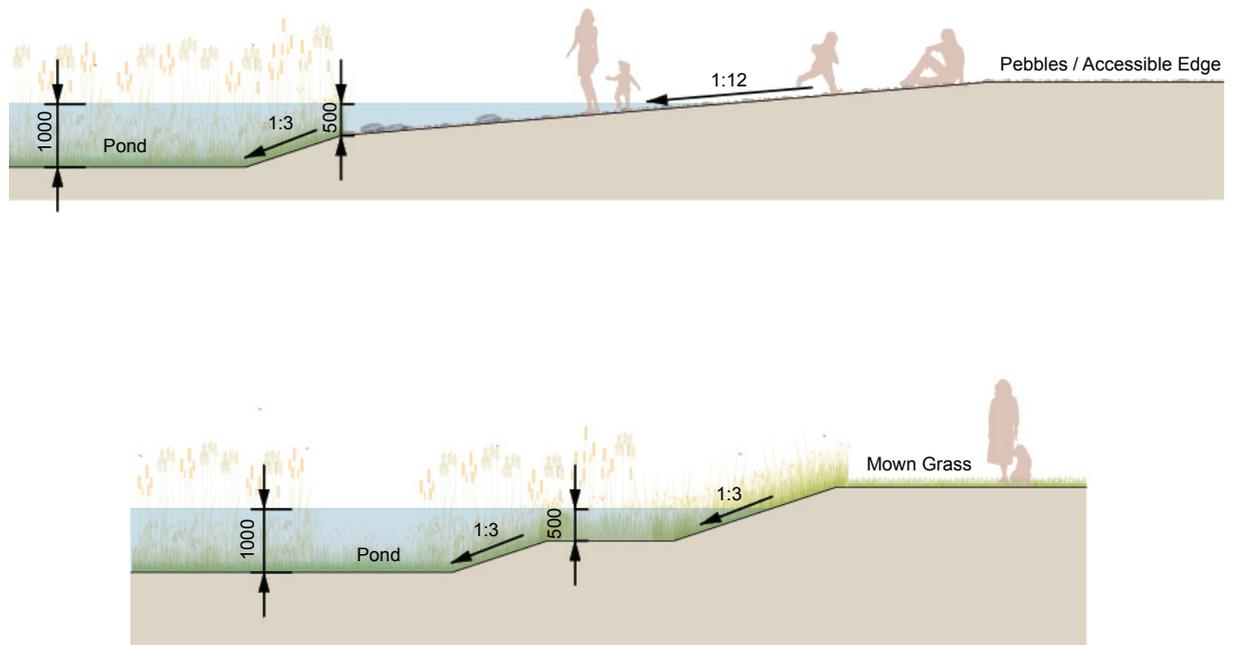
3A.27 Where pond edges are publicly accessible, the gradient of the internal pond slopes shall be 1:12, increasing to 1:3 at a depth of approximately 0.5 metres. Where a level shelf is created, the internal pond slope shall have a gradient of approximately 1:3 to a depth of 0.5 metres. The internal pond slope shall then have a gradient of approximately 1:3 from the level of the shelf to a depth of 1 metre as illustrated on Figure 3.3.

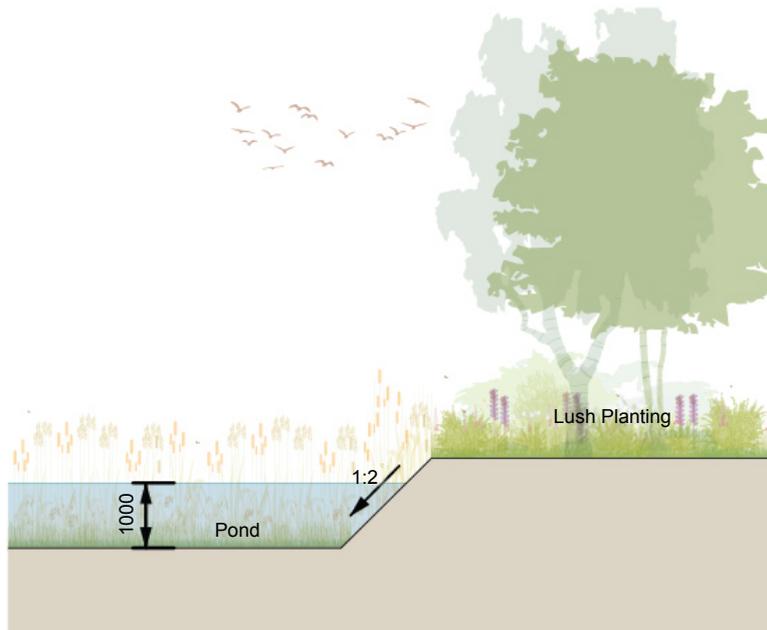
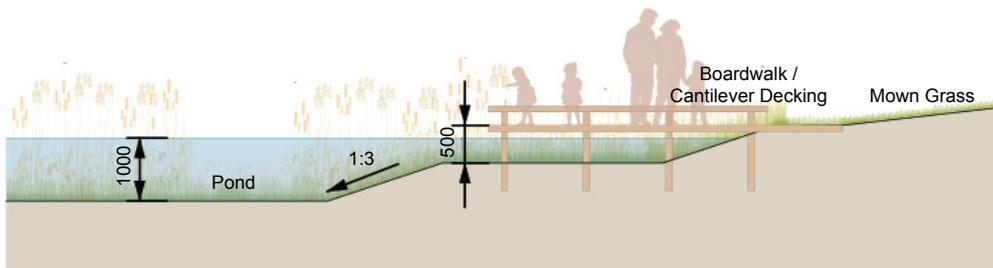
3A.28 Refer to Section 3D for Jetty/ Pond Dipping requirements.

**Figure 3.3: Example Ditch Sections**



**Figure 3.4: Example Pond Sections**





### Scrapes

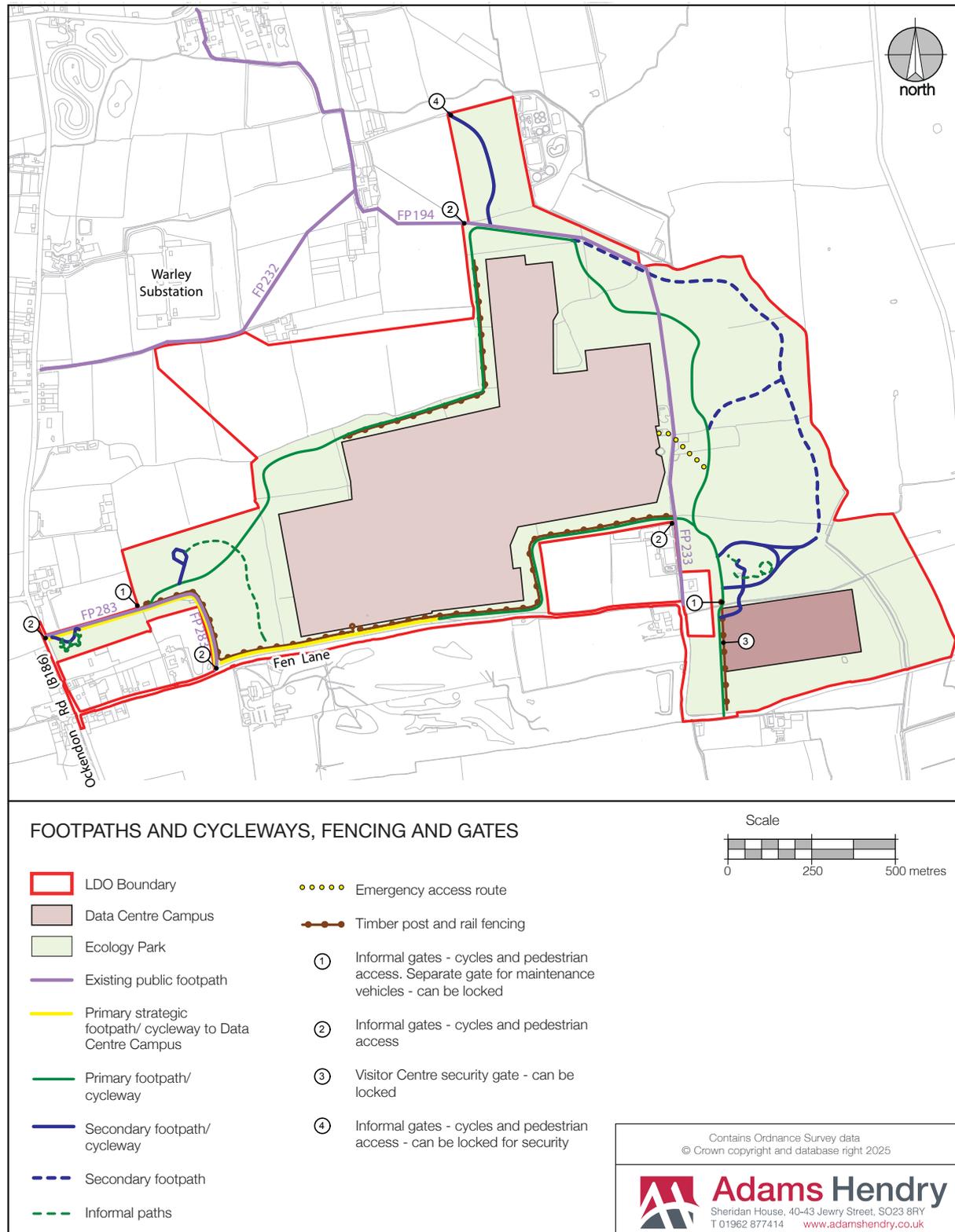
3A.29 Scrapes shall be provided in the seasonally wet grasslands shown on Figure 3.2. They shall be graded gradually from ground level towards the centre and be designed to ensure the maximum water depth in winter is 300mm, with an average depth of about 250mm. The scrapes shall be linked to each other and appear organic in shape.

### 3B Hard Landscaping

#### General Requirements

3B.1 Footpaths and cycleways shall be provided in accordance with Figure 3.5. Gradients shall not exceed 1:21.

Figure 3.5: Footpaths and cycleways, fencing and gates

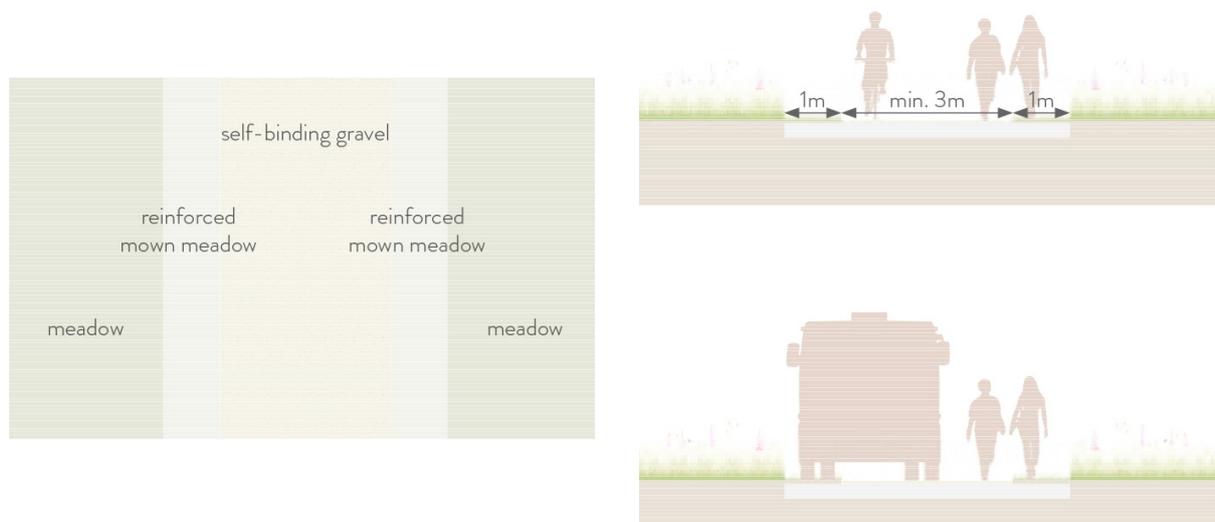


### Primary Strategic Footpath / Cycleway and Primary Footpath / Cycleway

3B.2 The primary strategic footpath/cycleway and primary footpath/cycleway shall be designed to the standards set out by the Department for Transport in the London Transport Note 1/20: Cycle Infrastructure Design (or as subsequently amended).

3B.3 The primary strategic footpath/cycleway and primary footpath/cycleway shall be at least 3m wide and finished with self-binding or resin bound gravel. A 1m wide geocell reinforced mown meadow strip shall be provided either side of the footpath / cycleway as shown in Figure 3.6 to enable use by maintenance vehicles.

**Figure 3.6: Primary Strategic Footpath/Cycleway and Primary Footpath/Cycleway**



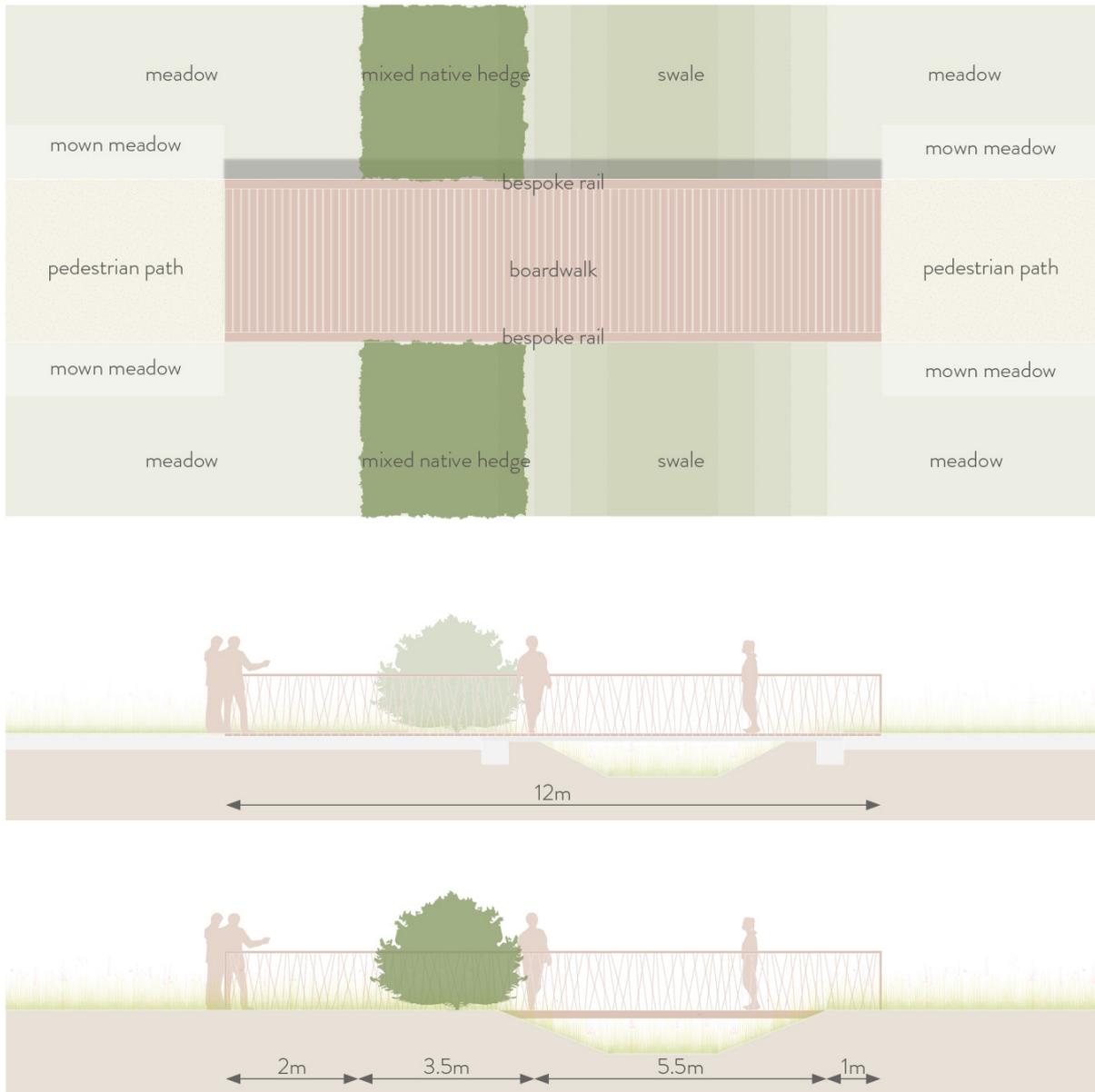
3B.4 An area of hardstanding with a minimum kerb to kerb turning radius of 8m to enable an LGV to turn around shall be provided at the entrance to the Ecology Park on Ockendon Road.

3B.5 Benches and/or seating made from natural and sustainable materials such as sustainably sourced wood certified by FSC shall be provided at regular intervals of no more than every 50m along the primary strategic footpath/cycleway and primary footpath/cycleway and at a location which is set back from the geocell reinforced mown meadow strip to not obstruct use.

3B.6 Hardstanding or geocell reinforced mown meadow shall be provided which extends by at least 1.2m on either side of each bench to enable wheelchair, mobility scooter and pushchair access.

3B.7 The pedestrian bridge over the existing swale north of the Visitors Centre shall be at least 3m wide and shall connect to the primary strategic footpaths and cycleways as shown in Figure 3.7. The bridge shall be of timber construction with barriers that are a minimum of 1.1 m high and gaps between the vertical railings no greater than 10cm. Structural engineering drawings of the pedestrian bridge shall be submitted to the local planning authority in accordance with Condition 36 of the LDO.

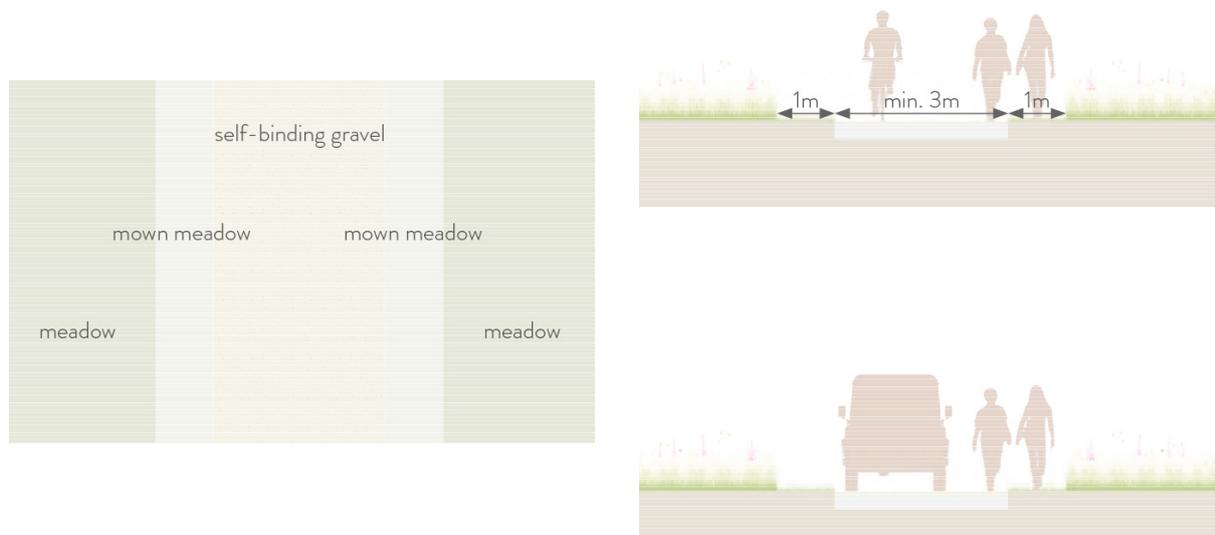
**Figure 3.7: Bridge Specification**



**Secondary Footpath / Cycleway and Emergency Access**

3B.8 The secondary footpath/cycleway and emergency access route shall be finished in self-binding gravel. The footpath/cycleway shall be at least 3m wide with a 1m wide mown meadow strip provided either side as shown in as shown on Figure 3.8. The emergency access route including the section within the Data Centre Campus (see Part 2, Figure 2.1) shall be at least 3m wide.

**Figure 3.8: Secondary Footpath and Cycleway**



**Secondary Footpath**

3B.9 The secondary footpath through the wetland areas shall comprise timber boardwalk and bridges constructed from decking boards. The boardwalk and bridges shall have a minimum clear width of 2m.

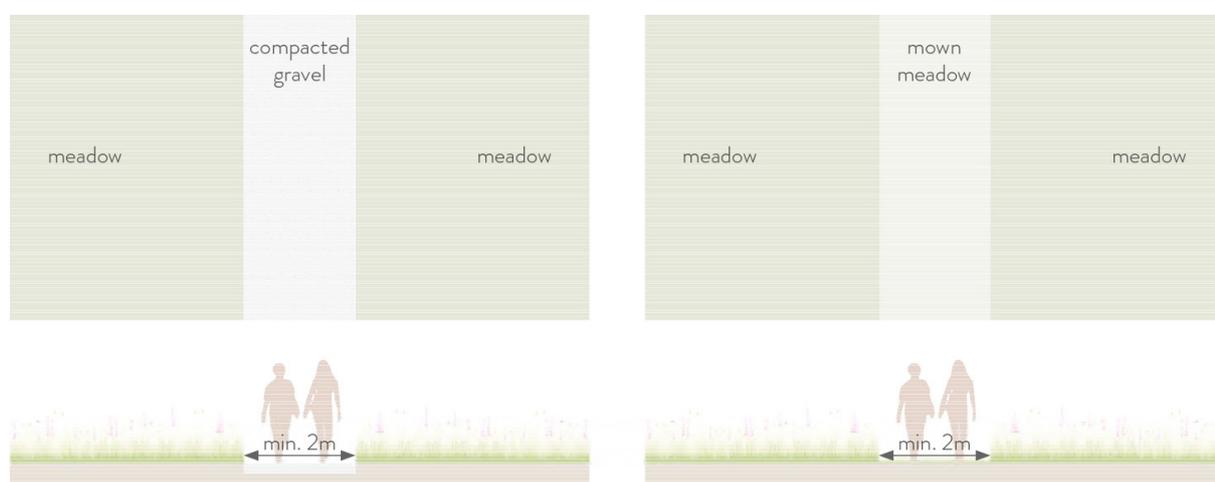
3B.10 Where the rise (fall) is less than 600mm, a timber knee rail shall be provided on both sides of the boardwalk and bridges. Where the rise (fall) is greater than 600mm, 1.1m high timber railings shall be provided on both sides of the boardwalk and bridges.

3B.11 The timber decking boards shall be a minimum of 50mm thickness with a maximum 12mm gap between boards. Anti slip measures shall be provided to improve grip for all weather conditions.

**Informal Paths**

3B.12 Informal paths shall comprise either mown and strimmed paths or compacted gravel. The paths shall be at least 2m wide as shown on Figure 3.9.

**Figure 3.9: Informal Paths**



## Boundary Treatments and Gates

3B.13 Boundary treatments and gates shall be provided in accordance with Figure 3.5. Timber post and rail fencing shall be a maximum of 1.2m high.

3B.14 Mixed native hedgerows shall be provided around the perimeter of the site. Planting shall be in accordance with the detailed soft landscaping specification as set out in Appendix 2. Timber post and rail fencing shall be used in areas where hedgerows are to be established.

3B.15 Wooden wheelchair accessible kissing gates shall be used at the access points to pedestrian and cycle routes at points 1 and 2 as shown on Figure 3.5. Wooden field gates shall be used for other access points and for maintenance access at point 1. Gates shall only be locked where detailed in Figure 3.5.

**Informal Field Gates**



**Post and Rail Fence**



**Mixed Native Hedgerows**



### 3C Landscaped Earth Mounds

3C.1 Earth arisings from construction activities within the Build Zones shall be reused within the Ecology Park to create landscape earth mounds.

3C.2 Mound zones 3, 4, 5, 6, 9a, 10, 11 and 12 shall be completed to a fixed height and profile as shown on Figure 3.10.

3C.3 Mound zones 1, 2, 7, 8, 9b, 13 and 14 shall not exceed the maximum height as shown on Figure 3.11. The final form will be dependent upon the volume of earth generated during the construction works.

3C.4 There shall be a variation in the height profile of the mounds along their length. The slope gradients of the mounds shall accord with the following design parameters:

- the slope gradient shall be 1:3 maximum to 1:6 where within a Woodland Buffer corridor or immediately adjacent to the Data Centre Campus boundary as illustrated in Figure 3.12;
- where facing the open landscape (away from site boundaries) and accessible from public footpaths, the slope gradients shall as a minimum range from 1:6 to 1:12 as illustrated in Figure 3.13. Where achievable, a softer gradient of 1:12+ shall be adopted; and
- footpath/cycleway gradients shall not exceed 1:21.

3C.5 The mounds shall be planted with trees and integrated into the surrounding ecology park.

3C.6 There shall be a minimum 5m offset from the toe of the mound to the defined tree/hedge root protection area as illustrated on Figure 3.13. For all other boundaries, a minimum mound offset of 3m shall be provided to maintain clear access routes.

3C.7 New hedges shall be offset by a minimum of 3m from the toe of any mound.

**Figure 3.10: Mounds with a Fixed Height and Profile**

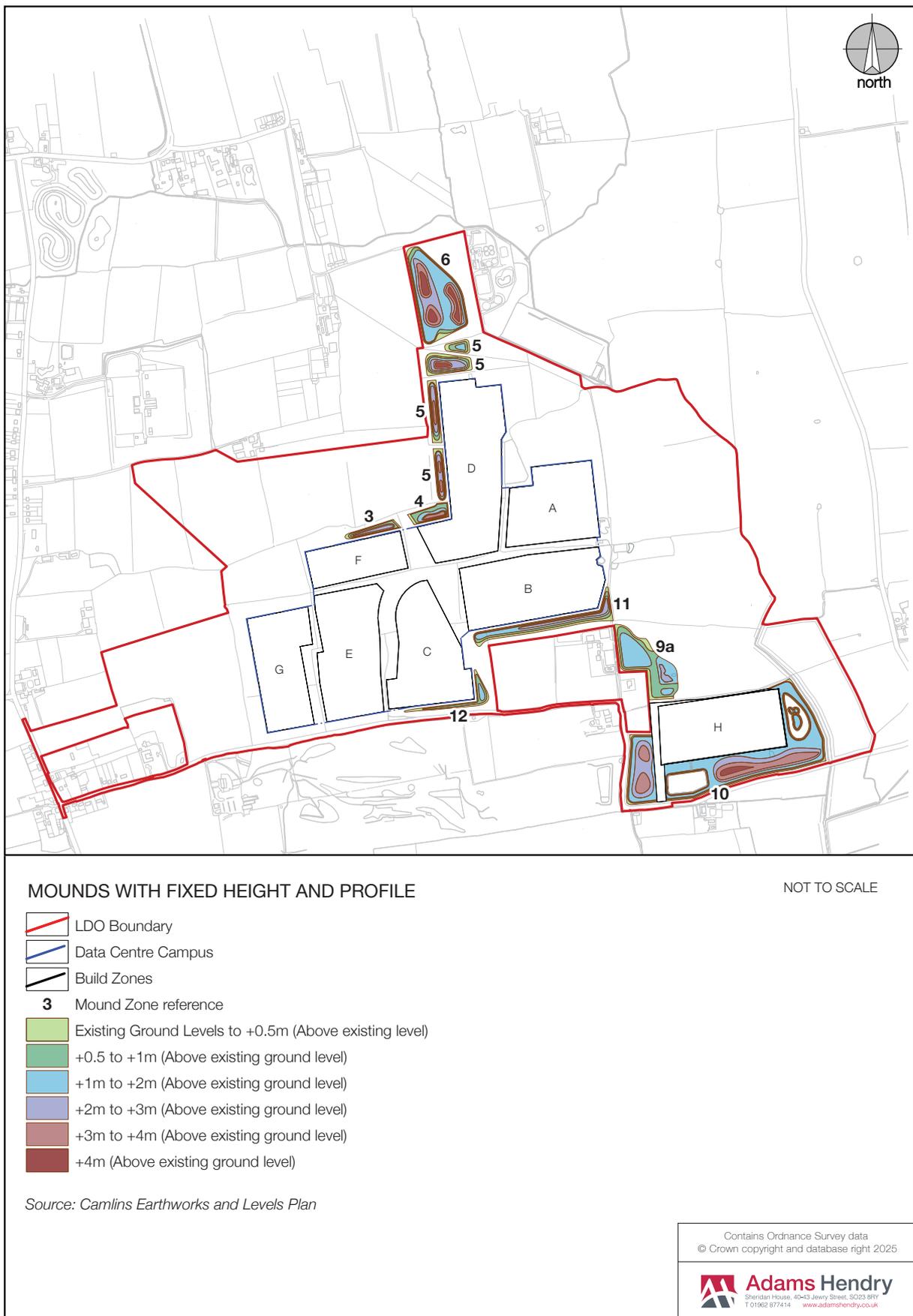


Figure 3.11: Mounding Heights

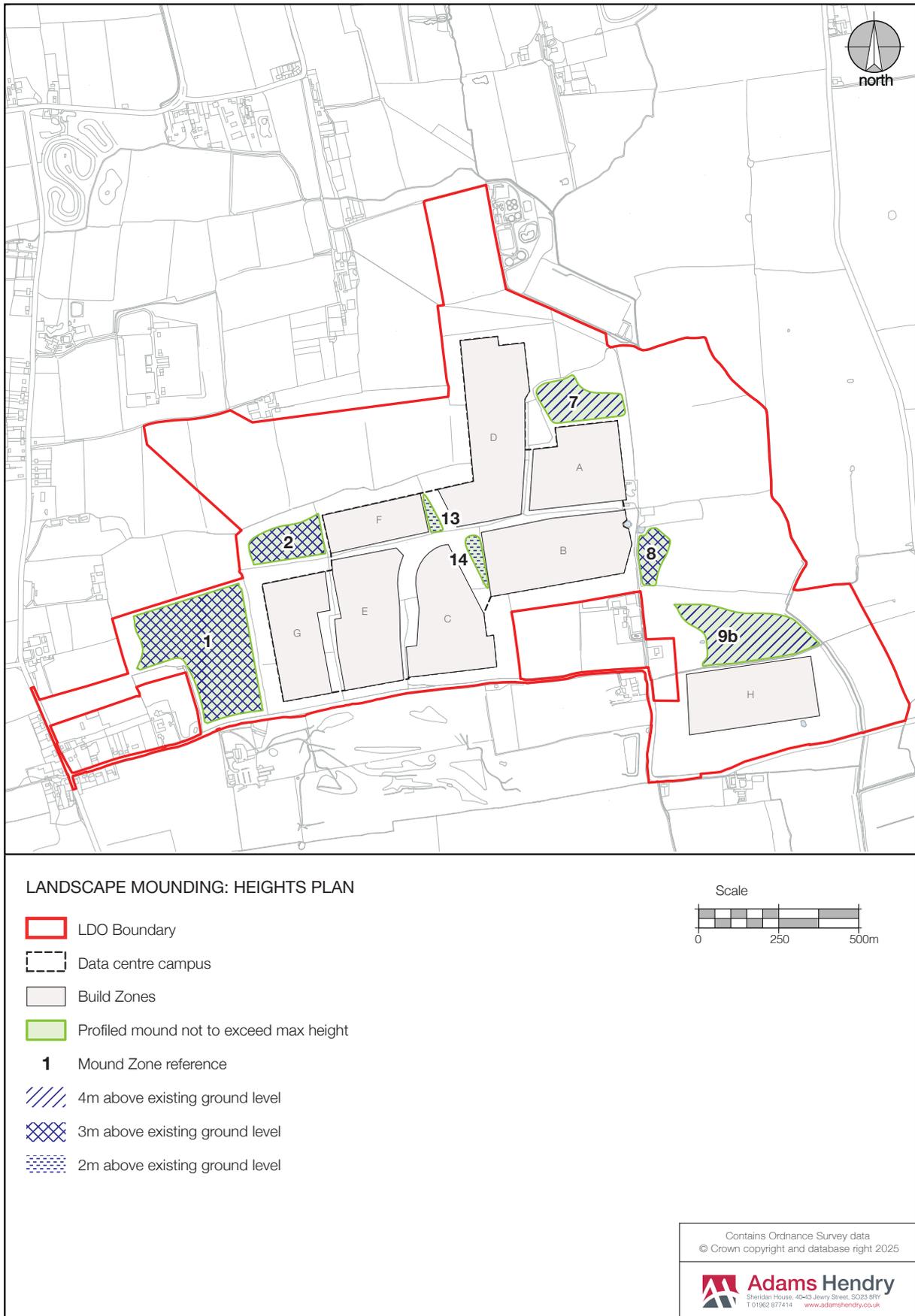


Figure 3.12: Mounds in Woodland Buffer corridors

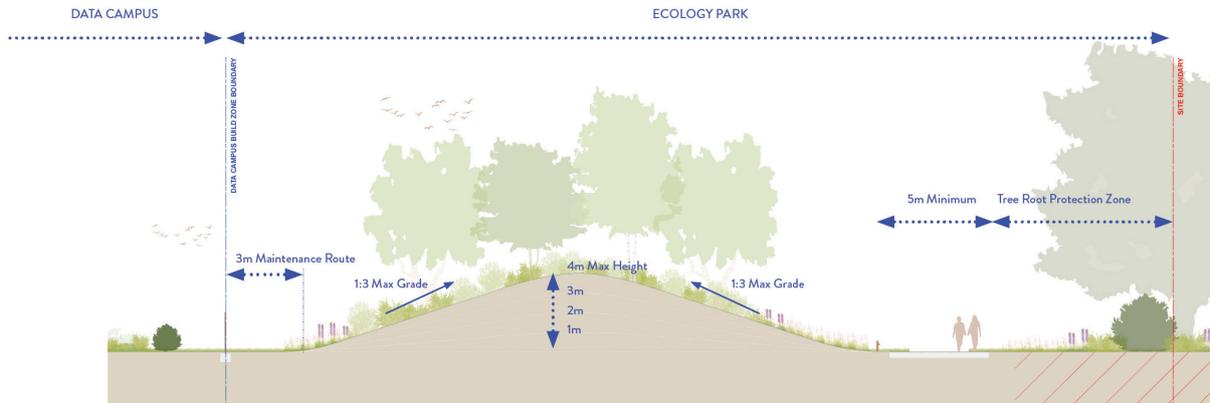
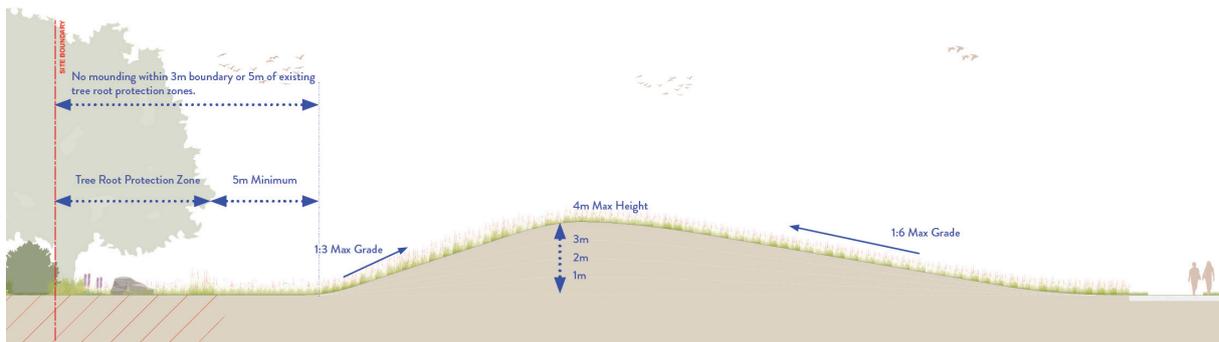


Figure 3.13: Mounds facing open landscape

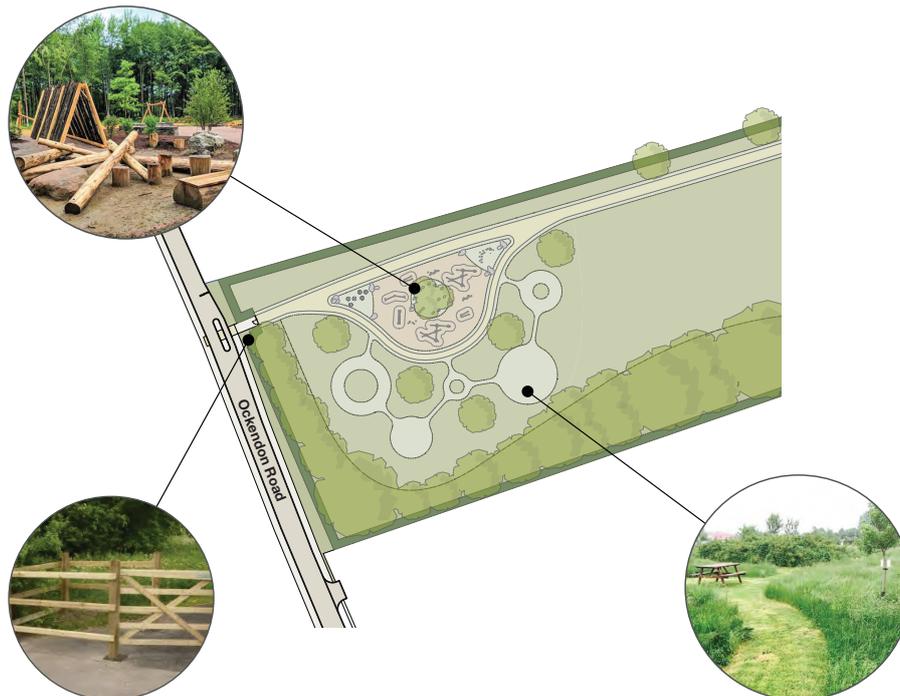


## 3D Visitor Provision

### Play Areas

3D.1 A Locally Equipped Area for Play (LEAP) shall be provided on the western side of the Ecology Park as indicatively shown on Figure 3.14. The play area shall be a minimum of 400 sqm and provide a variety of play equipment (refer to 3D.5 – 3D.11 for minimum specification).

**Figure 3.14: LEAP**



3D.2 Other areas of informal play shall be provided in the Ecology Park including provision on the eastern side near to the Visitor Centre as shown indicatively on Figure 3.15.

3D.3 Any item that is used for play shall comply with the guidance of the Royal Society for the Prevention of Accidents (RoSPA) and the BS EN 1176 series of standards for playground equipment.

3D.4 All play areas and items that are used for play shall be maintained in accordance with the requirements set out in Appendix 3.

### LEAP

3D.5 The LEAP shall provide at least five types of play equipment intended for early school age children (4-8 Years). At least two pieces of the play equipment shall be individual rather than part of a combination multi play unit.

3D.6 Each type of play equipment shall be designed to stimulate one of the following activities: balancing, rock climbing/agility, sliding, social play. Additional items may focus upon rotating, swinging, jumping, crawling, viewing, counting or touching

**Figure 3.15: Informal Play near to Visitor Centre**

3D.7 The play equipment shall be made from natural and/or sustainable materials such as:

- Timber and wood certified by Forest Stewardship Council (FSC).
- Recycled plastics and rubber with a minimum of 50% recycled content in accordance with the Global Recycled Standard (GRS).
- Natural rubber sourced following principles set out by the Global Platform for Sustainable Natural Rubber (GPSNR).

3D.8 A soft-landing surface (according with BS EN 1177) shall be provided around play equipment. Equipment shall be linked with a suitable pathway or surface. Coloured floors shall be provided in danger zones.

3D.9 As a minimum, 3 benches (each able to accommodate 3-4 adults) shall be provided for parents and/or carers made from natural and/or sustainable materials such as sustainably sourced wood certified by FSC. Waste bins shall be provided adjacent to the seating areas and comply with (refer to picnic areas section)

3D.10 The play area shall be enclosed by a 1m fence around the activity perimeter zone, with two outward opening self-closing gates to opposite sides of the play area. The play area shall be designated as a dog-free zone with signage displayed at all access points specifying 'No Dogs in Playground Area' in accordance with BS ISO 7010 standards, or as updated.

3D.11 A minimum of six cycle stands shall be provided near to the footpath/cycleway and play area. Design standards shall comply with Part 1, Section 1J.30, 1J.31 and 1J.33.

## Informal Play Areas

3D.12 Informal play areas shall comprise natural elements such as sand, logs, rocks and planting.

### Examples of Informal play areas



## Picnic Areas

3D.13 As a minimum, 2 picnic areas shall be provided with one located adjacent to the LEAP and the other near to an informal play area. Each picnic area shall comprise a minimum of 5 picnic tables and benches (each to accommodate at least 4 people) made from natural and/or sustainable materials such as:

- Timber and wood certified by Forest Stewardship Council (FSC).
- Recycled plastics with a minimum of 50% recycled content in accordance with the Global Recycled Standard (GRS).

3B.14 Each picnic table shall provide space to accommodate a wheelchair. The designs shall provide a clear knee space measuring a minimum of 750mm high, 500mm deep and 900mm wide. Hardstanding or geocell reinforced mown meadow shall also be provided which extends by at least 1.2m on either side of the picnic table to enable wheelchair, mobility scooter and pushchair access.

3D.15 A minimum of 2 waste bins shall be provided in each picnic area. Waste bins shall have a minimum of 2 compartments/bins for separating litter and recyclables.



### Bird Hides/Observation Towers

3D.16 Wildlife viewing stations and bird hides shall be provided in the Ecology Park constructed from timber and wood certified by Forest Stewardship Council (FSC).

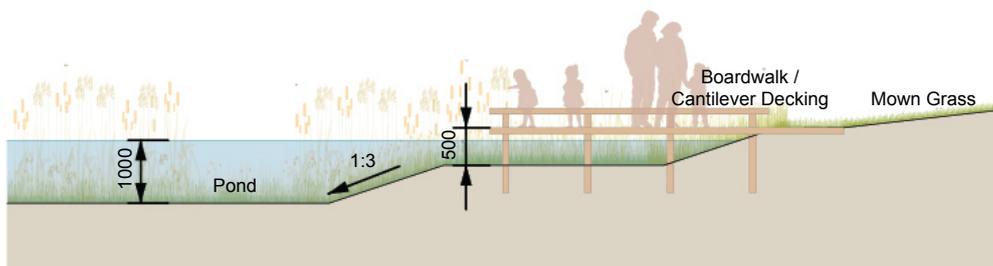
3D.17 As a minimum, an accessible bird hide shall be provided near to the Visitor Centre that can accommodate a minimum of 6 people including wheelchair users. The bird hide shall have a sloping ramp with a maximum gradient of 1:12.

3D.18 The overall height of any bird hide or viewing station shall not exceed 5 meters above the adjoining ground level.

### Jetty/ Pond Dipping

3D.19 A wooden boardwalk/ cantilever decking with a minimum width of 3m shall be provided to create a jetty to the pond adjacent to the Visitors Centre as shown indicatively on Figure 3.16. The wooden boardwalk/ cantilever decking shall be provided in an area where the depth of water does not exceed 0.5 metres (See Figure 3.16).

**Figure 3.16: Jetty/Pond Dipping**



### Wayfinding and Interpretation Boards

3D.20 Wayfinding signs shall be provided at all points where footpath/cycleways branch, intersect or change direction. The signs shall be visible from a distance, typically at eye level or above head height, and placed in areas that do not result in an obstruction.

3D.21 Educational interpretation boards shall be provided in the Ecology Park to inform the public of sensitive and ecologically important habitats.



### Maintenance Requirements

3D.22 General maintenance requirements for street furniture and visitor provision, play equipment and shared footpaths/ cycleways is set out in Appendix 3.

### 3E Lighting

3E.1 There shall be no external lighting in the Ecology Park other than along the primary strategic shared footpath/cycleway from Ockendon Road to the Data Centre Campus main entrance shown on Figure 1.19.

3E.2 The lighting installations shall not exceed the level of light intrusion, sky glow and luminaire intensity for an E2 Environmental Zone as shown in Part 1, Table 1.10. A drawing showing isolux contours shall accompany all prior notification submissions for development which includes lighting.

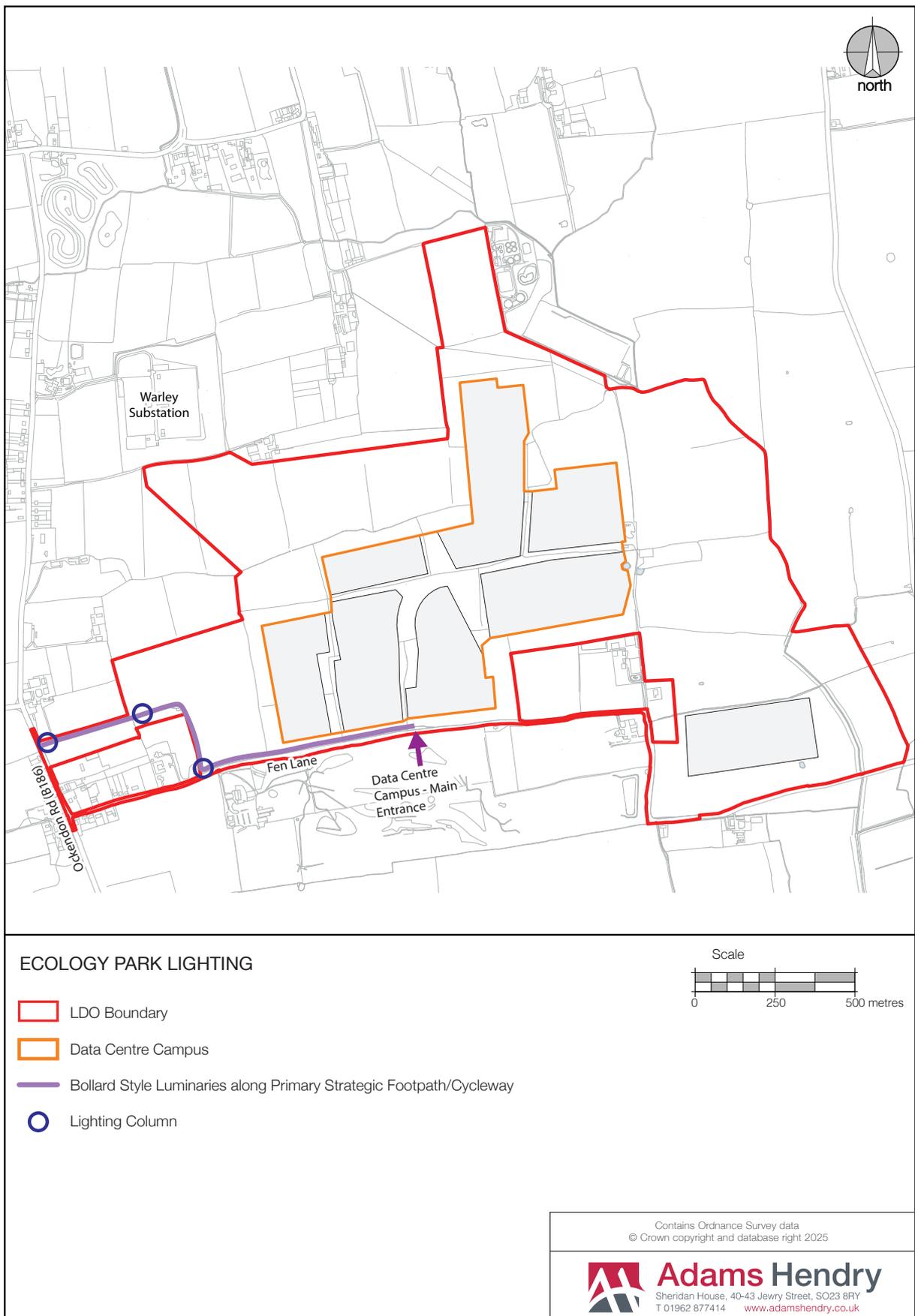
3E.3 The primary strategic shared footpath/cycleway shall be illuminated by bollard style luminaires, with low height lighting columns provided at intersections and other conflict zones as shown on Figure 3.17. Lighting shall be presence controlled, operating at dimmed levels under normal conditions and increasing to full output upon detection of personnel.

3E.4 Lighting parameters shall meet the requirements of Table 5 of BS EN 12464-2. The performance is as detailed below in Table 3.5.

**Table 3.5: Lighting Performance**

Equipment	Mounting height	Installation details	Average Illuminance	Uniformity	CRI	Colour temperature
Bollard style luminaire	~ 1m	Bollard with asymmetric AY optic	5 lux	0.25	>70	≤ 2700K
Lighting column	3-4 m	0° tilt	5 lux	0.40	>70	≤ 2700K

Figure 3.17: Lighting Columns



# Part 4: Highway Standards

## 4A General Requirements

4A.1 These design standards apply to all highway works on Fen Lane and Ockendon Road.

4A.2 All works shall accord with the highways drawings in Appendix 5 subject to submission and technical approval of the final details by the local highway authority as part of a s278 agreement under the Highways Act 1980.

4A.3 The highway drawings in Appendix 5 comprise:

- Appendix 5a: Fen Lane and Ockendon Road Drawings;
- Appendix 5b: Cross Sections;
- Appendix 5c: Long sections;
- Appendix 5d: Contours Plan;
- Appendix 5e: Fen Lane drainage drawings; and
- Appendix 5f: Construction detail drawing.

4A.4 The highway works on Fen Lane and Ockendon Road shall not be undertaken concurrently.

## 4B Highway Works on Fen Lane

4B.1 The carriageway on Fen Lane shall be widened to a width of 6.2 m between the junction with Ockendon Road and the eastern access road as shown on Fen Lane drawings in Appendix 5a.

4B.2 A new 1.5m footway on northern side of Fen Lane between Ockendon Road and east of the Ladyville Lodge Care Home shall be provided except in the area shown on Fen Lane drawings in Appendix 5 where the footway width shall be a minimum of 1.2m if 1.5m is demonstrated not to be feasible.

4B.3 The new footway shall tie-in to the proposed primary strategic footpath/cycleway through the ecology park.

4B.4 A new informal footpath link to the primary strategy footpath/cycleway in the ecology park opposite Top Meadow Golf Course shall be provided as shown on Fen Lane drawings in Appendix 5a.

### Drainage Requirements

4B.5 All works shall comply with the drainage layout drawings in Appendix 5e.

4B.6 Existing drainage gullies, including manhole covers and some headwalls, may be adjusted, and new gullies, may be installed where required with the approval of the Highway Authority under the s278 agreement.

4B.7 Hydroblocks shall be installed underneath the new footway to intercept surface water runoff in accordance with the drainage layout drawings in Appendix 5e.

## 4C Highway Works on Ockendon Road

4C.1 A new footway with a minimum width of 2m shall be provided on the eastern side of Ockendon Road from Fenland Nursery to the entrance to the Ecology Park on Ockendon Road as shown on Ockendon Road drawing in Appendix 5a.

4C.2 The existing traffic island and associated bollards on Ockendon Road shall be removed.

4C.3 A new informal crossing point and widened carriageway to provide a cycle lane shall be provided as shown on Ockendon Road drawing in Appendix 5a.

4C.4 The new informal crossing shall comprise a kerbed central island reservation with associated dropped kerbs and tactile paving on each side of the road. New road signs and associated bollards shall be provided.

### Drainage

4C.5 Existing roadside drainage gullies would be retained as shown on Ockendon Road drawing in Appendix 5a.

## 4D Lighting Standards

4D.1 New lighting shall be provided at locations shown on Figure 4.1.

4D.2 Lighting shall be designed to meet the performance requirements set out in BS 5489-1:2020 Design of Road Lighting, BS EN 13201 and PD CEN/TR 13201-1 (or as subsequently amended).

4D.3 The specifications of equipment set out in the London Borough of Havering's Developer's Street Lighting Guide June 2019 (or as subsequently amended) shall apply.

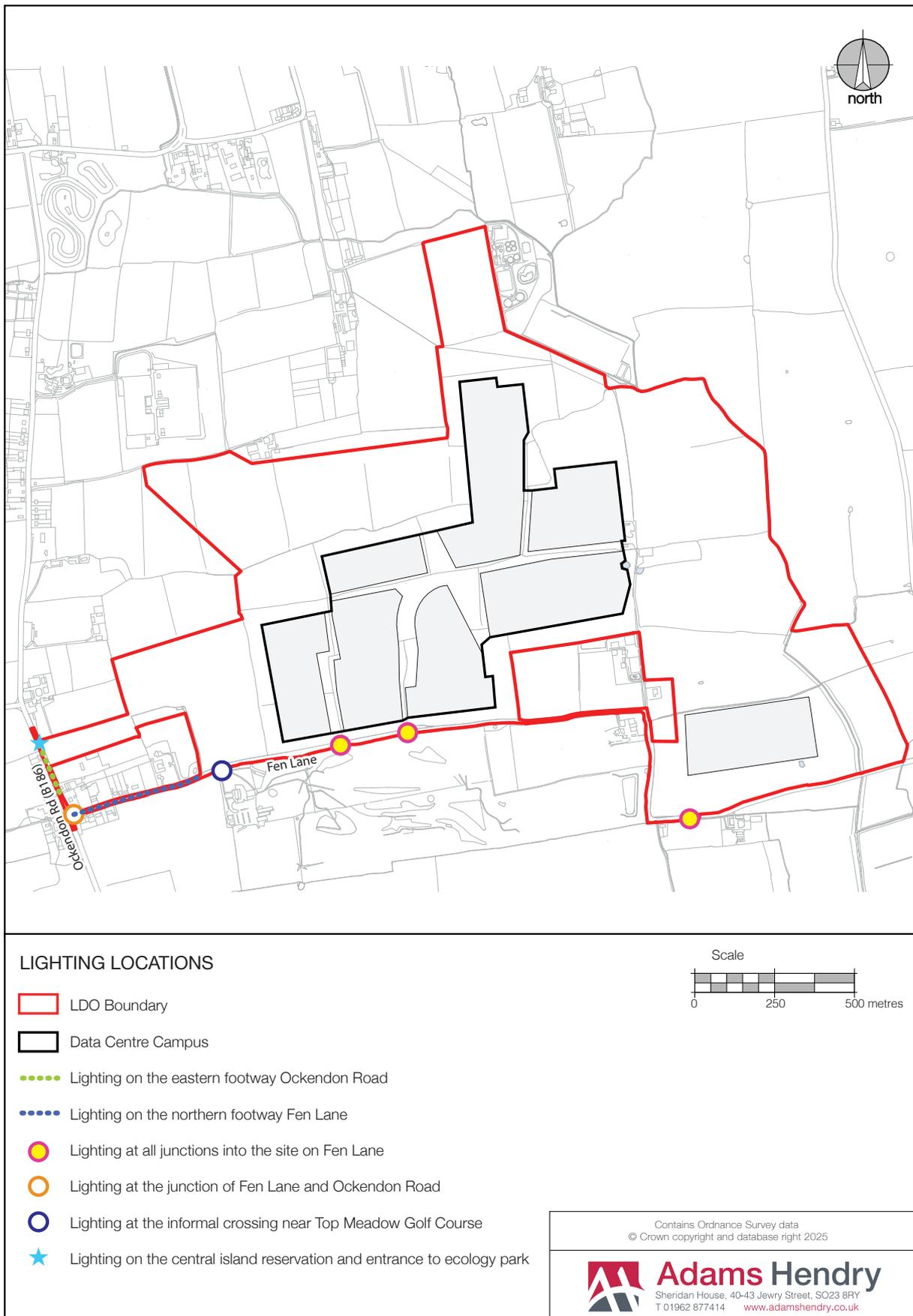
4D.4 To ensure the safety of electrical installations, all light shall comply with BS 7671: 2018+A3:2024 Requirements for Electrical Installations (or as subsequently amended).

## 4E Tree Protection Measures

4E.1 Individual trees along Fen Lane as identified in the Tree Works Schedule and Tree Protection Plans in Appendix 4 shall only be felled following further site investigation works with the approval of the local planning authority pursuant to condition 40 in Schedule 2 of the LDO.

4E.2 Localised pruning, trimming back of branches and removal of trees within groups may be undertaken in accordance with the Tree Works Schedule in Appendix 4.

Figure 4.1: Lighting Locations



## 4F Ecological Creation Features

4F.1 As a minimum, the specified number of each type of ecological feature shall be provided at the development stage as detailed in Table 4.1.

**Table 4.1: Ecological Features**

Ecological Feature	Phase 1
	Highway Works
Bird Boxes - House Sparrow	-
Bird Boxes - Swift	-
Bird Boxes - Song Birds	4
Bird Boxes – Open Fronted	4
Bird Boxes – Barn Owl	-
Sky Lark Plots)	-
Bat Boxes	4
Bat Hibernation Boxes	-
Hibernaculum (amphibians, reptiles, invertebrates)	1
Invertebrate Features (Bee boxes and hotels, Bee banks, Bee posts , Stumperies and log piles)	1

4F.2 The ecological features shall be provided in accordance with the detailed specifications as set out in Section 1M of Part 1.

# **Appendix 1:**

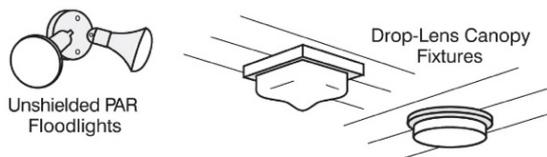
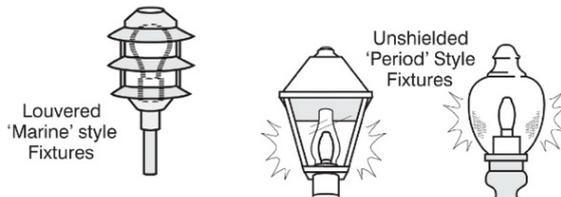
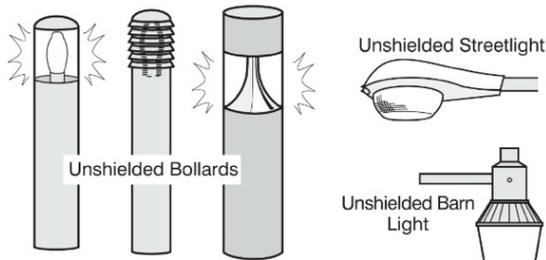
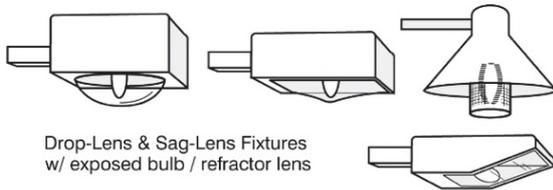
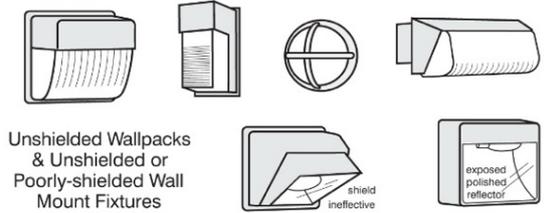
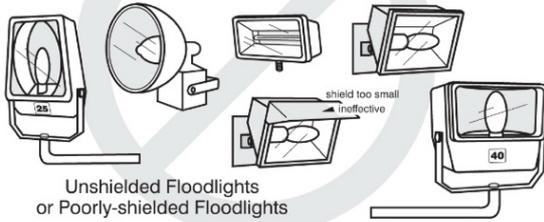
## **Accepted Luminaires**

The images below illustrate acceptable luminaires which are either DarkSky-approved fixtures certified by the International DarkSky Association or luminaires that meet recognised dark sky friendly performance criteria.

## Examples of Acceptable / Unacceptable Lighting Fixtures

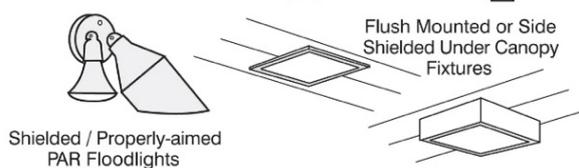
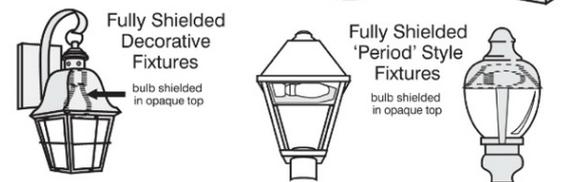
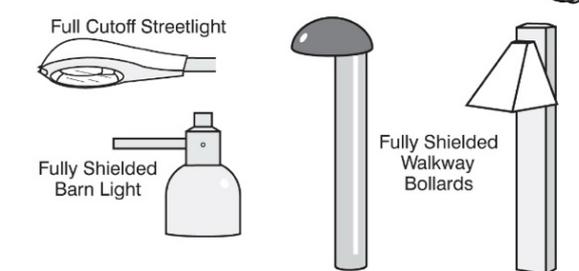
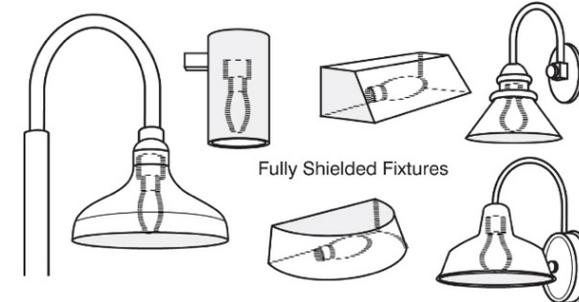
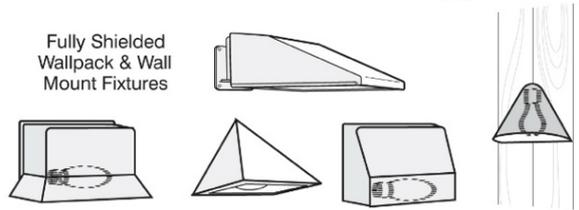
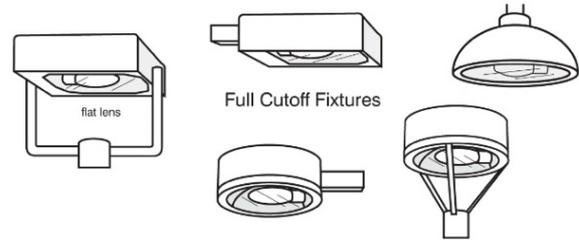
### Unacceptable / Discouraged

Fixtures that produce glare and light trespass



### Acceptable

Fixtures that shield the light source to minimize glare and light trespass and to facilitate better vision at night



# **Appendix 2: Soft Landscaping Specification**

# SOFT LANDSCAPE

## WET WOODLANDS

### TREES

- Alnus glutinosa* – (Alder)
- Betula pubescens* – (Downy Birch)
- Salix pentandra* – (Bay Willow)
- Salix alba* – (White Willow)
- Salix fragilis* – (Crack Willow)
- Salix cinerea* spp. *oleifolia* – (Grey Willow)
- Quercus petraea* – (Sessile Oak)

## BROADLEAF WOODLANDS

### TREES

- Populus tremula* – (Aspen)
- Betula utilis* ‘Edinburgh’ - (Birch ‘Edinburgh’)
- Betula pubescens* – (Downy Birch)
- Quercus robur* – (English Oak)
- Ulmus* ‘New Horizon’ - (Elm ‘New Horizon’)
- Ulmus* ‘Rebona’ - (Rebona Elm)
- Corylus avellana* - (Hazel)

## BUFFER WOODLANDS

### TREES

- Populus tremula* – (Aspen)
- Betula pendula* – (Silver Birch)
- Populus nigra* – (Black Poplar)
- Populus alba* – (White Poplar)
- Tilia cordata* – (Small-leaved Lime)
- Larix decidua* - (European larch)
- Pinus sylvestris* – (Scots Pine)

### UNDERSTOREY

- Prunus spinosa* - (Balckthorn)
- Malus sylvestris*– (Crab apple)
- Viburnum lantana* – (Wayfaring Tree)
- Viburnum opulus* – (Guelder Rose)
- Carpinus betulus* – (Hornbeam)

### UNDERSTOREY

- Malus sylvestris*– (Crab apple)
- Cornus sanguinea* – (Dogwood)
- Prunus avium* – (Wild Cherry)
- Crataegus monogyna* – (Hawthorn)
- Euonymus europaeus* – (Spindle)
- Viburnum opulus* – (Guelder Rose)

### UNDERSTOREY

- Prunus spinosa* - (Balckthorn)
- Ilex aquifolium* – (Holly)
- Cornus sanguinea* – (Dogwood)
- Hedera helix* – (Ivy)
- Cytisus scoparius* – (Broom)
- Rubus fruticosus* – (Bramble)
- Rosa canina* – (Dogrose)
- Lonicera periclymenum* – (Honeysuckle)
- Prunus avium* – (Wild Cherry)

*Betula pendula*



*Betula pubescens*



*Quercus robur*



*Salix cinerea*



*Betula utilis*



*Corylus avellana*



*Populus tremula*



*Alnus glutinosa*



*Salix alba*



*Salix fragilis*



*Prunus avium*



*Quercus petraea*



*Ulmus* ‘New Horizon’



*Ulmus* ‘Rebona’



*Populus nigra*



*Tilia cordata*



*Larix decidua*



*Pinus sylvestris*



*Malus sylvestris*



*Cornus sanguinea*



*Rubus fruticosus*



*Crataegus monogyna*



*Euonymus europaeus*



*Viburnum opulus*



# SOFT LANDSCAPE

## SEASONALLY WET GRASSLANDS (WETLANDS)

### WILDFLOWERS

- Dactylorhiza incarnata - (Early Marsh Orchid)
- Cirsium palustre - (Marsh Thistle)
- Trifolium pratense - (Red Clover)
- Petasites hybridus - (Butterbur)
- Llythrum salicaria - (Purple Loosestrife)
- Achillea millefolium - (Yarrow)
- Centaurea nigra - (Common Knapweed)
- Filipendula ulmaria - (Meadowsweet)
- Galium palustre - (Marsh Bed-straw)
- Hypericum tetrapterum - (Square Stemmed-wort)
- Hypochaeris radicata - (Common Cat's Ear)
- Lathyrus pratensis - (Meadow Vetchling)
- Leontodon autumnalis - (Autumn Hawkbit)
- Lotus corniculatus - (Common Bird's-foot Trefoil)
- Prunella vulgaris - (Self Heal)
- Sedum acre - (Yorkshire Fog)
- Succisa pratensis - (Devil's-bit Scabious)
- Vicia cracca - (Tufted Vetch)
- Stachys officinalis - (Betony)

### GRASSES

- Agrostis capillaris - (Common Bentgrass)
- Cynosurus cristatus - (Crested Dog's-tail)
- Festuca rubra spp. rubra - (Red Fescue)
- Poa nemoralis - (Smooth-stalked Meadow-grass)
- Anthoxanthum odoratum - (Sweet Vernal Grass)
- Alopecurus geniculatus - (Marsh Foxtail)
- Deschampsia cespitosa - (Tufted Hairgrass)

### TREES

- Quercus robur - (English oak)
- Ulmus 'Fiorente' - (Elm 'Fiorente')
- Acer campestre - (Field maple)
- Alnus glutinosa - (Alder)

Achillea millefolium



Centaurea nigra



Filipendula ulmaria



Galium palustre



Hypericum tetrapterum



Hypochaeris radicata



Leontodon autumnalis



Lotus corniculatus



Prunella vulgaris



Sedum acre



Stachys officinalis



Succisa pratensis



Cynosurus cristatus



Festuca rubra ssp rubra



Poa nemoralis



Anthoxanthum odoratum



Alopecurus geniculatus



Deschampsia cespitosa



Quercus robur



Ulmus 'Fiorente'



Acer campestre



Alnus glutinosa



# SOFT LANDSCAPE

## MEADOWS

### WILDFLOWERS

- Achillea millefolium – (Yarrow)
- Centaurea nigra – (Black knapweed)
- Galium verum – (Lady’s bedstraw)
- Hypochaeris radicata – (Common cat’s-ear)
- Lathyrus pratensis – (Meadow vetchling)
- Leontodon autumnalis – (Autumn hawkbit)
- Leucanthemum vulgare – (Ox-eye daisy)
- Lotus corniculatus – (Common bird’s-foot trefoil)
- Pimpinella saxifrage – (Burnet saxifrage)
- Plantago lanceolate – (Ribwort plantain)
- Primula veris – (Cowslip)
- Prunella vulgaris – (Selfheal)
- Ranunculus acris – (Meadow buttercup)
- Rhinanthus minor – (Yellow rattle)
- Rumex acetosa – (Common sorrel)
- Sanguisorba officinalis – (Great burnet)
- Stachys officinalis – (Betony)
- Succisa pratensis – (Devil’s bit-scabious)
- Vicia cracca – (Tufted vetch)

### GRASSES

- Agrostis castellana – (Common bent)
- Anthoxanthum odoratum – (Sweet vernal grass)
- Briza media – (Quaking grass)
- Cynosurus cristatus – (Crested dog’s-tail)
- Festuca rubra ssp litoralis – (Slender Creeping Red Fescue)
- Festuca rubra ssp rubra – (Red fescue)
- Trisetum flavescens – (Yellow oat grass)

### TREES

- Quercus robur – (English oak)
- Ulmus ‘Fiorente’ – (Elm ‘Fiorente’)
- Acer campestre – (Field maple)
- Alnus glutinosa – (Alder)

Centaurea nigra



Galium verum



Hypochaeris radicata



Lathyrus pratensis



Leontodon autumnalis



Leucanthemum vulgare



Ranunculus acris



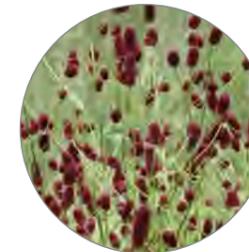
Rhinanthus minor



Rumex acetosa



Sanguisorba officinalis



Stachys officinalis



Succisa pratensis



Anthoxanthum odoratum



Briza media



Cynosurus cristatus



Festuca rubra ssp litoralis



Festuca rubra ssp rubra



Trisetum flavescens



Quercus robur



Ulmus ‘Fiorente’



Acer campestre



Alnus glutinosa



# SOFT LANDSCAPE

## NEUTRAL GRASSLAND

### WILDFLOWERS

- Centaurea nigra (Common Knapweed)
- Leucanthemum vulgare (Oxeye Daisy)
- Rhinanthus minor (Yellow Rattle)
- Trifolium pratense (Red Clover)
- Vicia cracca (Tufted Vetch)
- Plantago lanceolata (Ribwort Plantain)
- Lathyrus pratensis (Meadow Vetchling)
- Prunella vulgaris (Self-heal)
- Lotus corniculatus (Bird's-foot Trefoil)
- Campanula rotundifolia (Harebell)

### GRASSES

- Festuca rubra (Red Fescue)
- Agrostis capillaris (Common Bent Grass)
- Cynosurus cristatus (Crested Dog's-tail)
- Phleum pratense (Timothy Grass)
- Alopecurus pratensis (Meadow Foxtail)
- Anthoxanthum odoratum (Sweet Vernal-grass)
- Dactylis glomerata (Cock's-foot)
- Bromus hordeaceus (Soft Brome)

\* Note: To establish a naturalistic neutral grassland, the seed mix should mirror traditional lowland meadows or neutral pastures, which typically thrive on moderate-fertility soils with a pH between 5.5 and 7.5. The goal is to create a diverse, species-rich sward where grasses form the dominant structure (70-80%), providing stability while allowing wildflowers to flourish.

### TREES

- Quercus robur – (English oak)
- Ulmus 'Fiorente' – (Elm 'Fiorente')
- Acer campestre – (Field maple)
- Alnus glutinosa – (Alder)

Centaurea nigra



Leucanthemum vulgare



Rhinanthus minor



Trifolium pratense



Vicia cracca



Plantago lanceolata



Lathyrus pratensis



Prunella vulgaris



Lotus corniculatus



Campanula rotundifolia



Agrostis capillaris



Cynosurus cristatus



Phleum pratense



Festuca rubra



Alopecurus pratensis



Anthoxanthum odoratum



Dactylis glomerata



Bromus hordeaceus



# SOFT LANDSCAPE

## PERMANENT WATER BODY

### MARGINAL

- Caltha palustris – (Marsh Marigold)
- Iris pseudacorus – (Yellow Flag Iris)
- Ranunculus flammula – (Lesser Spearwort)
- Veronica beccabunga – (Brooklime)
- Trollius europaeus – (Globeflower)
- Phragmatis australis – (Common Reed)
- Sedum acre – (Yorkshire Fog)
- Anthoxanthum odoratum – (Sweet Vernal Grass)
- Schoenoplectus lacustris – (Common Club-rush)
- Glyceria maxima – (Reed Sweet-grass)
- Briza media – (Quaking Grass)
- Cynosurus cristatus – (Crested Dog's-tail)
- Juncus effusus – (Soft Rush)
- Carex riparia – (Greater Pond Sedge)

### AQUATIC

- Ceratophyllum demersum - (Rigid Hornwort)
- Myriophyllum spicatum - (Spiked Water-milfoil)
- Pilularia globulifera – (Pillwort)
- Mentha aquatica – (Watermint)
- Ranunculus aquatilis – (Common Water-crowfoot)
- Nymphaeaceae lutea – (Water Lily)
- Hottonia alustris – (Water Violet)
- Menyanthes trifoliata – (Bogbean)
- Myosotis scorpioides – (Water Forget-me-not)
- Hydrocharis morsus-ranae – (Frogbit)

Iris pseudacorus



Ranunculus flammula



Veronica beccabunga



Trollius europaeus



Phragmatis australis



Sedum acre



Schoenoplectus lacustris



Glyceria maxima



Briza media



Cynosurus cristatus



Juncus effusus



Carex riparia



Myriophyllum spicatum



Pilularia globulifera



Mentha aquatica



Ranunculus aquatilis



Hottonia alustris



Hydrocharis morsus-ranae



# SOFT LANDSCAPE

## SUDS FEATURES:

### BIORETENTION SWALES & RAIN GARDENS

#### HERBACEOUS

- Ajuga reptans (Bugle)
- Aquilegia spp. (Columbine)
- Aster spp. (Aster)
- Bog Sage (Salvia uliginosa)
- Campanula glomerata (Clustered bellflower)
- Cardinal Flower (Lobelia cardinalis)
- Eupatorium cannabinum (Hemp agrimony)
- Globeflower (Trollius europaeus)
- Helleborus foetidus (Stinking hellebore)
- Iris pseudacorus (Yellow flag Iris)
- Marsh Marigold (Caltha palustris)
- Osmunda regalis (Royal Fern)
- Primula veris (Cowslip)
- Sedges (Carex spp.)
- Water Mint (Mentha aquatica)

#### SHRUBS

- Corylus avellana (Hazel)
- Crataegus monogyna (Hawthorn)
- Cornus sanguinea (Dogwood)
- Ribes sanguineum (Flowering currant)
- Salix cinerea (Grey willow)
- Viburnum opulus (Guelder-rose)

Corylus avellana



Crataegus monogyna



Viburnum opulus



Cornus sanguinea



Ribes sanguineum



Salix cinerea



Mentha aquatica



Ajuga reptans



Aquilegia spp.



Campanula glomerata



Eupatorium cannabinum



Helleborus foetidus



Iris pseudacorus



Osmunda regalis



Primula veris



Lobelia cardinalis



Trollius europaeus



Caltha palustris



# SOFT LANDSCAPE

## VISITOR CENTRE & BUILD ZONE PLANTING

### HERBACEOUS

- Anthyrium felix-femina (Lady Fern)
- Geranium phaeum (Dusky cranesbill)
- Anthoxanthum odoratum (Sweet vernal grass)
- Festuca rubra commutata (Red fescue)
- Matteucia struthiopteris (Ostrich Fern)
- Silene dioica (Red campion)
- Prunella vulgaris (Self Heal heal)
- Stachys officinalis (Betony)
- Allium ursinum (Wild garlic)
- Circaea lutetiana (Enchanter's nightshade)
- Deschampsia cespitosa (Tufted-hair grass)
- Llythrum spicaria (Purple loosestrife)
- Galium palustre (Marsh bed-straw)
- Myosotis scorpioides (Water forget-me-not)
- Hosta undulata (Wavy plantain lilly)
- Brunnera macrophylla (Siberian bugloss)
- Hyacinthoides non-scripta (Bluebells)
- Crocus sativus (Crocus)
- Narcissus (Duffodils)
- Lavandula angustifolia 'Hidcote' (English Lavender 'Hidcote')
- Nicotiana sylvestris (Tobacco Plant)
- Oenothera biennis (Evening Primrose)
- Silene noctiflora (Night-Flowering Catchfly)

### SHRUBS

- Cornus sanguinea (Dogwood)
- Viburnum opulus (Guelder rose)
- Sambucus nigra (Common elder)
- Viburnum lantata (Wayfaring)
- Hamamelis mollis (Chinese witch hazel)
- Jasminum officinale (Common Jasmine)
- Lonicera periclymenum (Common Honeysuckle)

Anthyrium felix-femina



Geranium phaeum



Anthoxanthum odoratum



Festuca rubra



Matteucia struthiopteris



Silene dioica



Prunella vulgaris



Stachys officinalis



Allium ursinum



Circaea lutetiana



Deschampsia cespitosa



Lythrum spicaria



Galium palustre



Myosotis scorpioides



Hosta undulata



Brunnera macrophylla



Hyacinthoides non-scripta



Crocus sativa



Narcissus



Cornus sanguinea



Viburnum opulus



Sambucus nigra



Viburnum lantata



Hamamelis mollis



# SOFT LANDSCAPE

## MIXED NATIVE HEDGEROW

- Crataegus monogyna - (Hawthorn) - 50%
- Prunus padus - (Bird Cherry) - 10%
- Corylus avellana - (Hazel) - 10%
- Acer campestre - (Field Maple) - 10%
- Prunus spinosa - (Blackthorn) - 10%
- Rosa canina - (Dog Rose) - 10%

Crataegus monogyna



Prunus padus



Corylus avellana



Acer campestre



Prunus spinosa



Rosa Canina



## DITCHES & REED BEDS

### MARGINAL & HERBACEOUS

- Caltha palustris - (Marsh Marigold)
- Iris pseudacorus - (Yellow Flag Iris)
- Ranunculus flammula - (Lesser Spearwort)
- Veronica beccabunga - (Brooklime)
- Trollius europaeus - (Globeflower)
- Phragmites australis - (Common Reed)
- Sedum acre - (Yorkshire Fog)
- Anthoxanthum odoratum - (Sweet Vernal Grass)
- Schoenoplectus lacustris - (Common Club-rush)
- Glyceria maxima - (Reed Sweet-grass)
- Briza media - (Quaking Grass)
- Cynosurus cristatus - (Crested Dog's-tail)
- Juncus effusus - (Soft Rush)
- Carex riparia - (Greater Pond Sedge)
- Dryopteris filix-mas - (Male Fern)
- Asplenium scolopendrium - (Hart's-tongue fern)
- Vinca major - (Greater periwinkle)
- Carex pendula - (Pendulous Sedge)
- Carex vulpina - (True Fox-sedge)

Schoenoplectus lacustris



Glyceria maxima



Briza media



Cynosurus cristatus



Juncus effusus



Carex riparia



Asplenium scolopendrium



Dryopteris filix-mas



Vinca major



Carex vulpina



Veronica beccabunga



Sedum acre



Salix viminalis



Prunus spinosa



Frangula alnus



Hedera helix



Rubus fruticosus



Cornus sanguinea



## SHRUBS

- Salix viminalis - (Common Osier)
- Prunus spinosa - (Blackthorn)
- Frangula alnus - (Alder Buckthorn)
- Hedera helix - (Ivy)
- Rubus fruticosus - (Bramble)
- Cornus sanguinea - (Common dogwood)

**Appendix 3:  
Schedule of General Maintenance  
Requirements for Street Furniture and  
Visitor Provision, Play Equipment and  
Footpaths/Cycleways**

## **Street Furniture and Visitor Provision (except Play Equipment)**

- 1.1 Street furniture and visitor facilities comprise all fixed outdoor objects and equipment in public spaces such as benches, bins, picnic benches/tables, bollards, bird hides and observation towers.
- 1.2 The following general maintenance shall be undertaken:
- Monthly inspections of all street furniture and visitor provision (structural, fixings, cleanliness).
  - Regular cleaning and graffiti removal (often monthly or more frequently)
  - Litter bins emptied every 1–2 weeks (varies by use levels/season)
  - Repair/replacement arranged soon after defects are found. Dangerous items shall be repaired or made safe within 24 hours, while routine works shall be completed within 30 working days.

## **Play Equipment**

- 1.3 Play equipment maintenance shall be in compliance with Royal Society for the Prevention of Accidents (RoSPA) requirements and BS EN 1176 series.
- 1.4 The following inspections shall be carried out:
- Routine visual inspections shall be conducted daily or weekly, depending on usage. These checks shall help identify obvious hazards such as loose bolts, broken parts, sharp edges, or vandalism. Inspectors shall also ensure the area is free from litter, hazardous objects, and standing water. Moving parts like swings and roundabouts shall be checked for smooth operation, while corrosion, splintering wood, and rust shall be monitored. In the LEAP, daily inspections are recommended, while weekly checks may suffice for lower-use playgrounds.
  - Operational inspections shall be conducted quarterly, involving a more detailed examination of the play equipment's structural integrity. This shall include assessing the condition of surfacing materials, checking for wear on moving parts like bearings and chains, and ensuring drainage systems are functioning effectively. These inspections shall help prevent long-term damage and extend the life of the equipment.
  - An annual main inspection shall be carried out every 12 months by a qualified professional, such as a RoSPA-registered inspector to ensure compliance with BS EN 1176 safety standards, to assesses wear and structural integrity, and test the impact attenuation of safety surfacing. The inspector shall also recommend necessary repairs, replacements, or upgrades to maintain a safe play environment.
  - A logbook shall be maintained to track all inspections and repairs, record any accidents or incidents, and store manufacturer guidelines and warranty information.
  - Post-storm checks shall be undertaken to identify weather-related damage and shall be recorded in the logbook. An updated risk assessment shall be prepared if modifications or repairs are made.

## **Self-Binding or Resin Bound Gravel Footpaths/Cycleways**

- 1.5 Routine visual inspections shall be conducted weekly.
- 1.6 For self-binding gravel, the following maintenance shall be carried out:

- The footpath/cycleway shall be regularly swept with a stiff brush to remove leaves, twigs, and debris.
- Weeds shall be pulled by hand when they appear. Harsh chemical weed killers shall not be used as they can damage the binder.
- During dry spells, the top layer may feel loose. In this instance, the surface shall be raked and sprayed lightly with water and compacted again with a hand roller or whacker plate.
- Small, localised potholes shall be repaired immediately to prevent them from growing.
- If the surface becomes heavily worn, the top 25-35mm can be scarified (broken up) and a new layer of gravel added, watered, and compacted.

1.7 For resin-bound gravel, the following maintenance shall be carried out:

- The footpath/cycleway shall be regularly swept with a stiff brush to remove leaves, twigs, and debris.
- Pressure washing (jet wash) shall be carried out annually to remove dirt, grime, and moss, particularly in shady areas.
- While resistant to weeds, air-blown seeds can take root. These shall be removed by hand or treated with a weed killer, provided it is a non-solvent-based product.

### **Boardwalks and Bridges**

- Routine visual inspections shall be conducted weekly to check for warped boards and popped screws.
- Debris, dirt and algae shall be removed to prevent slippery, hazardous conditions.
- Replacement of decaying timber, tightening/replacement of fasteners, and repair of support posts shall be carried out as required.
- Regular checks shall be carried out to ensure timber knee rails and railings are in place and that the surface remains slip resistant.