

DUNSBURY HILL FARM, HAVANT

DESIGN CODE





Revision	Date	Status	Authorised
P1	14/09	Draft Review	JR
P2	17/09	Draft Review	JR
P3	07/10	Submission	JR

Dunsbury Hill Farm

Design Code



1.0 Introduction



2.0 Overview



3.0 Aspirations



4.0 Access and Movement Framework



5.0 Landscaping and Ecology



6.0 Building Design Principles and Plot Layout



7.0 Sustainability



1

Dunsbury Hill Farm

1.0 Introduction



1.1 Synopsis

This code is concerned with establishing a sense of place and cohesive aesthetic for the development at Dunsbury Hill Farm.

This guide will set out a clear vision and principles and serve as a benchmark for the character of the plots within the development.



1.2 What is a Design code?

A design code is a site specific set of design guidelines and principles to define development quality without prescribing the final outcome.

This document forms part of the planning conditions and is to be read in conjunction with Dunsbury Hill Farm Design and Access Statement March 2012.



1.3 What Are The Benefits?

Early establishment of the Design Code will allow greater clarity for developers and speed up the process of approvals, whilst ensuring the success of the final product.

2

Dunsbury Hill Farm 2.0 Overview



2.1 Summary

The development consists of 8 plots and will be mixed use comprising of Commercial Office, Manufacturing, Warehouses, small scale Retail and Hotel.

Project time-line: Commencing 2015
Client: Portsmouth County Council
Site Area: 32.9 Hectares



2.2 Phasing

Phase 1

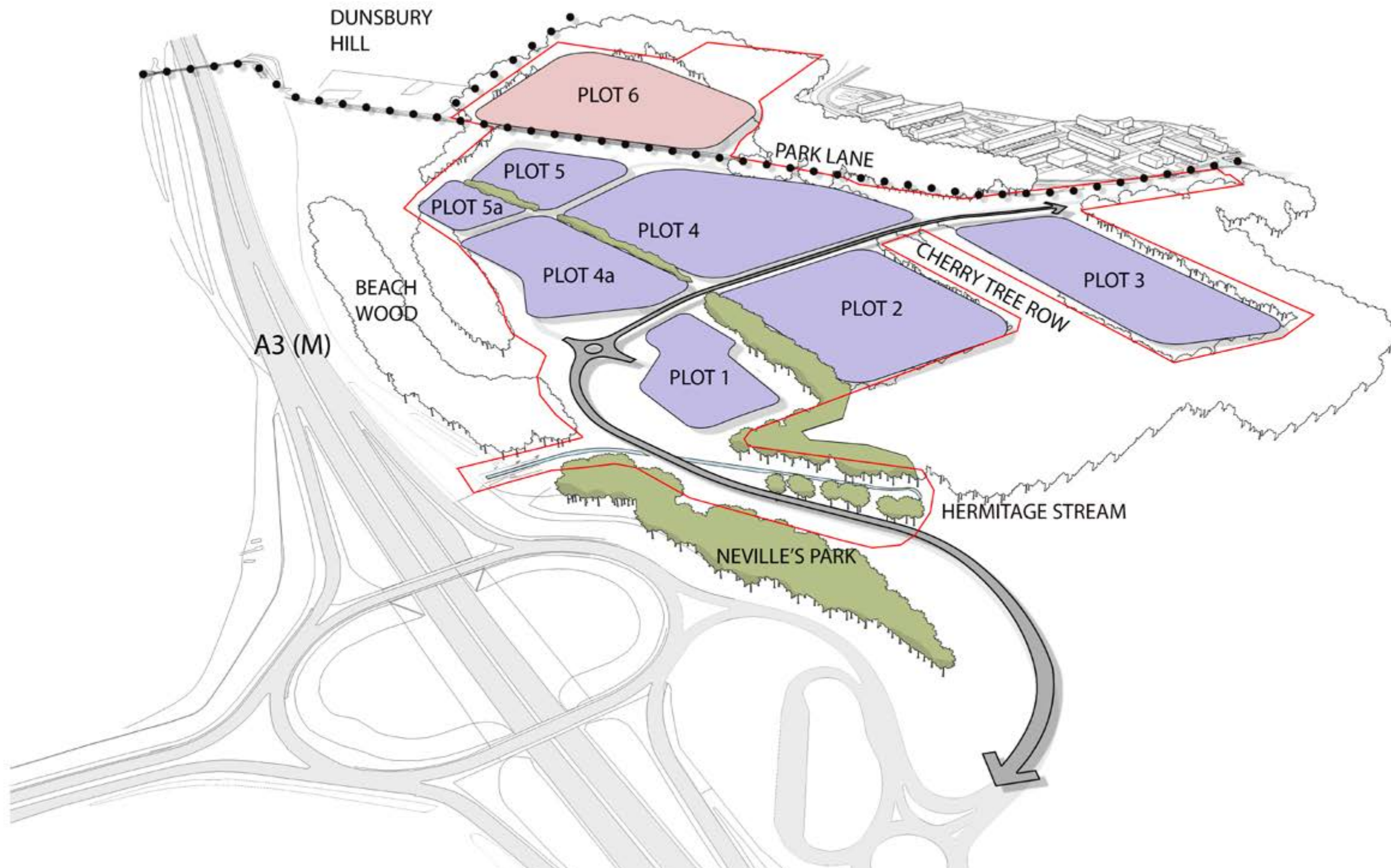
- Employment uses totalling 46,450 m² (B1, B2 and B8) including an enterprise centre.
- Hotel and conference Centre 5,574 m²
- New access junction of Hulbert Road
- A new east west link road (detailed)
- Retention of existing trees and hedgerows
- 30-150 m wide landscape buffer to A3M boundary and infrastructure planting to the site

Phase 2

- 15,329 m² B1, B2 & B8



DEVELOPMENT PLOTS AND PHASING



PHASE 1

PLOT 1	HOTEL DEVELOPMENT
PLOT 2	B8 DEVELOPMENT
PLOT 3	B1/ B2/ B8 DEVELOPMENT
PLOT 4	B1/ B2 / B8 DEVELOPMENT
PLOT 4a	B1/ B2 UNIT
PLOT 5	B1/ B2 / B8 DEVELOPMENT
PLOT 5a	B1/ B2 UNIT

PHASE 2

PLOT 6	B1/ B2/ B8 DEVELOPMENT
--------	------------------------

3

Dunsbury Hill Farm

3.0 Aspirations



3.1 Sense of place

Objective; to create a socially responsible development that acts as a landmark whilst integrating itself into the natural woodland setting. To create place making through considered and creative landscaping, defined routes through the site and considered approaches to buildings for pedestrians and vehicles.



3.2 Holistic Approach

Objective: To ensure a consistent approach in terms of a limited select pallet of materials that is used across building elevations, external enclosures, street furniture and landscape features. The aspiration is to create a modern business park feel whilst retaining the inherent character of the Dunsbury Hill site. This code will ensure a unified appearance whilst affording each plot to retain its own character.



3.3 Sustainable Development

To create a sustainable development that meets the appropriate requirements for BREEAM, whilst also encouraging conservation, the local ecology, and the opportunity to provide outdoor amenity for building users and the wider community.

MASTERPLAN BIRDS-EYE VIEW





Dunsbury Hill Farm

4.0 Access and Movement Framework

4.1 Primary Access Corridor

4.2 Secondary Access Routes

4.3 Leisure and Riding Routes

4

Dunsbury Hill Farm

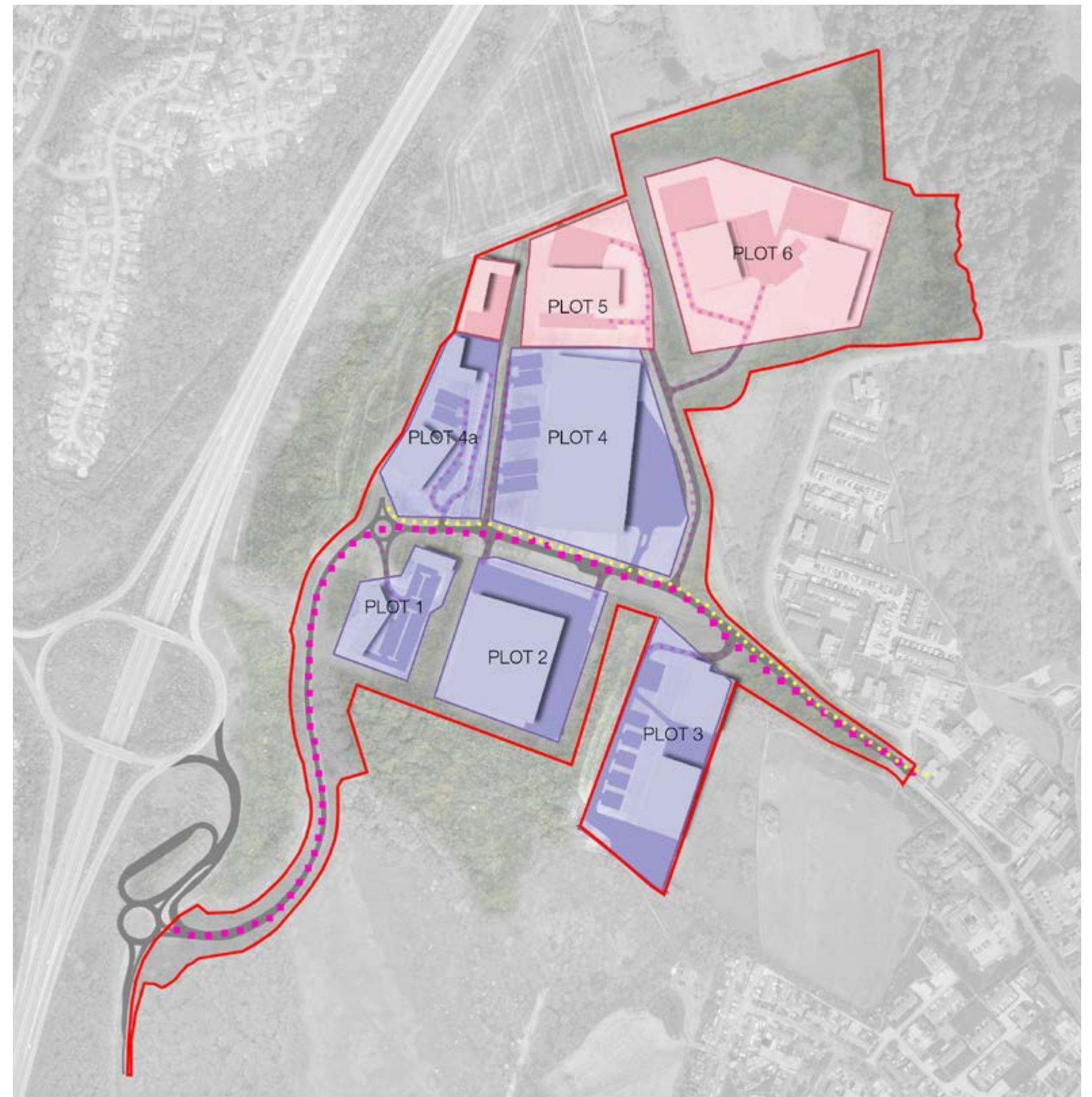
4.1 Primary Access Corridor

The purpose of this section is to establish the relationship between the site infrastructure, landscape and built development.

This is to ensure a consistent approach to movement of vehicles, pedestrian, cyclists and access to individual plots for staff, visitors and vehicles servicing deliveries.

The detailed design of the link road that forms the primary access corridor was approved following the discharge of all relevant conditions in May 2015 and is currently under construction.

- The link road will be a two way single lane carriageway between the Hulbert Rd and Woolston Rd, to accommodate all traffic in and out of the site.
- It will incorporate a four arm standard roundabout on Hulbert road.
- It has been designed to accommodate a bus route and bus stops in each direction (located within lay-bys).
- A bus gate at the Woolston Road roundabout will prevent access to the proposed development by general traffic.
- The road will have a minimum 2m pedestrian footway on the South side and a minimum 3m combined pedestrian and cycle path on the North.
- Highway drainage will accord with approved drainage strategy, incorporating swales / wet swales and attenuation ponds.



KEY

- ■ ■ ■ ■ Primary Access Corridor
- ● ● ● ● Pedestrian and Cyclist Path
- ■ ■ ■ ■ Secondary Corridor



Landscaped approach to the buildings within the plots



Gabion retaining walls provide aesthetic interest and blur the line between landscaped and natural



Pedestrian and cycle paths through the primary access corridors



Avenues of trees provide screening between pedestrian and vehicle routes



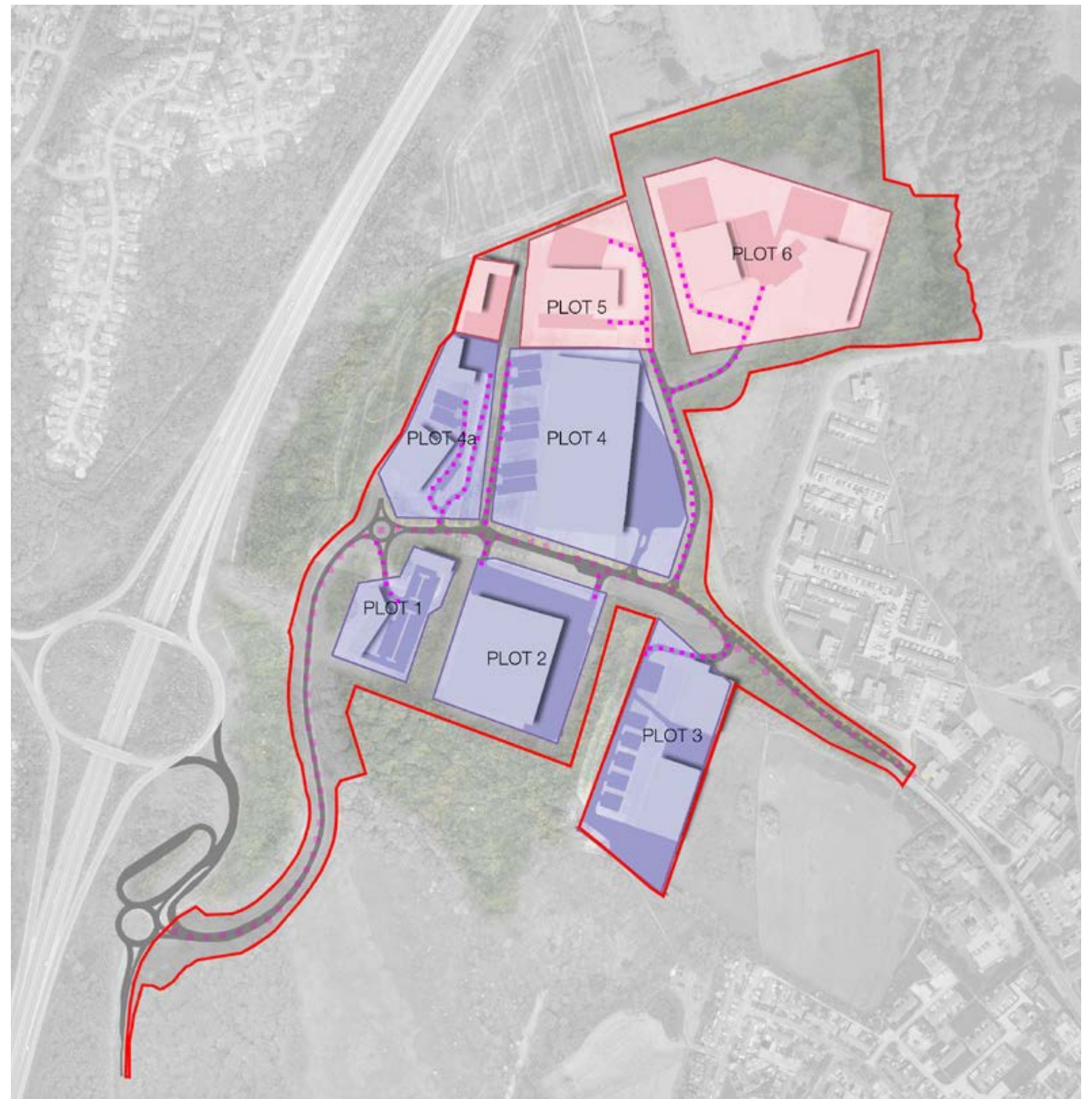
[Primary Landscape Corridor]

4

Dunsbury Hill Farm 4.2 Secondary Access Route

Secondary routes from the primary access corridor provide access to buildings within plots and links to phase 2 of the development. Side roads provide distinct access to car parking, service yards, and deliveries / refuse collections. These should be smaller in scale with adjoining landscape margins and avenue tree planting where there is an adjoining pavement.

- All link roads to be single lane carriageways a minimum of 6.5m width.
- The road will have a minimum 2m pedestrian footway and a minimum 3m combined pedestrian and cycle path where leading to a main entrance of a plot.
- The formation of avenues with verge planting, trees and hedgerows, setting the character of a high end business park.
- Hedgerows to define soft barrier adjoining development plots.
- Combine landscaping with mounding to accommodate change in levels.
- Openings to provide visual links from roads to front entrances of buildings



KEY

- Primary Access Corridor
- Pedestrian and Cyclist Path
- Secondary Corridor



Wide vehicle roads lined with trees and planting



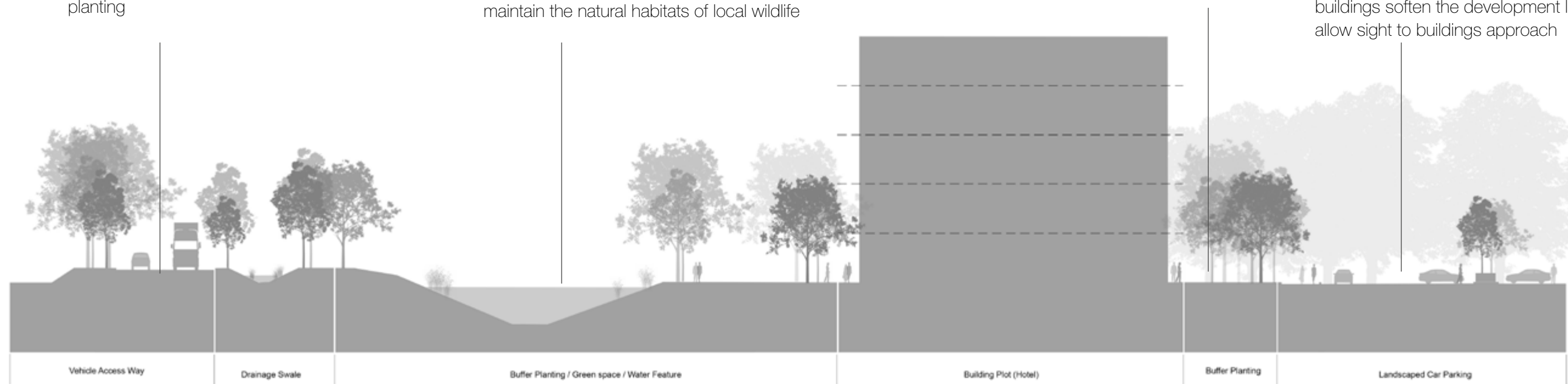
Swales and attenuation form drainage and maintain the natural habitats of local wildlife



Landscaped building approach



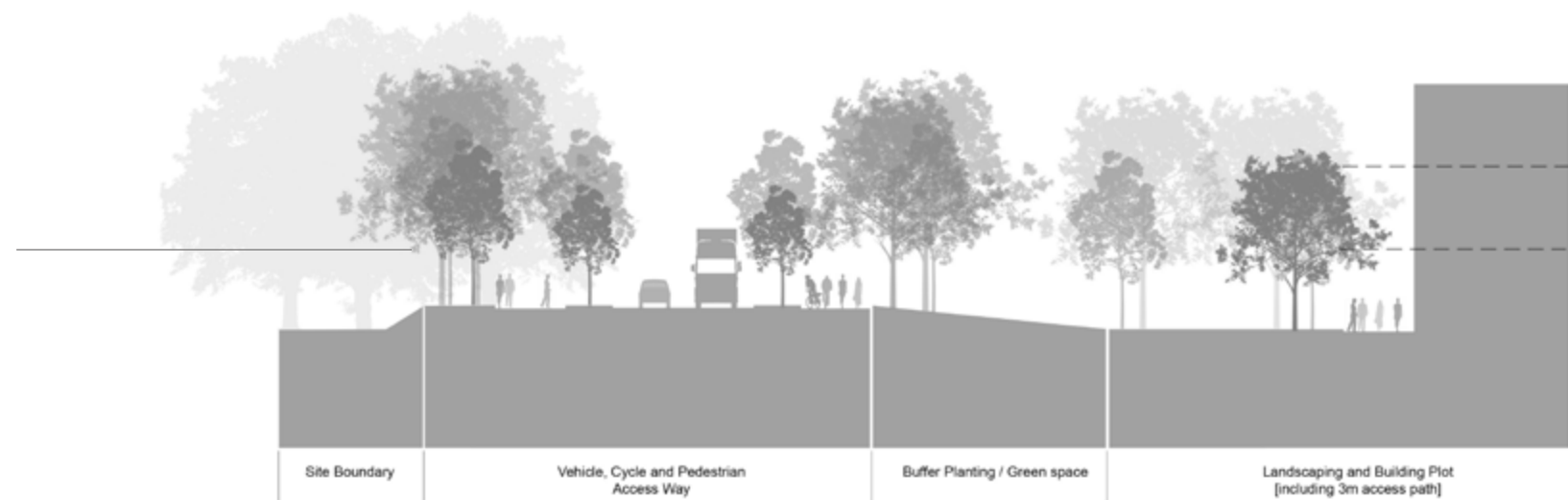
Landscaped parking areas adjacent to buildings soften the development lines and allow sight to buildings approach



[Secondary Landscape Corridor]



Newly planted trees provide screening to the development



[Secondary Landscape Corridor]

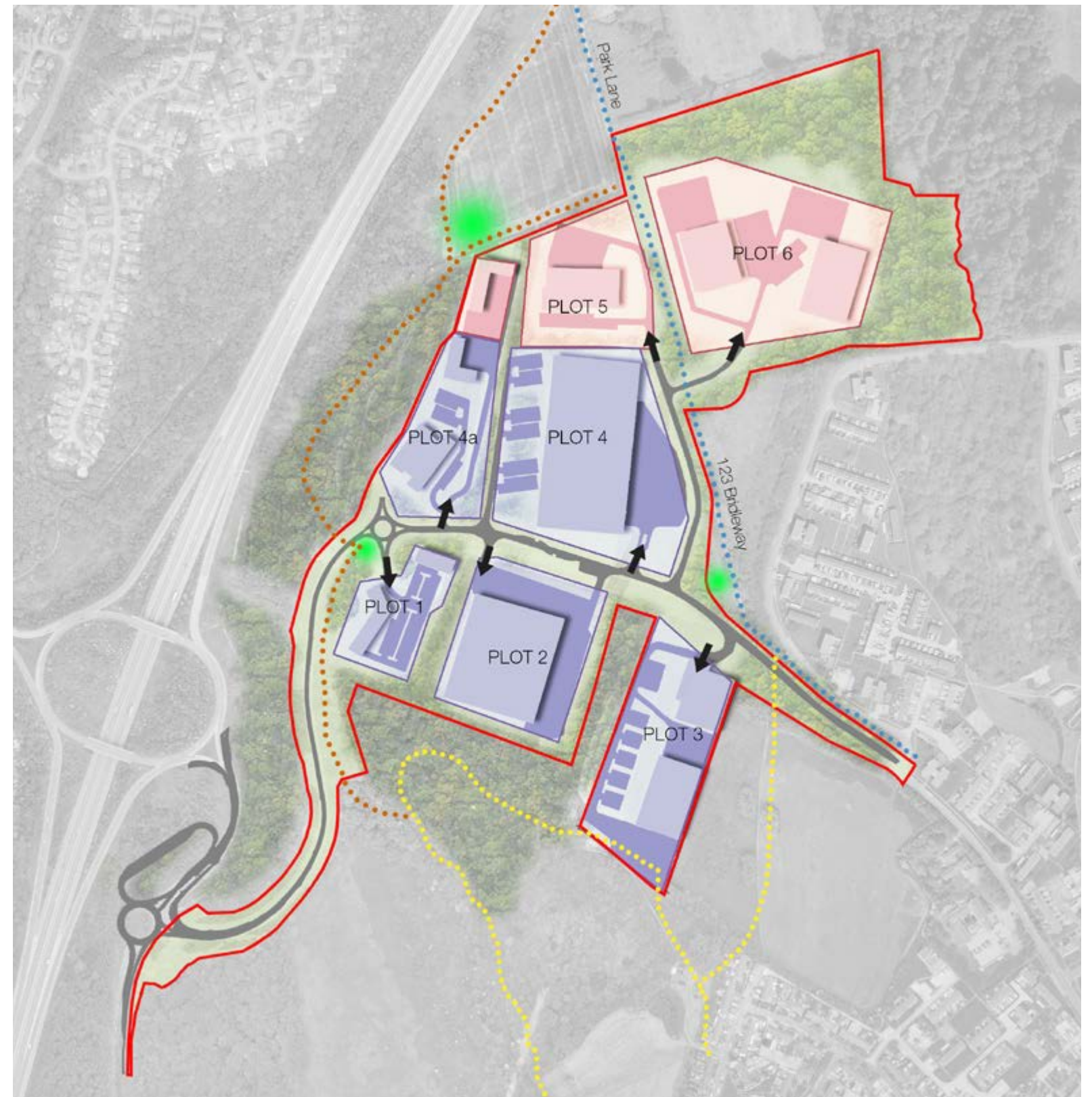
4

Dunsbury Hill Farm

4.3 Leisure and Riding Routes

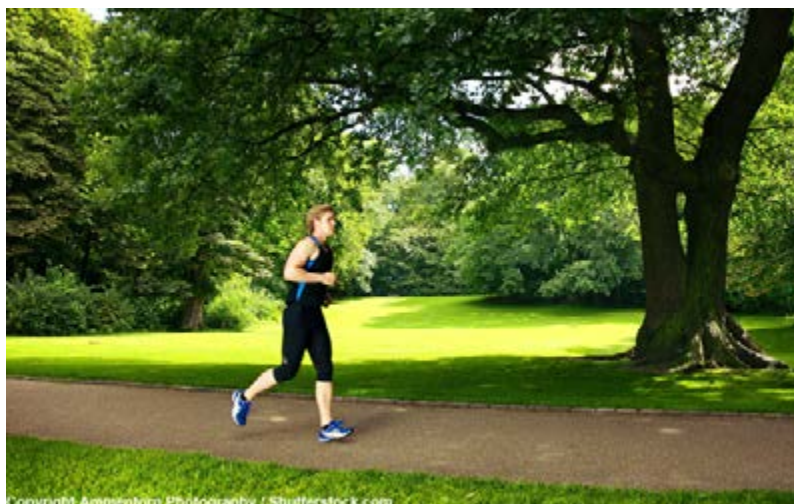
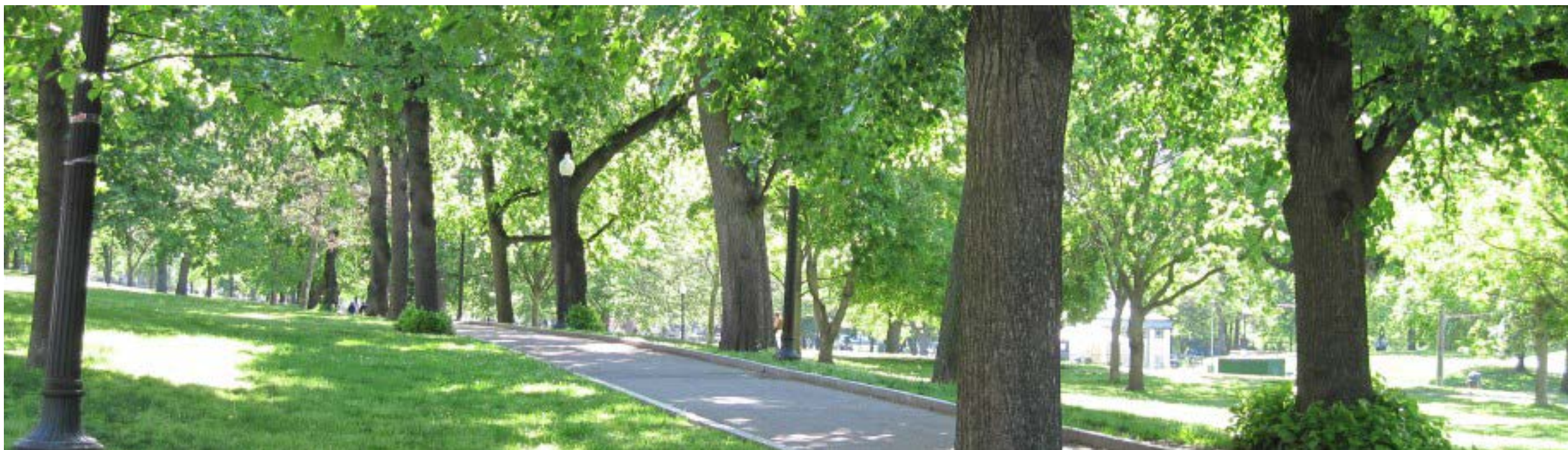
Existing and new movement routes for the general public and recreation use will be created and enhanced respectively and consider the following key objectives:

- Pedestrian, cycle and equestrian routes must be suitably constructed and landscaped to reflect the character of the setting.
- Park Lane is an important historic link between Leigh Park and Waterloo and should be enhanced as a leisure route and be provided with a metallised surface for use by cyclists.
- Where suitable, new leisure and riding routes should be introduced linking areas of landscape and recreational significance including Staunton Country Park, Beech Wood, Neville's Park and Bushy Lease.



KEY

- Existing Pedestrian/ Cycle Routes
- Park Lane/ 123 Bridleway
- Possible Trim Trail/ Leisure Route
- Opportunity or Landscape feature/ Public Art





Dunsbury Hill Farm

5.0 Landscape and Ecology

5.1 Natural Environment

5.2 Landscaping and Public Realm

5

Dunsbury Hill Farm

5.1 Natural Environment

This section sets out the landscape, ecological and spatial strategies which underpin the approach to be taken in the detailed design of plots.

The existing site is open in character, contained by existing woodland, hedgerows and the motorway to the west. It is intended that the proposals be designed to reinforce this character whilst providing an attractive setting to the buildings within each development parcel.

Such landscaping needs to integrate with the historic woodland elements in terms of species mixes and habitat. These form part of the wider Forest of Bere with Sites of Importance to Nature Conservation (SINC's), ancient woodland falling within and beyond the Site.



KEY

	Existing Woodland		Extended area of Beech Wood
	Trees adjacent to and within the site		Retained Hedgerow with significant trees
	River		



- Boundary planting will provide an extension of Beech Wood with a minimum 150m – 180m landscaped gap between the A3(M) and the development. This will strengthen and connect the existing woodland parcels along the eastern side of the A3
- Development plots are to consider provision of green 'fingers' of woodland extending eastwards from Beech Wood together with a landscaped corridor on the east/west link road.
- These can be combined with Site earthworks to create mounds or accommodate level changes with landscaping which will help articulate development across a sloping site.
- Development plots will provide new landscape features and extensive structure planting in a contemporary style to form a framework for the new development. This will tie together and reflect the elements of historic and more recent woodland whilst presenting a high quality business park feel.
- Margins of buffer planting or inter planting to plots are recommended to offset potential adverse effects upon biodiversity and to enhance the connectivity for species such as dormice which are dependent upon the resource for connection to the wider Site.



- New planting will be of similar indigenous species mix to the existing woodland. Particular care in the choice of species will be given to the design of planting in the vicinity of Beech Wood East, Cherry Tree Row and Bushy Lease.
- The layout of the link road and access routes through the various plots at the Site will be designed to minimise the loss of ecologically important hedgerows (under the Hedgerow Regulations, 1997), and the other hedgerows at the Site.
- The link road and access routes should cross the hedgerows at a perpendicular angle to minimise loss of hedgerow.
- New development should consider how hedgerows can establish and maintain defined walkways and boundaries that also maintain wildlife routes. These include the footpath and bridleway along Park lane (no.123), the new link road, the northern edges of the phase 2 plot boundaries, and the existing routes leading to Staunton Country Park.



To ensure that the proposed development has a neutral overall effect on the ecological features and protected species on the site, there are mitigation proposals contained within the approved site wide ecology strategy. In summary designers should consider the following:

- Mitigation measures to sites along the southern part of the link road affecting Nevilles Park East Wood to include additional/refreshed buffer planting along all SINC boundaries to reinforce and protect their edges.
- Habitat creation area to the north of the Site (approximately 3ha), to be a mosaic of woodland edge, species-rich grasslands and scrub with scrapes to create temporary holdings of water.
- Proposals are to provide mitigation for the loss of semi-improved neutral grassland due to the construction of the link road. Where stands of grassland can be retained, they will be incorporated into the landscaping design.
- New grassland will be created within a habitat creation area that will include native grassland species characteristic of the local area and soil conditions to the north of the Proposed Development. The turf from the existing species-rich grassland within the footprint of the proposed hotel will be used to contribute to the habitat creation area.

5

Dunsbury Hill Farm 5.2 Landscaping & Public Realm

The treatment of the public realm will be seamless with a limited palette of paving materials, street furniture and lighting. The design of elements shall be contemporary in style, and reflect the overall approach for the Site wide architecture.

The intended material palette will combine timber and steel finishes to building elevations and this shall be extended to the chosen street furniture ranges.

Treatment of the public realm could be co-ordinated such that a limited palette of street furniture and finishes to surfaces are provided. Images illustrate potential material choices for shared spaces and for cycle ways and existing bridleway.



KEY

	Existing Woodland		Existing Pedestrian/ Cycle Routes
	Trees adjacent to and within the site		Park Lane/ 123 Bridleway
	River		Possible Trim Trail/ Leisure Route



- A high quality business park feel should be created with materials and equipment appropriate to the setting.
- Plot entrances and approaches to buildings will require appropriate and welcoming landscape features that promote accessibility and visibility. Design will be developed to promote good natural surveillance to/from the buildings and the site wide infrastructure or publicly accessible areas.
- Amenity landscape areas within groups of buildings and between buildings which are used by staff shall have designed landscape which link the built form and is carefully considered in terms of their interface with the buildings itself



- The hotel and conferencing facilities with water feature and framework planting to the Site. This site will require a higher quality more intensively designed landscape with amenity landscape species
- Signage on buildings should be tasteful and integrated with the architectural design of the buildings, avoiding over-sized or poorly designed illuminated signs. The signage is to be back lit in silhouette as not to interfere with native bat species.
- Site wide signage shall be legible and coordinated with other site furniture.



- Car parking areas; lines of parking bays should have hedgerows and tree planting between, such that only a single line of parking is accessible via access route on either side
- The landscape strategy for these sites must integrate the retention of existing important trees and hedgerows into the development.

5

Dunsbury Hill Farm 5.3 Landscaping & Signage

The signage for the park will come under three categories; Primary, Directional and Plot

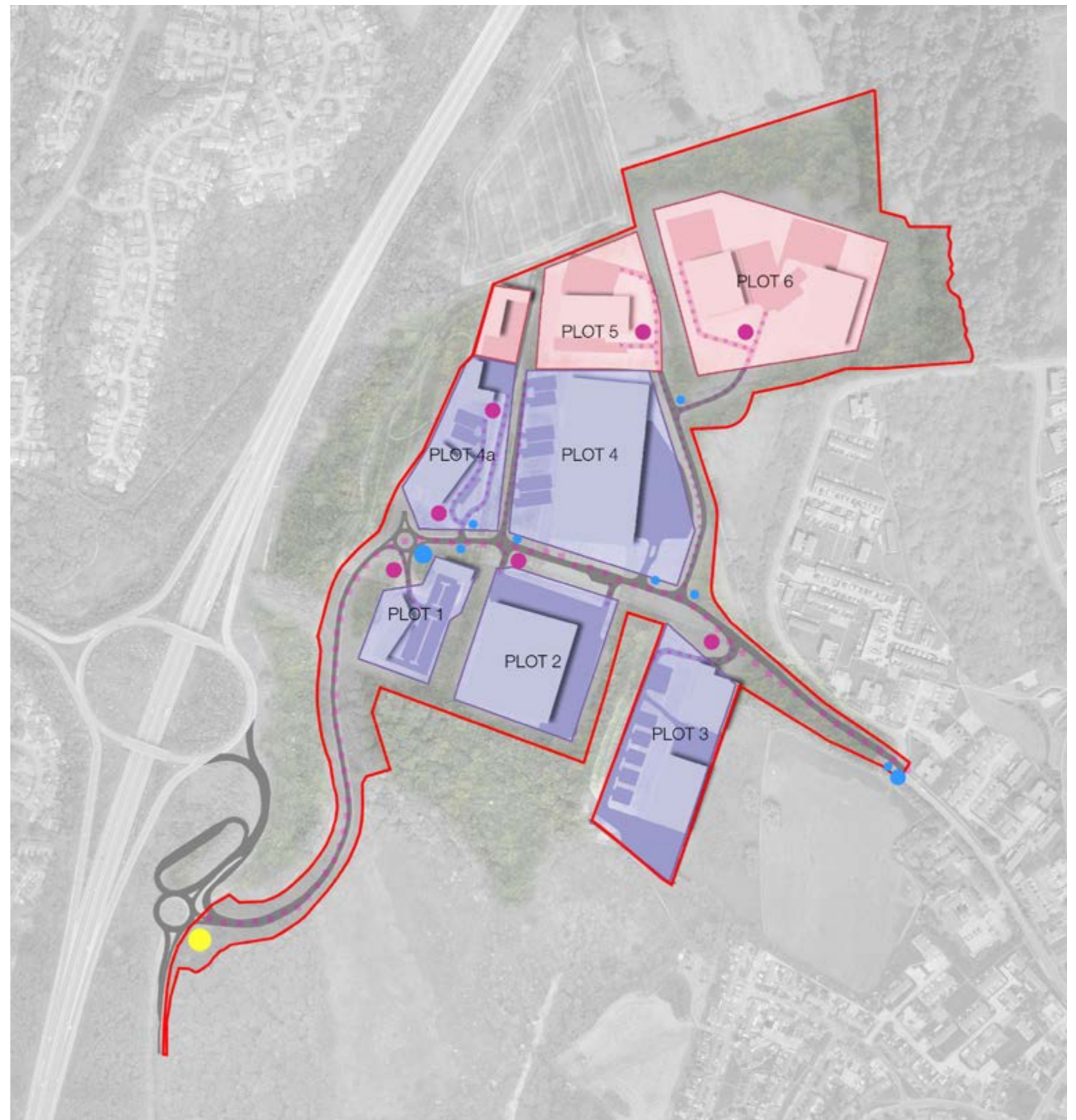
Primary signage will be located at the entrance to the site and the business park.

Directional signage will be located at key junctions and a directory will be located at the sites roundabout.

Plot signage will be located at the entrance to each plot.

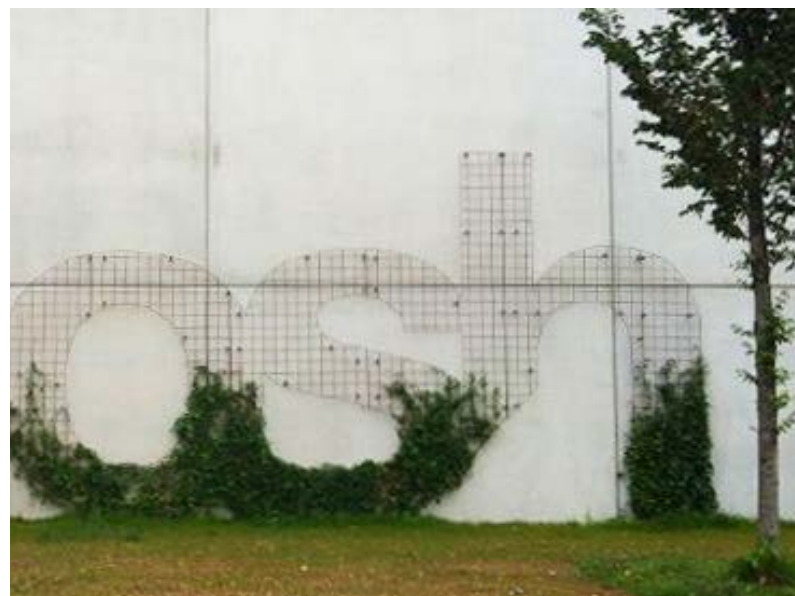
The intention is to create a cohesive aesthetic without branding bias that reflects the character of the development.

The colour palette should be simple monotone and neutral colours and materials with colour coding to assist wayfinding.



KEY

- Primary Business Park Sign
- Business Park Directory
- Directional Signage
- Plot Signage



5.3.1 Primary Signage

- Primary signage located at Junction 3 A3(M) to direct people to business park access road.
- Signage should be distinctive, in keeping with the parks natural and rural character and large scale to be read from a distance.

Suggested materials:

- o Stainless steel or white lettering
- o Dark grey background
- o Evergreen climbing plants
- o Gabions
- o Vertical sleepers

5.3.2 Directional Signage

- Direction signage should encompass directories and way finding signage around the site.
- Aesthetic should be consistent throughout the site.
- Signage should be sleek and professional in a monotone pallet with subtle feature colours for wayfinding
- Signage should be clearly visible from the road and contrast to background vegetation and surrounds in summer and winter.
- Directory to be located by roundabout at entrance to the business park.

Suggested materials:

- o Gabions or sleeper structure approx. 2m tall by 1m wide
- o Signs to have dark grey background with white text
- o Signs to have dark grey background with white text
- o Feature colour coding to assist with wayfinding

5.3.3 Plot Signage

- Plot signage should be located at the entrance to each plot.
- It should be of a sufficient scale to visible from at least 50m away to allow vehicles sufficient warning of the turning.
- Materials should be the same as Primary and Directional signage.
- All plot signs should be similar dimensions and text should be a similar scale

6

Dunsbury Hill Farm

6.0 Building Design Principles and Plot Layouts

6.1 Building Approach

6.2 Scale and Massing

6.3 Hotel and Conference Site

6.4 B1 Office Development

6.5 B2/ B8 Industrial Warehouse Development

6

Dunsbury Hill Farm

6.1 Building Approach





This section explains the principles that should be considered in the design, massing, scale and appearance of the proposals and the layout of development plots.

- The approaches to buildings must be of high quality with provision for pedestrian to walk/cycle safely across the Site, particularly across parking areas.
- Glazing should be used in defining entrances and façades. Material finish and hierarchy or complexity should be such that the entrance to each premise can be clearly understood without reliance upon excessive signage.



- On the approach to buildings, elevations which adjoin footpaths and roads which are used by visitors to the sites shall have active frontage with glazed doors and windows to improve the sense of natural surveillance.
- Pockets of space between buildings can be designed as outdoor spaces for staff or as linking spaces for pedestrian routes across the development plots.
- Careful consideration should be given to the position of car parking, with the aim of reducing extensive unbroken hard landscaping and provide safe pedestrian routes from vehicles to entrances. This can be achieved through tree and hedgerow planning together with locating parking within contained courtyards where feasible.



- If a business is anticipating frequent delivery via articulated vehicles provision should be made within their own plot.
- Designers are to ensure all statutory regulations are met in respect of achieving adequate separation and in particular fire protection between buildings of potentially different use categories.

6

Dunsbury Hill Farm

6.2 Scale and Massing

The lowest part of the Site lies at approximately 20m AOD and rises to almost 45 metres in the north and peaks at 50m AOD on the crown of the hill, to the north of the Site boundary.

Building eaves within Phase 1 will be below the 40m contour to exploit the screening effect of Beech Wood and planting alongside the A3 (M) corridor. The average storey height for Phase 1 is three to four storeys with up to five storeys for the hotel

Phase 2 rooflines will be below the 45m contour to ensure that Dunsbury Hill and Bell's Copse and the planting to the east of Park Lane Stream will screen views into the Site. Phase 2 is predominantly two storey decreasing to one on the most elevated slopes.



KEY

PHASE 1

- Hotel: Up to 5 Storeys
- Up to 4 Storeys
- Up to 3 Storeys
- Up to 2 Storeys

PHASE 2

- Up to 2 Storeys
- Single Storey

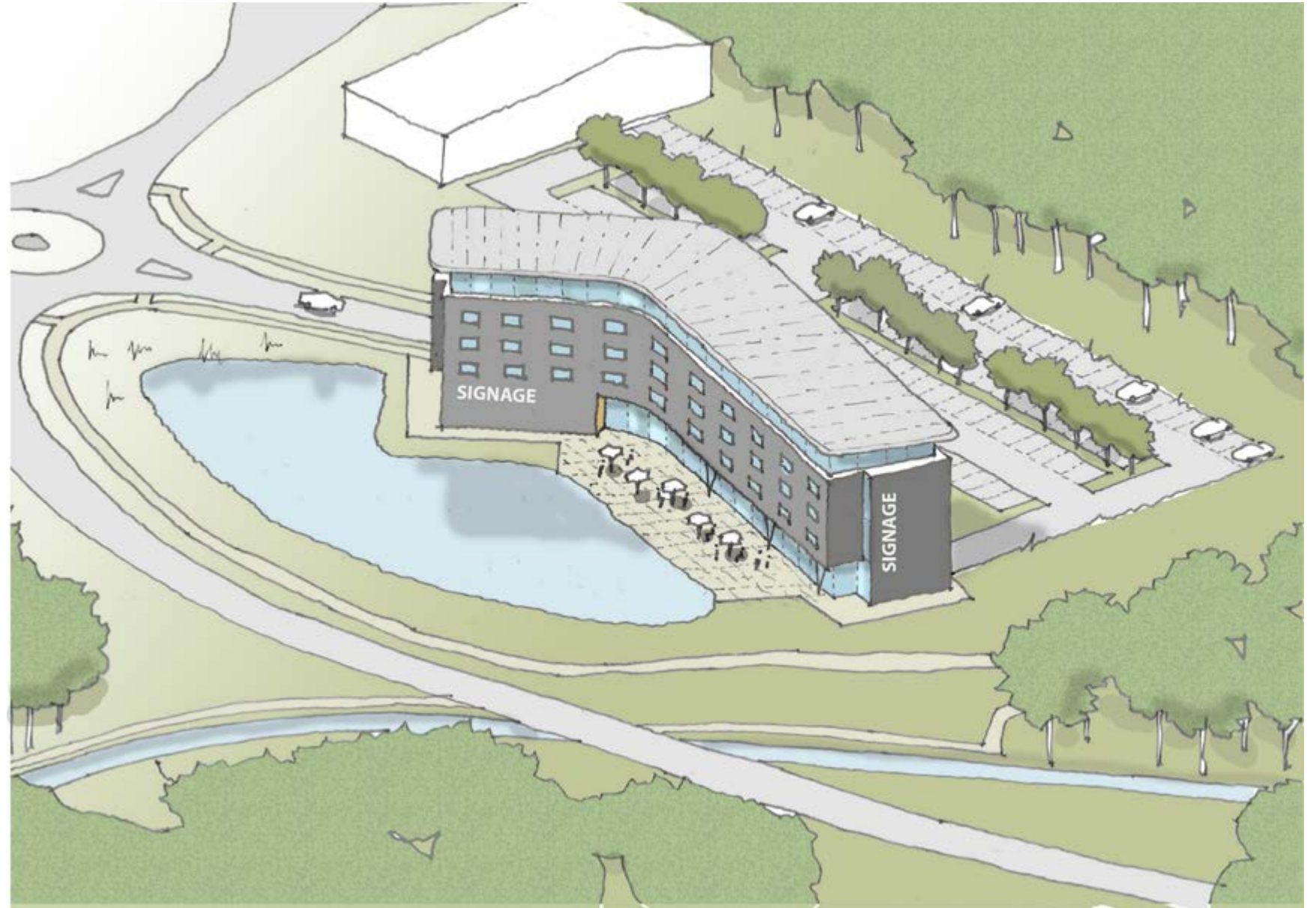
SCALE AND LEVELS

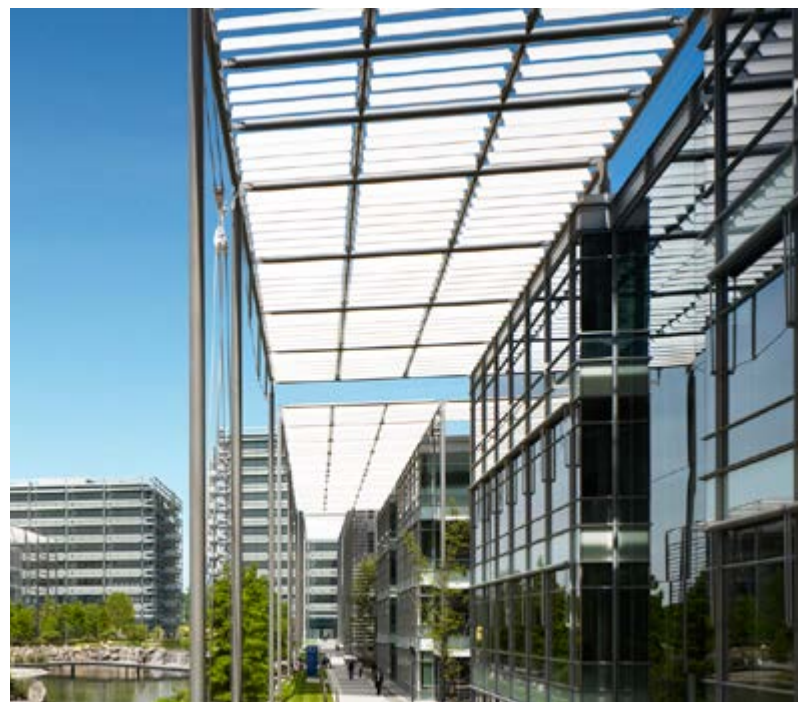


6

Dunsbury Hill Farm 6.3 Hotel and Conference Site

- Façades shall create a simple, contemporary architectural aesthetic, with articulated roofs and overhanging canopies.
- A simple rhythm should be achieved along elevations through change of materials, openings and articulation through changing direction and height.
- Façades should give due regard for adequate openable glazing that will offer natural day lighting and ventilation.
- Large expanses of bright coloured cladding will not be acceptable in this location so as not to have a detrimental impact on the surrounding countryside.





- Metallic finishes to reflect light and define changes in material.



- Timber cladding with clear finish allowed to weather naturally, used on both buildings, external enclosures and street furniture.

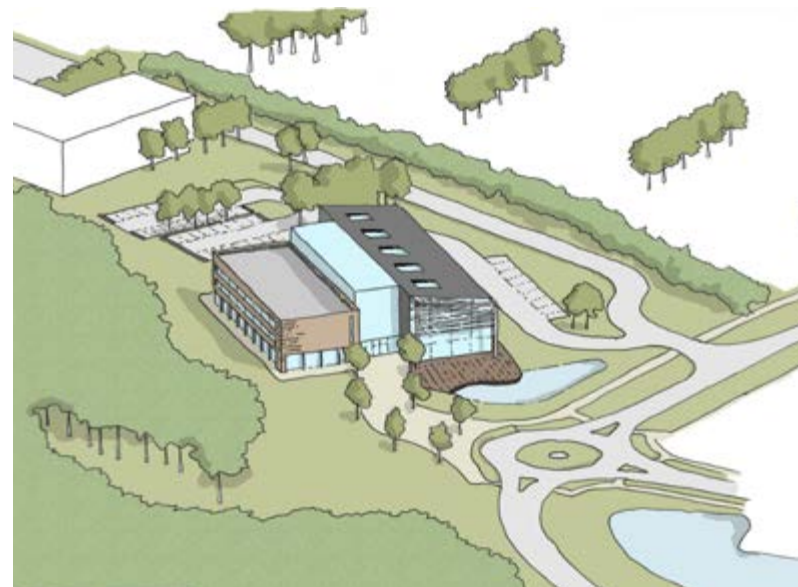


- Pre-cast concrete or buff stock brickwork to detail building plinths and structural elements.

6

Dunsbury Hill Farm 6.4 B1 Office Development

- Fenestration should be creative to create variety in appearance and promote a sense of natural surveillance and respond to 'design against crime'.
- Façade treatment for larger buildings could be divided by careful use of materials to reflect the structure with changes in building line to create rhythm.

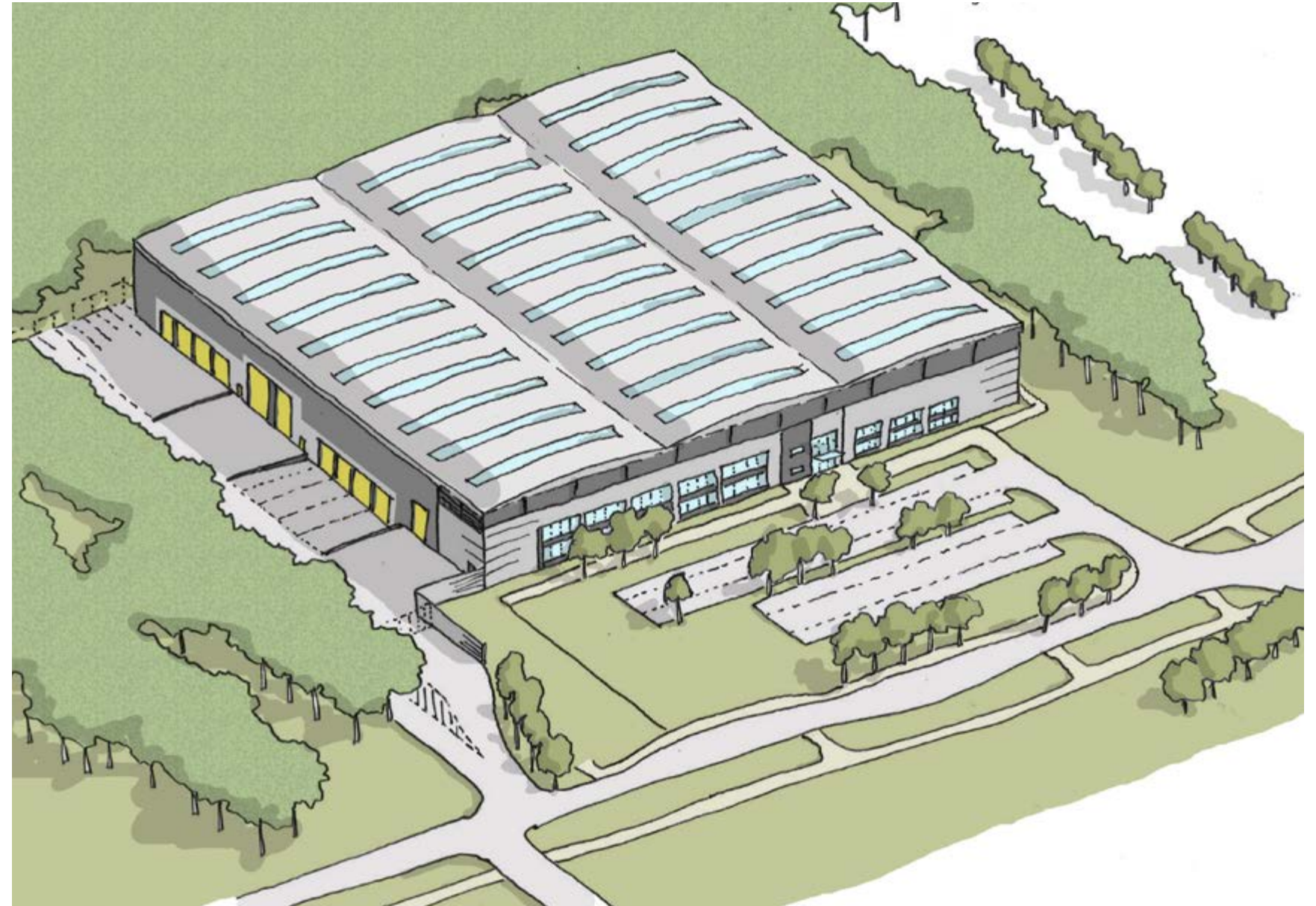


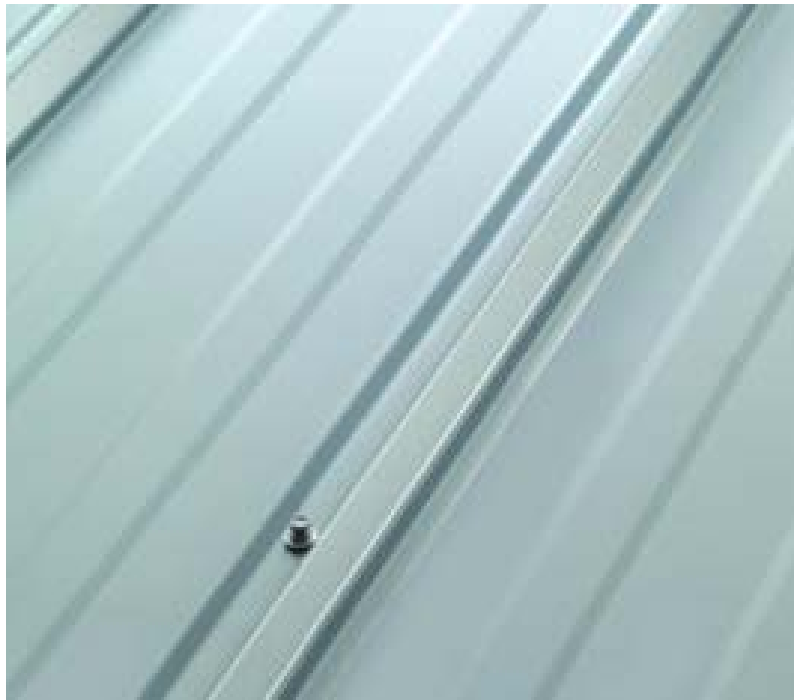


6

Dunsbury Hill Farm 6.5 B2/B8 Industrial/ Warehouse Development

- Single storey open spaces with multi storey associated offices and facilities. Development which should be treated with material common to the wider Site.
- Utilise the land-form to reduce the bulk of buildings.
- Open storage areas must be screened with advance planting to allow early establishment.
- Position of open storage areas should be carefully considered and located away from footpaths and visually prominent parts of the Site, where activity would impact on neighbouring uses.







Dunsbury Hill Farm

7.0 Energy and Sustainability Statement

7.1 Introduction

7.2 BREEAM

7.3 Energy Use and Co2 Emissions

7.4 Lean

7.5 Clean

7.6 Green



Dunsbury Hill Farm

7.0 Energy and Sustainability Statement

7.1 Introduction

This design code for energy and sustainability outlines the design philosophy and key principles that should be followed when considering development of the building plots at the Dunsbury Hill Farm development. This code has been developed based on the initial Atkins Design and Access and Sustainability Statements produced for outline planning for the site in 2012. Reference to these documents should also be made when considering sustainability for new buildings on the Dunsbury Hill Farm site.

The following key principles are discussed;

- BREEAM
- Energy Use and CO2 Emissions
- Sustainable Urban Drainage Strategy

7.2 BREEAM

BREEAM sets the standard for best practice in sustainable design and is widely considered to be the primary metric by which buildings are benchmarked based on environmental performance. Since the initial sustainability strategy was written in 2012 the BREEAM assessment methodology has been reviewed and revised to encompass all types of development (new construction) rather than separate schemes for offices, hotels, retail and the like. As such, all new developments on the site will need to be assessed under the latest revision of the BREEAM New Construction methodology.

All new developments on the Dunsbury Hill site should set an aspiration for a BREEAM rating of 'Excellent', with a 'Very Good' rating being the minimum acceptable standard. Achieving this will demonstrate a design that has been developed in line with the Core Strategy Policies relating to sustainability and building environmental performance, taking into account the specific site constraints of Dunsbury Hill Farm.

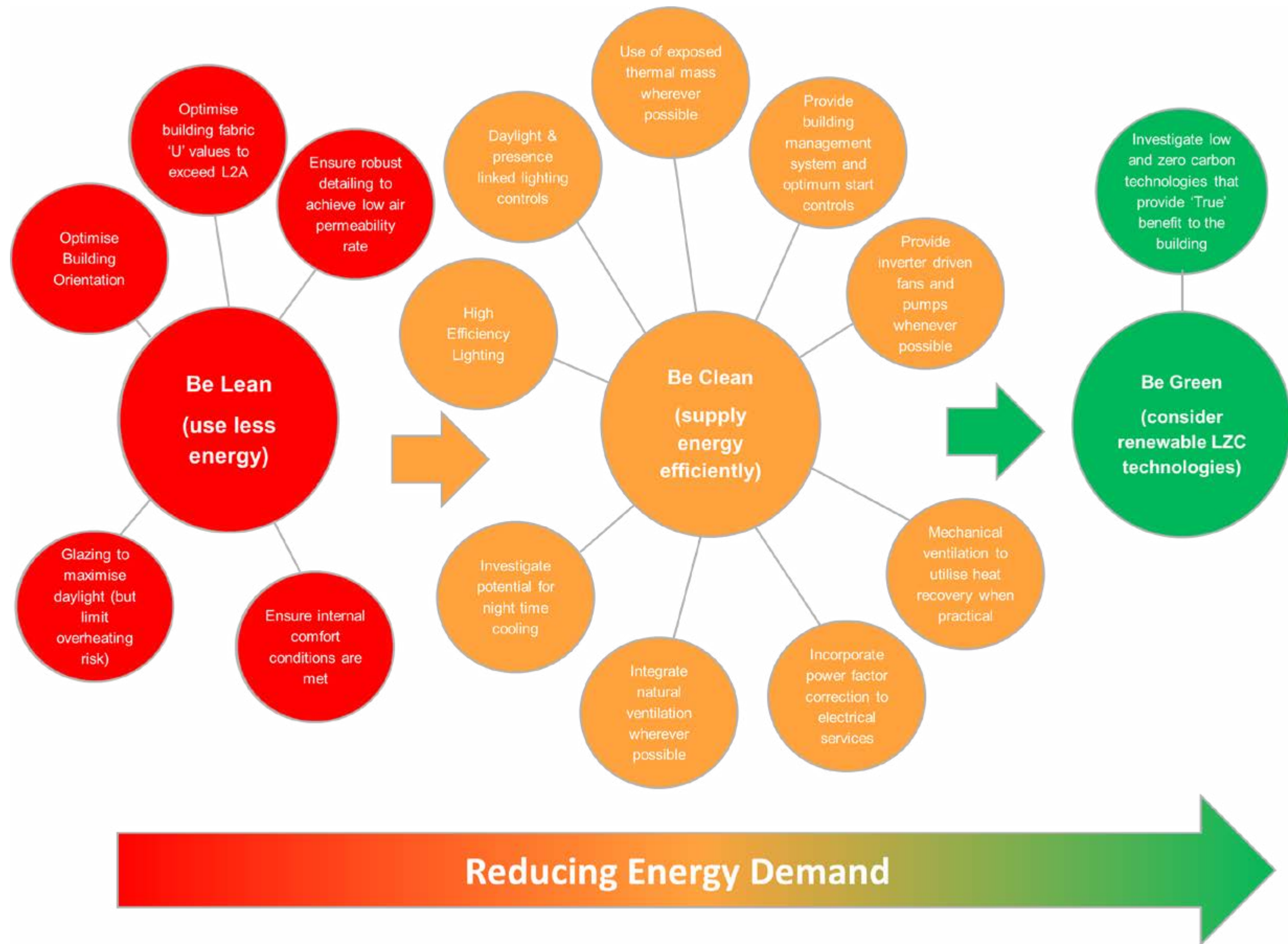
7.3 Energy Use and Co2 Emissions

A sustainable design approach as outlined below should be followed in order to maximise reduction in energy consumption and CO2 emissions. A "Lean", "Clean", and "Green" approach should be taken to provide a well-considered sustainable design solution that aims to maximise the energy efficiency of the building and thus reduces both carbon dioxide emissions and the energy demand and ultimately operating/running costs.

The approach to building design should enable the development of a solution which will achieve an EPC rating of A.

The strategy can be summarised below

- Be Lean (use less energy)
- Be Clean – (supply energy efficiently)
- Be Green (consider renewable energy)





Dunsbury Hill Farm

7.0 Energy and Sustainability Statement

7.4 Lean

A 'fabric first' approach should be considered to maximise energy and CO2 savings using passive design measures, and to enhance the sustainability of the building. This includes the following;

- Building orientation and internal space planning considered to maximise availability of useful daylight, natural shading, and passive solar gains.
- High performance U-values for the walls, roof, floors and glazing and high air tightness to reduce heating loads
- Use of exposed thermal mass and natural ventilation strategies where appropriate
- Sustainable construction practices such as consideration for recycled building materials and minimisation of waste.
- Roofs designed to consider integration of green/blue roofs, renewable energy etc. (refer to 'Green' measures where practical)

7.5 Clean

Further to the 'lean' measures outlined above the design should be developed based upon a 'clean' design principle. This ensures that the use of energy in the building is minimised, and what energy is used is used efficiently, minimising waste.

The following lean design measures should be considered;

- Natural ventilation – Where possible areas should be naturally ventilated to minimise energy consumption without compromising occupant comfort.
- Heat recovery on mechanical ventilation – Where mechanical ventilation is required, heat recovery on the extract air should be used to pre-heat supply air. This significantly reduces energy consumption in heating fresh air for occupants.
- High efficiency LED lighting systems
- High efficiency condensing gas boilers with flow and return temperatures selected to maximise condensing operation of the boiler. (i.e. 70°C flow, 40°C return). Or
- High efficiency heat pump heating and cooling using High COP (coefficient of performance) refrigerant based heat pumps used to provide simultaneous heating and cooling.
- Inverter driven fans and pumps – inverters provide speed control of fans and pumps to ensure no energy is wasted in over provision of heating and ventilation. Controls should be linked to occupancy to maximise efficiency.

7.6 Green

The third and last design strategy in the design hierarchy is to implement renewable or low carbon technologies, where appropriate, to improve the sustainable credentials of the building further. In line with Core Strategy Policy CS14 and PPS22: Renewable Energy, the implementation of low or zero carbon technologies should be considered, and if feasible implemented. An aspiration of at least 10% of total energy consumption of the proposed building provided by LZCs should be made.

An LZO feasibility study should identify the most appropriate technologies to implement, including size/scale of installations and feasibility of delivery of fuels etc, as appropriate. Financial viability of each LZO should be assessed to inform the development of any appropriate technology.

Technology	Capital Cost	Functionality/ suitability	Reliability	Maintenance Requirements	CO ₂ Saving	Overall Rating
Ground coupled air system	Medium – dependant on excavation costs	High – can pre-heat and pre-cool fresh air thus reduces energy demand – limits on summer cooling capacity due to ground temperature	Medium – minimal moving parts, but high level of workmanship required to ensure water tightness	Medium - regular replacement of filtration. Water tightness can be problematic	Medium – potential to reduce winter heating load and to reduce ventilation rates to minimum due to free cooling of air during summer	* No space to implement due to requirements for SUDs drainage and limitations on site area
Ground source systems (water)	Medium to High dependant of drilling & infrastructure costs	High – can provide free cooling during summer and low grade heating (up to 55°C) in winter when used in conjunction with GSHP	High – although subject to suitability of boreholes - open loop can be susceptible to blockages	Low for closed loop systems – Medium for open loop systems and may require specialist maintenance contractor	Medium – dependant on whether used for heating as well as cooling	** Low water temperatures in heating not conducive to warehouse environment
Ground source heat pumps	As ground source water	High – can be utilised to provide low temperature cooling and low grade heating – best suited for underfloor heating and pre-heating of mechanical ventilation systems	Medium – regular inspection in line with F Gas regulations. Proven technology	Low for GSHP and as above for open/closed loop system	Medium – operational efficiency dependant on low heating temperature	** Low water temperatures in heating not conducive to warehouse environment
Biomass	Low – however higher cost than conventional boiler Cost of fuel to be taken into account in life cycle	High – can be utilised to supply 100% of required heating demand	High – dependant on stringent maintenance regime and quality of fuel	High – requires specialist maintenance for boilers and associated fuel delivery system – if poor quality fuel then risk of fault will increase. Large area for bulk storage required coupled with frequent deliveries, especially in winter.	High	** subject to fuel availability (recommend back up gas boiler due to implications with fuel delivery). Negative impact on BREEAM NOx credits
Solar thermal panels	Medium – roof may need structural enhancement due to weight and wind load	Medium – although requires consistent HWS demand	High	Low – requires regular cleaning and annual glycol checks (medium for vacuum tubes)	Medium	* Needs a high, and consistent hot water demand for viability
Photovoltaic panels	Medium	High – with optimum positioning	High	Low	Medium	**** The cost of PVs is continually reducing and with Feed in Tariffs these are now financially viable
Wind turbine	High – potential structural implication for building mounted turbines	Best suited for non-urban location with high average wind speed- high risk of planning refusal for large scale schemes	Low /medium – dependant on wind conditions	Medium - specialist maintenance required	Low – unlikely to provide major savings in isolation (unless high wind speeds)	* Not suitable due to location of surrounding residential areas. Also insufficient space for citing of turbine
Micro -CHP	Medium – initial cost of CHP engine and commissioning	High – provides consistent base load	High	Medium - specialist maintenance required. Regular maintenance schedule	Medium	*** Requires Clean Air Act calculation and flue that may not be desirable wrt planning

7

Dunsbury Hill Farm

7.0 Energy and Sustainability Statement

7.7 Sustainable Urban Drainage

Surface water arising from any proposed development on the site must not increase the flooding elsewhere in the catchment. A Flood Risk Assessment has been produced by Atkins for the complete Dunsbury Hill Farm development. This document was submitted and accepted as part of this original planning application. The document advises that the site is not at risk of flooding from outside sources and will not subject other properties to flooding providing green field run-off discharge rates are adhered to. An initial site wide drainage strategy has been produced by Peter Brett Associates.

- The drainage strategy requires all plots on the Dunsbury Hill Farm site to provide an element of storm water attenuation both locally on each plot and via a centralised storm water attenuation pond.
- This effectively provides two forms of treatment to the storm water prior to discharge to the Hermitage Stream. This will meet the requirements of the Flood Risk Assessment and the Atkins Drainage Strategy.
- Sustainable urban drainage (SUDs) system should be incorporated into the development to address potential surface water flooding. The SUDs system should be incorporated into the landscape, enhancing biodiversity, creating recreation opportunities and provide a high quality environment.
- Hard surfacing should where practical to do so, utilise porous surfaces over a granular sub base.
- Porous drainage techniques also help to intercept and prevent silt from entering the drainage system which further helps to improve the quality of the water discharged off site.
- Low flow water fittings will be specified to reduce water consumption and foul water discharge volumes.
- Schemes should consider, where practical to do so, the use of green roofs and other sustainable means of providing attenuated water discharge whilst enhancing local biodiversity.

Surface Water drainage design shall be based on relevant UK Building Regulations, design guidance (in particular CIRIA guides on SUDS and EA pollution prevention guidance), British/ European Standards and Sewers for Adoption.

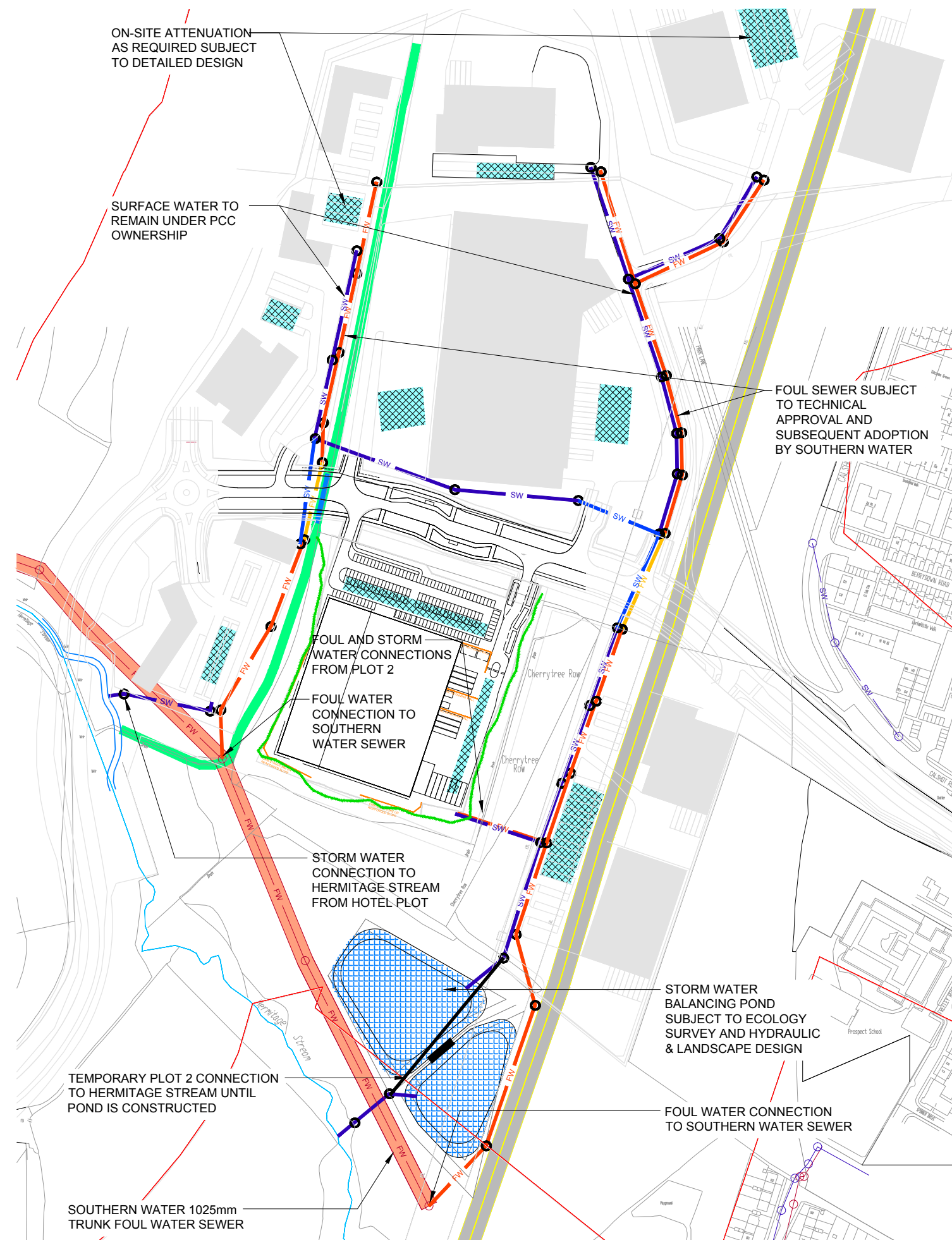
- Early consultations with Southern Water have indicated that they would not adopt the surface water sewers given outfall was to the Hermitage Stream and not a public sewer.
- Pipe sizes will be subject to further design – which will in particular be determined by the final pond design and whether or not this will provide full or partial attenuation.
- The primary means of surface water treatment will be provided by the pond – but where feasible this should be augmented by further upstream treatment within each site – for example utilising swales, porous pavements or rain-water harvesting.
- Surface water storage is to be based on attenuation of the 100 year storm - including a 30% allowance for climate change - to green field equivalent run-off rates. It is proposed to provide full attenuation for the site (excluding the hotel site) within the proposed pond; the pond design is currently at a strategic level and subject to further ecological surveys and detailed hydraulic and landscape designs.
- Where full attenuation is unable to be provided within the proposed pond this will need to be augmented by provision of additional storage on site – typically these would be located under car-parks as indicated on the Drainage Strategy drawing.
- The Hotel site surface runoff is to be attenuated entirely on site utilising a below ground storage structure such as cellular crates or Tubosider tanks – with a separate outfall from the pond to Hermitage Stream as indicated on the strategy drawing.

External foul drainage design shall be based on relevant UK Building Regulations, design guidance and British/European Standards, in particular Building Regulations Document H, BSEN 12056, Sewers for Adoption 7 – and any other particular Southern Water requirements. The extent of proposed adopted foul drainage is shown on the Drainage Strategy Drawing.

- This system will be subject to Southern Water Technical Approval which will act as a framework for future adoption as and when each Lot is developed. This will commence initially with the sewer from Lot 2 to the southern connection to the existing 1025mm trunk main; approval in principle to this main has been previously confirmed by Southern Water.
- As each Lot is developed, the associated adoption application will need to be accompanied by connection applications to allow Southern Water to validate actual demand against the assumptions made in the original Technical Approval application.

It should be noted that the highway drainage is specifically excluded from the above design and constitutes a separate and independent drainage system installed as part of the highway construction currently under way. Part of these works includes provision of pipework across the road which is highlighted as light blue lines for surface water and yellow lines for foul. An additional surface water pipe to the west has been included only for insurance purposes – the intention being to route all drainage from the north of the road to the eastern surface water crossing. An existing ditch drainage system indicated as a green line on the strategy drawing is to be culverted under the road - the design and construction for which forms part of the highway contract.

Dunsbury Hill Farm
Site Wide Drainage Strategy





Contact:
Bam Design
Unit 2, 5 York Way, London, N1C 4AJ
Telephone: 020 3668 7981