

## 5.0 Housing Design

### 5.1 Housing Design and Architectural Language

All of the homes to be constructed in the first phase will achieve Code for Sustainable Homes Level Five and be Zero Carbon. This goes beyond the Level Four requirements set out in PPS1 and illustrates the Client bodies' commitment to the development. The homes will also achieve Building for life Silver Standard and Lifetime Homes standards. Therefore they are designed for accessibility and adaptability. Both aspirations help to create a diverse and long lasting community.

Good practice suggests that energy use should be minimised first before energy production is considered. The buildings will be highly insulated, achieve air tightness with internal heat recovery systems for re-circulation of warm air and be fitted with low energy equipment throughout therefore minimising the energy needed.

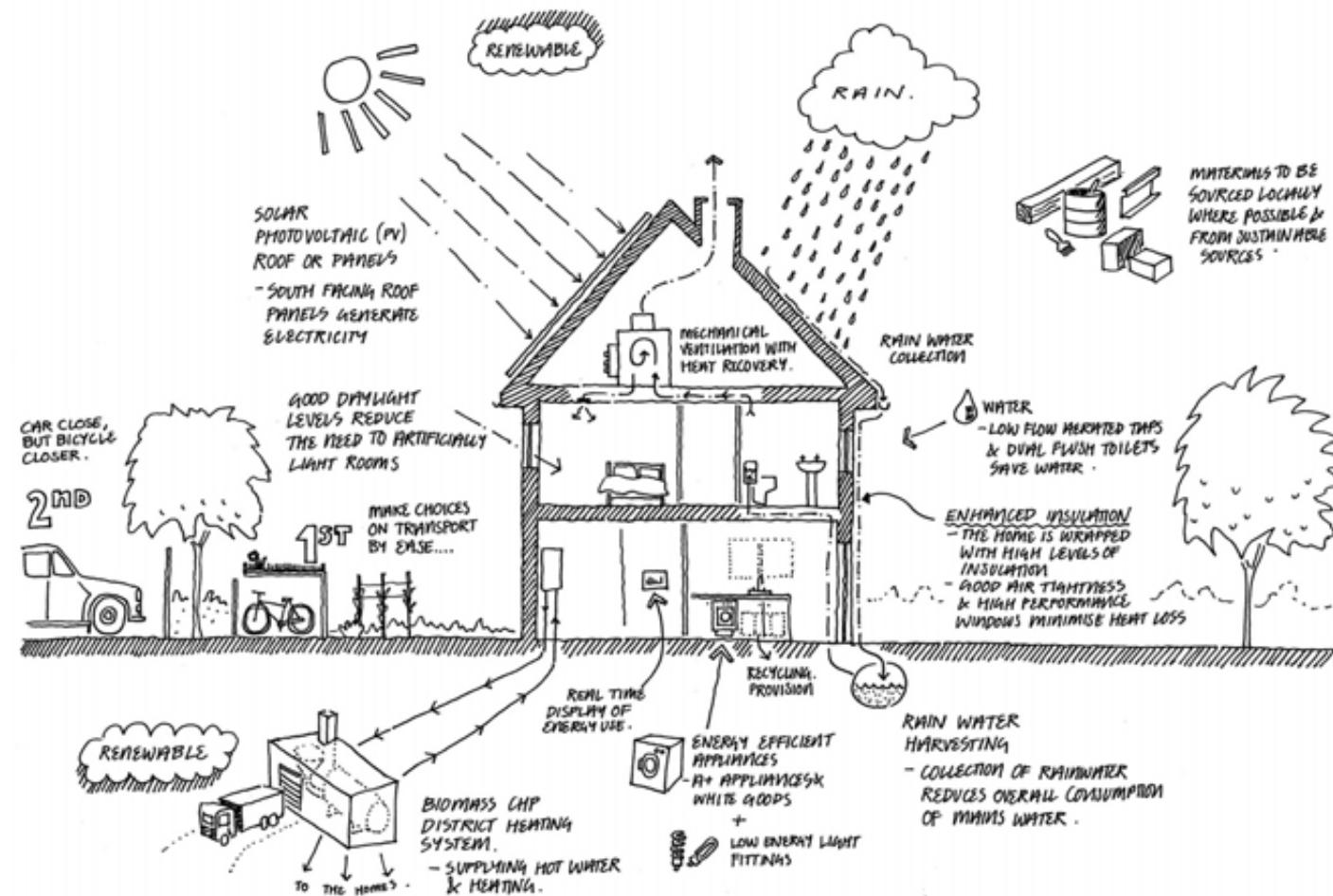


FIG.67 Code Level 5 House

To generate energy there will be an on-site system which combines the use of photovoltaic (PV) roof tiles for homes, with a gas combined heat and power plant, supported by a Biomass district heating system. Subject to the efficiency of the photovoltaics excess electricity can be sold back to the grid.

The housing technologies are therefore 'smart'; however they alone have not been the driving factor for the aesthetics for the residential buildings. There have been much publicised schemes, like BedZed that use the environmental technology of their properties to define their aesthetic. The approach for the first phase is different and is based on contextualism.

The masterplan and the first phase seek to grow the existing town rather than create an alternative, stand alone settlement. Therefore the architecture should reflect this philosophy by responding to the character of Bicester and its surroundings. The Client's brief required the houses to look welcoming and familiar, with the development aiming to embrace the general public.

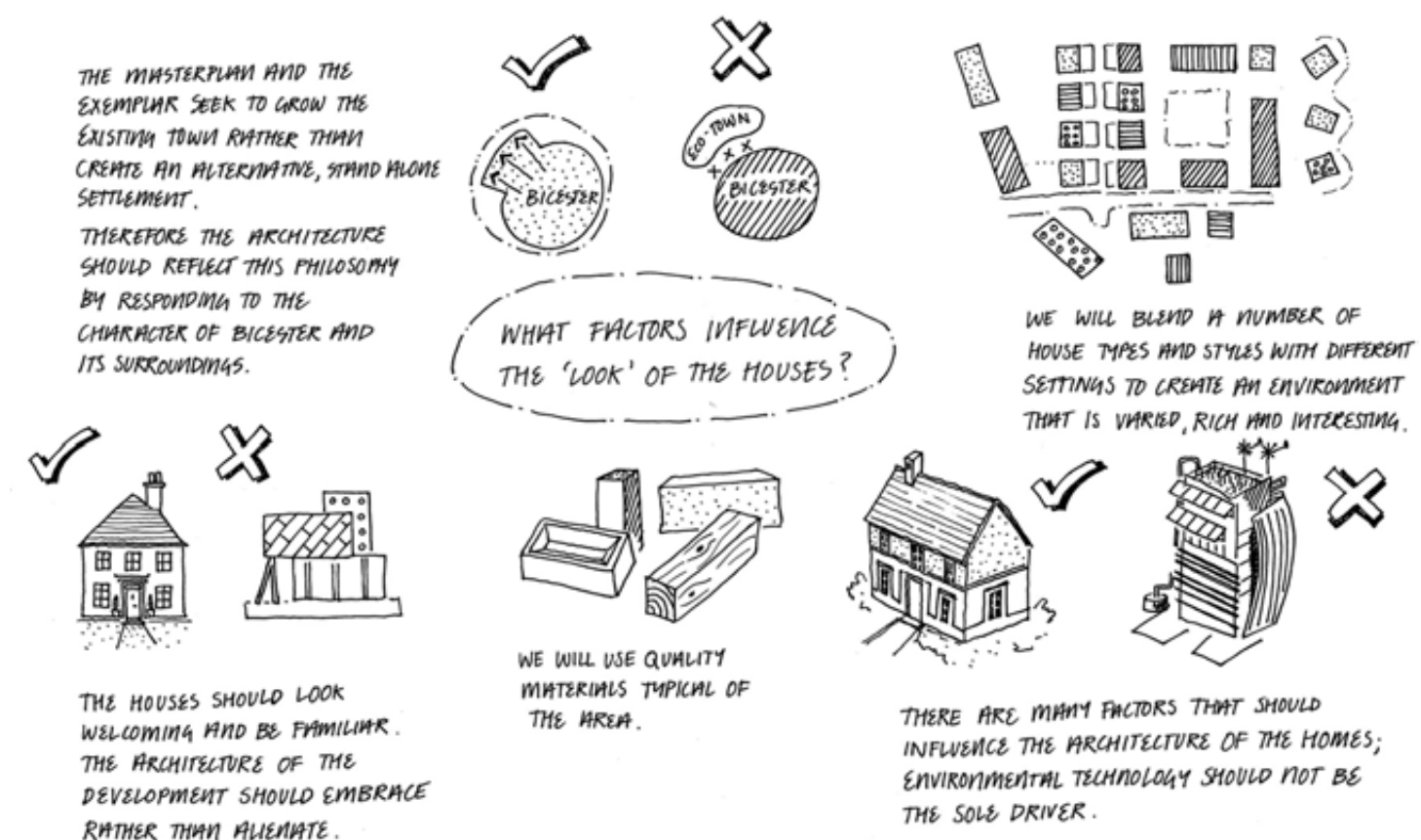


FIG.68 Housing design influences

# Housing Design

## An application for the exemplar phase of the NW Bicester Eco Development

### Design & Access Statement

A lot of thought was given to what the architecture of this extension to Bicester should be. Research into traditional Bicester typologies led us to conclude that a re-use or interpretation of the typologies would not meet our Client's brief but an understanding of the local material palette and its use could influence the new design and embed the new development into its surroundings.

A careful balance was struck between A2D's commercial requirements to provide housing that was recognisable and competitive in the Oxfordshire marketplace and the high aspirations of the Eco Town development. The first phase proposals aim to create a transition between the current perceptions of traditional housing that our Client believes will sell in this location, with more cutting edge sustainable design which it is anticipated will feature increasingly on the later phases of the masterplan.



**FIG.69 Material precedent; Bicester and Bucknell**



The architectural language of the scheme is grounded in its locality by making reference to local materials whilst looking further afield to develop the language for the housing. A study of successful housing developer-led precedent studies was undertaken to assess the qualities that contributed to a successful streetscape and architectural language. These included reference to built schemes including Poundbury but also emerging developments and developers including Kevin McCloud's Hab Oakus. Five design themes were created for the new housing and the Client then selected three to use within the exemplar phase.



**FIG.70 Material precedent; built schemes**

The first phase utilises a number of overlaid features to create variety, interest and complexity. These are documented below:

i) Housing typologies

There is a strong desire to provide tenure blind accommodation. The brief for the housing contains a number of housing types including bungalows, flats, terraced and detached properties of different sizes. Thirty percent of the accommodation is affordable and the space standard requirements have resulted in subtle variations in composition between the tenure types. The different accommodation is deployed in different locations across the site leading to a variety of massing.

ii) Roof orientation

The utilisation of photovoltaics (PV) on the roofs of houses has led to the manipulation of roof angles to assist in maximising their use and efficiency. PV's will form a substantial component of the energy strategy for the proposal and their incorporation has dictated the

roof pitch direction across the layout. As a rule, gable fronted properties have been developed for streets running north/south and linear eave fronted housing for east/west routes.

Two gable options have been developed and these are deployed in different locations throughout the layout. An equal pitch design has been developed for relatively flat areas of the site. The significant amount of PV required has been used to create a pitch 'overrun' detail that adds a complexity to the silhouette of the property. An asymmetric gable has been developed for sloping sites to allow for stepping of the properties. A simpler roof profile is achieved in these areas with the PV's located on the longer roof pitch.

The roof pitch of the properties has also been studied and typically a 40° roof pitch has been adopted to allow for the future habitation of the loft space, facilitated by the use of attic trusses.



FIG.71 Equal Gable



FIG.72 Asymmetrical Gable



FIG.73 Linear Eave

### 5.1.1 Design type 1

This has a horizontal expression breaking the façade into two bands. The lower is exaggerated making the façade more welcoming, whilst the upper band is suppressed with windows pushed up under the linear eave. Windows are proportioned to assist this reading with smaller units used at first floor level. At ground level, meanwhile, the openings appear larger as they are 'framed' by a light colour render and reconstituted stone detailing that unifies the base of the dwellings. The horizontal expression is not typical of the local area but the use of brick or reconstituted stone for the extended ground level make reference to materials used in the Bicester locality.



FIG.74 Design Type 1- Part elevation and material labels



FIG.75 Design Type 1- Terrace



FIG.76 Design Type 1- Detached property

5.1.2 Design Type 2

The second design allows for the expression of each housing unit as a single entity, meaning that variety of materials can exist within terraces from dwelling to dwelling. It is proposed that there is material change across terraces (from property to property) whilst detached houses use a single material treatment, brick or render (familiar local materials) but also timber boarding is proposed. Whilst timber does not form part of the local palette, locally sourced timber is sustainable and will respond to the softer organic landscape features of the scheme. In contrast with the first typology, tall windows are arranged vertically across the façade creating a contemporary rhythm to the frontage. The simplicity of the window composition allows for a more complex roofline and gable arrangements are appropriate with this design.



FIG.77 Design Type 2- Part elevation and material labels



FIG.78 Design Type 2- Terrace



FIG.79 Design Type 2- Detached property



### 5.1.3 Design Type 3

The third design considers the essence of a typical Georgian model using a regular pattern of openings in the façade. This creates an ordering principle that can then be individualised on a property by property basis with the use of reconstituted stone banding and detailing, canopies, porches and window surrounds.

All three designs have been developed to include feature end/side facades for significant exposed ends and sheltered terrace breaks.



FIG.80 Design Type 3- Part elevation and material labels



FIG.81 Design Type 3- Terrace



FIG.82 Design Type 3- Detached property



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The feature housing designed by Higgs Young Architects seeks to maximise available roofspace for photovoltaics and creates flexibility by adopting loftspace for home offices. The buldings’ forms are driven by an expression of the roofline and respond directly to their orientation. The language of the houses is derived from a vertical banding of the building frontage and interesting contrast to style one across the layout.



FIG.83 Higgs Young Architects’ proposals

The designs proposed by Panter Hudspith seek to reduce heat gain and loss by passive means by promoting a thermally massive ground level (to moderate temperatures in active living spaces) and a lightweight first floor level. Allied with internalised shutters and a wind and sun assisted ventilation system the buildings aspire to be economically constructed with locally available materials. The houses have a horizontal expression, but in this instance emphasise the heavyweight base with an exaggerated first floor level.



FIG.84 Panter Hudspith’s proposal

## 5.2 Materials

A series of studies were undertaken of Bicester and the surrounding villages and a photographic precedent created that documented the material palette for the NW Bicester masterplan's context. This has informed the material selection used across the housing in the first phase and seeks to 'ground' the proposals in their surroundings.

The Client has made a commitment to source materials locally where possible.



FIG.85 Red brick, Flemish bond



FIG.86 Blue brick, Dragface, Stretcher bond



FIG.87 Through colour renders- white, beige and cream, different surface finishes



FIG.88 Reconstituted stone



FIG.89 Slate roof



FIG.90 Timber boarding

## 6.0 Green Infrastructure/Landscape

### 6.1 Landscape Strategy

The landscape strategy set out for the NW Bicester eco development Exemplar site is sensitive to the local landscape character, responsive to the existing green infrastructure (GI) and the limited valuable habitats present. The PPS1 Supplement sets out the core guidance for Eco-Towns, including requirements for green infrastructure.

Biodiversity has been a key consideration in the design of the green infrastructure from the outset, rooted in the retention of existing hedgerows, even those not identified as species rich, and the river corridor environs. The phase 1 habitat surveys received in July 2010 provided valuable early warning of potential species and habitats and have been used as a formative factor in the design layout and landscape strategy. This informed the targeted extended phase 1 habitat surveys data received at the end of October 2010. However, the targeted surveys have not identified any additional significant

species or habitats beyond that already identified much earlier in the design process. In addition the Biodiversity Workstream has been invaluable in contributing to the emerging Biodiversity Strategy and Green infrastructure proposals.

Green Infrastructure is a strategically planned and delivered network of quality green spaces and environmental features. It threads through and surrounding the built environment, respecting and enhancing the distinctiveness and character of habitats and landscape types while supporting and sustaining natural and ecological processes and the quality of life and health of the community, including play provision. The guidance indicates that 40% of the area of an Eco-Town should be green infrastructure, 20% of which should be publicly accessible. Guidance also advocates that GI should, as far as possible, be multi-functional, a principle which has also been applied to the design of the Exemplar site.

### 6.2 Landscape Character

As part of the landscape assessment and design process for the wider Bicester eco development masterplan, Hyder has prepared a landscape character assessment based on the principles set out in 'Landscape Character Assessment Guidance for England and Scotland', produced by the Countryside Agency and Scottish Natural Heritage, in 2002. This landscape character assessment (see Hyder's Site Landscape Character Assessment dated 18th August 2010) provides the landscape context for the wider Bicester eco development site area, which includes the exemplar site. The latter falls within the Caversfield Valleys and Ridges landscape character area, typified by mixed farmland on ridges, with a strong field pattern bounded by established hedgerows and woodland blocks. This arrangement generally provides a strong sense of enclosure due to characteristic landform, vegetation and settlement edges.



The Oxfordshire Wildlife and Landscape Study (2004), places the site within 'Wooded Estatelands' Landscape Character Type, with the following key characteristics:

- 'Rolling topography with localised steep slopes.
- Large blocks of ancient woodland and mixed plantations of variable sizes.
- Large parklands and mansion houses.
- A regularly shaped field pattern dominated by arable fields.
- Small villages with strong vernacular character.'

This is a well-wooded landscape with blocks of woodland and corridors of trees bordering valley streams. Fields are generally enclosed by hedgerows, with established ash and oak hedgerow trees also contributing to the wooded character of the landscape. The surrounding agricultural land is generally characterised by a geometric pattern of medium to large fields.

### 6.3 Palimpsest & Local Distinctiveness

It is important that the exemplar site will present a sequence of memorable spaces for visitors and residents alike, that respect the cultural and natural history of the locally distinctive landscape. Characterised by hedgerows, scattered trees and occasional woodland copses much of which is associated with 18th Century parkland, the site perimeter is mostly defined by existing hedgerows.

The landscape design seeks to reveal these layers of history through safeguarding where possible and through juxtaposing these with new and contemporary opportunities.

### 6.4 Conceptual Origins

It is important to note that the layout design and landscape design share a common conceptual origin, based on the above, expressing a collective story of how the layout and the landscape have been developed

iteratively, from Terry Farrell Associates earlier work as a starting block (endorsed by all) which set out a number of design principles. For Green Infrastructure an important design principle was to ensure that the development layout incorporated and embraced both existing and proposed accessible green space. Particularly in the north fields where the development has a permanent rural edge the layout design is shaped around three new key green spaces, and bound within the retained hedgerows, enriched with supporting habitat buffers and small copse planting reflective of the local landscape character.

Place making and quality of environment is an integral element of the design. The root concept for the landscape design of the exemplar site is, where possible, to preserve and enhance the existing green infrastructure, site topography, hydrology and key ecological and cultural assets. The hedgerows are a critical element of the landscape structure.

Predominantly these have been retained in the proposed scheme, many of which are also rich in biodiversity and, together with the local river corridors and associated habitat, are the primary ecological asset.

The landscape sensitivity and capacity to accommodate development is a key formative factor in the proposed layout and the landscape design, largely by augmenting the existing green infrastructure and mitigating sensitive views from the nearby setting of St Lawrence’s Church and Home Farm by the use of planting buffers.

6.5 Landscape Design Principles

The following design principles have been applied to the proposed landscape structure of the exemplar site, all of which are wholly complimentary to the landscape character and merits of the site (see below) and have informed the conceptual origins of the layout:

- Gently rolling landform, characterised with species-rich hedgerows
- Biodiverse river corridor

- Cultural Heritage, Architectural and Landscape Vernacular
- Strong perimeter and internal hedgerow structure retained
- retain and enhance existing Green Infrastructure, improving green links through and contextual connectivity
- improve biodiversity through better management and habitat creation
- integrate SuDS, Green Corridors, Cycleways and Community Routes
- create a variety of open spaces (soft and hard / green and grey) and public amenity space
- create a new Village Centre maximising relationship with the River Bure corridor
- maximise retention of species-rich hedgerows, woodland planting and specimen trees
- improve riparian corridor, protect existing sensitive habitats and create areas of new biodiverse wetland and long term enhancement
- provide natural play areas including LEAPs and NEAPs to cater for all age groups

- provide a lighting strategy that is mindful of Secured by Design and public safety while remaining sensitive to wildlife (eg bat feeding corridors)
- provide productive, edible landscape through allotment and community gardens and natural foraging areas, including within homezones and school grounds

6.6 Site Zoning

Typical of the wider landscape character (described above) the merits of the exemplar site are:

- Gently rolling landform, characterised with species-rich hedgerows
- Biodiverse river corridor
- Cultural Heritage, Architectural and Landscape Vernacular
- Strong boundary hedgerows

Within this landscape structure the exemplar layout proposed can be broadly described as five distinct zones:

1. North Fields
2. River Corridors
3. Non-Residential Core
4. South Field
5. Edges

**North Fields** – The safeguarding of the hedgerows here is integral to the proposed layout. Since the early Farrell’s concept of the ‘green link’ the iterative design process has been developed into three key green spaces within the development layout. The central location adjacent to the retained middle hedgerow and proposed primary route, and a green space in the middle of both the north east and north west fields. These are the primary multifunctional greenspace for the north site area, containing swales, public amenity ponds, new aquatic, marginal and dry habitats and natural play areas. Collectively they are a strong physical extension of the contextual greenery into the site from the north and west and provide a green umbilical cord

toward the southern part of the site.

Pedestrian paths along the site perimeter here connect to homezones and green lanes within the layout and also offer permeability to future phases of the Masterplan.

**River Corridors** – This area includes the residential layout to the immediate north of the river corridors. By agreement through the ‘Biodiversity Workstream’ both the Bure river corridor and its tributary have been protected by retaining in the main a 60m wide zone free of proposed buildings. The north / south river corridor has been designed as riparian with an open wooded character, and accommodating a NEAP to the south of the proposed bridge crossing. A series of footpaths would provide links and circular walks within this corridor, but all would be unlit and avoid certain areas to further promote biodiversity and minimise disturbance of existing and proposed habitats. This is the primary greenspace in the southern part of the site. The east / west river corridor has been designed as a marginal or temporal grassland habitat with scattered trees, to promote habitat variety and improve foraging

areas for birds and other wildlife. This is where a main badger sett is located so public access will be limited, and foraging is supported by introducing small groups of fruiting orchard trees on the upper slopes north and south of the tributary.

**Non-Residential Core** – The non-residential core is laid out along the primary east / west route, either side of the proposed bridge. On the west side the proposed primary school grounds include sports pitches, open space and a perimeter nature trail.

The village ‘high street’ public realm is sensitively designed as a high quality environment and village retail square, accommodating through traffic and servicing access to the rear of shops and facilities. The proposed shared surface arrangement is consciously designed to reduce traffic speeds and promote free movement of pedestrian and cycle users. The character and footprint of the village high street extends across the proposed Bure Bridge to the other side adjacent to the residential buildings. It is important to acknowledge this space at the community route crossing point with equal importance.



**South Field** –Being closest to Bicester town the character of the layout here is subtly more ‘urban’ than the north fields, and the north / south homezone axis that ‘cross’ the east / west spine lane borrow and compliment the proposed design pattern and character of the village high street public realm.

**Edges** – The treatment of the perimeter of the proposed plan has been considered from the outset. The landscape and visual impact assessment and constraints plan identified where landscape mitigation buffers would be required to mitigate sensitive views. These buffers include allotments, biodiversity, hedgerow supporting habitats and planting and movement corridors.

6.7 Street Hierarchy

Route hierarchy has been carefully considered in the design development of the layout, and against Manual for Streets and MFS2. Generally, in relation to vehicular traffic, the road system will be designed to control vehicle speeds for the benefit of road safety.

The provision of social infrastructure will also promote social interaction that will benefit overall well-being. Therefore all streets off of the primary route have been designed as homezones (two types, Classic Woonerf and Exemplar or ‘Green Lanes’.

The streets are arranged to reflect a simple but rich sequential experience, becoming increasingly pedestrian dominant toward the edge of the site, with ‘Green Lanes’ where buildings face access lanes on one side only and are typified by a rural or greenspace character on the other side.

A change in surface materials to distinguish the homezones / edge environs encouraged in accordance with OCC’s Street Design Manual. Resin bonded gravel or contemporary forms of ‘grass paving’ (such as golpa block or fibre-turf) might be suitable in some locations to create a distinctive and inviting character to Green Lanes, for example.

Spine Road / Street (Primary Route)

The primary route through the site will be akin to a country lane in proportions and character. This route runs north / south. Large street trees, equally spaced, will help to distinguish the primary route.

Classic Homezones (Woonerf - Secondary Routes)

(See Green Infrastructure Typology, below)

Exemplar Homezones (Tertiary Routes)

(See Green Infrastructure Typology, below)

Green Lanes (incl Private Access Routes)

(See Green Infrastructure Typology, below)

6.8 Green Infrastructure

In considering the green infrastructure and landscape strategy reference to the following guidance has been made, amongst others:

- eco- towns : A Supplement to Planning Policy Statement 1

- Natural England’s Green Infrastructure Guidance
- TCPA’s Green Infrastructure Worksheet
- The Landscape Institute Green Infrastructure Position Statement
- Secured by Design and Manual for Streets 1 and 2
- CABE’s Open Space Strategies
- Cherwell Recreational Strategy 2007-2012
- Hyder’s Landscape Character Assessment of the Exemplar Site

The retention and enhancement of existing Green Infrastructure and biodiversity, improving green links, contextual and habitat connectivity, have been key considerations in the integrity of the proposed landscape structure.

The design layout provides a Green Infrastructure (GI) potentially exceeding 46%, with public GI exceeding 36%. This includes some homezone areas in accordance with GI guidance, but by no means all (see below for further details). These figures do not account for the

potential and likely contribution that back gardens could offer to the overall GI. Neither do they account for the full width of the perimeter hedgerows, as all measurements have been calculated from the assumed centre line in accordance with the application boundary. Importantly, the existing landscape features of greatest biodiversity are the hedgerows, which have been retained and augmented with supporting habitat and management. They form a skeletal framework for the green infrastructure, together with the river corridors and local topography. The landscape infrastructure is designed in sympathy with the local landscape character, but also incorporates the philosophy of minimising dominance of cars by claiming streets for people and creating extensive areas of homezones (see below).

Green Infrastructure provision on the exemplar site should be considered in context of Bicester’s existing green spaces and links, and the planned future provision of GI on the wider Masterplan site.

Proposed Green Infrastructure typologies for the Exemplar site are as follows:

6.9 Hedgerows / Buffers

The retention of species-rich hedgerows and specimen trees has been maximized, being the most important existing land cover and terrestrial habitat corridors. It is proposed to augment the hedgerows by creating a new and adjacent habitat. For example a minimum 3m rough grass ‘buffer zone’ against hedgerows as a new supporting habitat to improve biodiversity. This grass zone protects the roots of the trees and shrubs in the hedgerows and creates an open area adjacent to the hedgerow of benefit to fauna.

Wide buffers are particularly important where the hedgerows support trees, but there are very few trees of any size within the existing hedgerows on the exemplar site. New wider and more diverse buffer areas have been incorporated with other areas of open space or landscape features alongside the hedgerows, such as areas of tree and shrub planting, woodland copses, allotments and SuDS features. These additional habitats add to the diversity of habitat conditions in proximity to the hedgerows. They ensure that significant corridors

that allow for the movement of wildlife across the site are maintained. Incorporating the other landscape and SuDS features into areas close to the hedgerows enhances the value of these features for wildlife.

Proposed supporting structure planting and habitats that have been located close to the hedgerows will not be lit and thus maintaining dark corridors suitable for nocturnal fauna including light sensitive bat species.

By design, all breaks in existing hedgerows have been kept to a minimum to maximize continuity of associated feeding corridors (such as for bats) and visual enclosure. Through collaboration with Oxfordshire County Council streets have been kept to a minimum width at break points. All sections of hedgerow to be removed to accommodate the development footprint will be translocated within the site to form part of the green infrastructure elsewhere, supplemented with new planting where necessary.

**6.10 River & Riparian Corridors**

The river and riparian corridors, (the Bure, running north / south and its tributary running east / west),

in the southern area of the exemplar site offer, wet and ephemeral habitat and diversity within the green infrastructure.

However, there is significant scope to improve the quality of these corridors to benefit existing habitats and enjoyment by future users. It is proposed to re-profile areas of the river corridors to secure the future enhancement and diversity of habitats within the river corridor, to minimize the impact of the proposed bridges to wildlife movement and visual amenity and to enrich the overall landscape experience of this primary greenspace. Careful creation of areas of new biodiverse wetland, using scrapes and small perched SuDS ponds will be included within the riparian corridor. By agreement through the ‘Biodiversity Workstream’ the Bure river corridor has been designed as riparian and wooded to enhance its existing habitat, and accommodating a NEAP. A series of footpaths would provide links and circular walks within this corridor.

This is the primary greenspace in the southern part of the site. The east / west tributary corridor has been designed as a marginal / ephemeral grassland habitat with scattered trees. This is where a main badger sett

is located so public access will be limited. Together the proposed enhancement of these river corridors will offer a more diverse habitat mosaic and create a strong ‘green lung’ in the heart of the development for recreation and amenity.

**6.11 Green Open Space**

Collectively this typology is the primary multifunctional green space in the north fields. It is a collection of green space functions, the central green space being anchored by the existing retained hedgerow to the west, which offers strong compartmentalization of the development layout in the north. From the north entrance to the site this central greenspace flanks the spine lane, providing a strong visual amenity setting for the exemplar site within its rural context. Both in the east and west fields a similar multifunctional greenspace provides amenity, play, SuDS and habitat opportunity upon which buildings are orientated to maximize visual benefit and strong spatial design.

These open spaces offer a strong physical extension of the greenery into the site from the north and provide a



green umbilical cord as it broadens toward the southern part of the site.

Pedestrian paths along the site perimeter here connect to homezones within the layout and also offer permeability to future phases of the Masterplan.

## 6.12 Green Roofs

There is a mosaic of green roofs across the development, on private garages, private roof and some non residential buildings. These will, ideally, be meadow turf (rather than sedums) as meadow turf can support a far greater species rich habitat than sedum. However, for the purposes of Green Infrastructure all green and brown roofs are positive contributions.

## 6.13 Natural Play / Recreation

Natural play and recreation areas including LEAPs and a NEAP cater for all age groups, and disabled users in accordance with CDC and national guidance. The incorporation of LEAP, a NEAP and play environments within exemplar homezones, as an integral part of the green infrastructure, will encourage children and young

people to interact with their environment and use the landscape for creative learning activity. CDC have encouraged and endorsed LEAPs and a NEAP without formal play equipment, which will encourage greater levels of imaginative play. LEAPs have been designed to include natural play environments for younger children and consist of a variety of stimuli, such as varied surface textures, low and gentle landform, child sized 'doorways', floor or hedge mazes, shallow rills that fill with surface water following rainfall, and edible plants. Proposed provision is as follows:

### 1. Neighbourhood Equipped Area for Play (NEAP -Adjacent to River Bure corridor)

Spatial provision included for the 465m2 requirement for ball games, but proposed grass surface not hard surface & 8+ items of 'play equipment' (green gym). 30m buffer to boundary of residential properties.

The NEAP has been designed for all age groups, and includes seating areas, level space for ball games, trim trail, green gym with proprietary 'natural' and timber low key installations, dexterity challenges (e.g. timber posts), natural shelters, etc.

### 2. Enhanced Local Equipped Area for Play (Enhanced LEAP – in central Green Open Space)

This area has been designed to be as flexible and green as possible, using reinforced turf (rather than an artificial surface) and a demarked games fence / kick wall / games wall at one end and to accommodate the equivalent space for a Multi Use Games Area (MUGA) footprint. As with the NEAP in the south, this has been designed to be an integral element of the landscape, complete with green gym / younger children's play items around the periphery and integrated buffers / biodiversity and access for all. 10m buffer for LEAP to boundary of residential properties – compliant. 8 items of 'play equipment' provided + natural play areas included.

### 3. Local Equipped Area for Play 1 (LEAP 1 – near School)

Appropriately sited adjacent to the school this is envisaged to be well used, safeguarded by a low railing to the perimeter. Approx 5 items of 'play equipment' provided and natural play areas. 10m buffer for LEAP to boundary of residential properties.

4. Local Equipped Area for Play 2 (LEAP 2 – North East field)

Maximising use of the SuDS swale feature and using the local topography this location incorporates a local ‘scrape’ to create a shallow bog habitat to assist natural play and education. 10m buffer for LEAP to boundary of residential properties. Approx 5 items of ‘play equipment’ provided and natural play areas. This location has strong natural surveillance and is overlooked on all sides.

5. Exemplar Homezone Play Environments

Exemplar Homezones will be designed to provide flexible environments to encourage young play, including demarked or subtle surface pavement patterns and textures (for hopscotch, etc). This is a subtle but locally important contribution to play provision, particularly for young children.

6.14 School Green Space

Within the school curtilage provision is made for hard and soft play areas. Importantly, the perimeter of the

school grounds offers opportunities for a nature trail and learning through landscapes. In particular the area adjacent to the Bure tributary to the north is on the edge of the badger Sett foraging ground, and it may be suitable here to introduce an orchard and rough grassland areas for children to learn and play.

6.15 Sustainable Urban Drainage Systems (SuDS) / Swales

SSuDS have been incorporated into the landscape design from the outset to mitigate flood risk from surface water, comprising a system of devices designed to manage both the quality and quantity of surface water runoff, whilst providing biodiversity habitat creation and public amenity.

The SUDS strategy is based on discharge via ground infiltration alone, minimising surface water discharges to nearby watercourses and the risk of surface water flooding. As a contingency against unexpectedly poor ground conditions, SuDS features have been designed to allow for discharge to watercourses restricted to greenfield rates.

Treatment trains have been formed using individual SuDS features to form a chain, each having a variety of attributes and strengths, which have been linked to complement one another to provide the required balance of storage and treatment.

Each property would incorporate a subsurface combined rainwater harvesting and soakaway system within the curtilage. Rainfall would be retained within the rainwater harvesting tank, ready for future reuse within the property, significantly reducing demand on the potable water network. Excess rainwater would discharge to a soakaway structure. Commercial property, the school and other large properties would allow use of a wider range of storage techniques including basins, ponds and other soakaways within open areas.

At locations where shallow impermeable strata prevent the use of a soakaway, excess rainwater within the rainwater harvesting tank would discharge by pipe to a basin, pond or subsurface storage structure nearby via a local pipe network, discharging via pipework to a

nearby watercourse at a controlled rate to ensure site discharges remain at greenfield rates.

Basins would incorporate relatively small channels and wetland areas to provide storage for regular rainfall events, whilst a larger area would be provided for inundation during highly infrequent events, allowing the area to be used for amenity with inundation typically once every few years for twelve hours. Ponds would incorporate a permanent water body, and incorporate sufficient volume to store additional rainfall whilst slowly discharging to ground. Ponds and basins would have a minimum of 1:3 slopes and appropriate access to facilitate maintenance, whilst the incorporation of gentle slopes would also provide conditions for wetland / marginal habitat creation to count toward biodiversity net gain. Swales are proposed across the site and provide excellent opportunities for water treatment, habitat creation and flood attenuation.

Adopted roads within the site would drain via a mixture of permeable paving, swales and channel features, discharging to the ground. Private roads, parking and

other areas of paving would drain surface water via permeable block paving. Typical features include:

- Narrow, relatively deep, vertically faced channels formed within the paved area, the base of which would be permeable and the sides formed using suitable impermeable material such as concrete. A grill near the surface would provide a resilient surface through which would protrude vegetation such as reeds planted in the base.
- Infiltration trenches comprising an excavation with permeable base and backfilled with granular filter material to provide storage and planting medium, allowing infiltration through the base and sides.

By designing in modest surface channels at specific locations, surface water runoff can be conveyed to supply swales and ponds. There is an opportunity for these features to animate space during and following precipitation (see also Natural Play / Recreation).

The development offers the opportunity to improve the quality of watercourses within Bicester which

suffer from a poor flow regime and high nitrate and phosphate levels caused by runoff from farmland.

The regularity and quantity of flow will be adjusted to improve the flow regime whilst lowering the discharges of nitrate and phosphorous.

## 6.16 Classic Homezones (Woonerf)

These routes predominantly run east/ west and feature classic Dutch Woonerf design principles, such as staggered on street parking to create chicanes to reduce traffic speeds and areas of broadened pedestrian space. These routes will mostly accommodate two-way traffic movements. Small street trees in geometric groups will help to distinguish these homezones, located between occasional on street parking

## 6.17 Exemplar Homezones (Incl. Play Environs)

These enhanced homezones convey the character and spatial qualities of exemplar homezone design, befitting of an eco development.



Typically these are aligned north / south at the periphery of the site, organic in layout and serving only a small number of units. Importantly they have been identified as areas where vehicle access is minimal and usually one way in and out. Clusters of natural tree planting can help characterise these as living streets, and shared surface design will incorporate detailed SuDS features such as narrow shallow rills or shallow dished channels to animate street space during and following downpours.

Minimal access for vehicles is accommodated but thereby offering much of the shared street for communal spaces such as raised decks, seating, raised planters to support trees, and strong pedestrian and cycle links through to good permeability connections to surrounding footways. ‘Sheltered’ play environments are incorporated to wholly encourage young children to occupy and claim the homezone as their immediate outdoor natural play realm.

**6.18 Green Lanes (Incl. Private Access)**

These are envisaged as the leafy rural lanes characteristic of the local countryside, flanked by very limited numbers of properties on one side and typically a rural edge, green open space or perimeter hedge and buffer on the other. Lane width is minimal, with tree planting into both the lane and garden boundaries where possible to create a composite leafy fringe to the development.

Surfacing could be typically resin bonded gravel, without kerbs and could either be permeable to promote SuDS or non permeable with a crossfall toward proposed trees to aid natural watering of the rootzone.

**6.19 Community Growing / Allotments**

The landscape planting strategy, as far as practicable, is for a productive, edible landscape through allotments and community gardens and natural foraging areas, using either native species or cultivars of natives.

CDC requirement is for 0.31 hectares of allotments per 1,000 people. There is a designed 0.55 hectares of

allotment provision against an assumed 1,022 people (based on 393 units at a general assumption of 2.6 people per unit). Local food production has been considered from the outset, and in addition to allotment provision there are localised orchards, natural foraging areas and a wider aspiration for a productive natural, edible landscape, including within homezones, subject to adoption by OCC. All of this has the potential for a collective social enterprise or local market garden which could be expanded with additional phases of the Masterplan area.

Allotments have been designed with a low hedge and hedge trees surrounding each group of allotments, as agreed with CDC as a fitting alternative to a security fence. Allotment provision is intentionally dispersed across the site, and where possible with an aspect to the south or east of existing hedgerows to maximize natural light to aid food production.

## 6.20 Connectivity and Permeability

Route hierarchy has been carefully considered in the design development of the layout, and against Manual for Streets and Manual for Streets 2. Generally, in relation to vehicular traffic, the road system will be designed to control vehicle speeds for the benefit of road safety. The provision of social infrastructure will also promote social interaction that will benefit overall well-being. It has therefore been vital to design as many streets as possible as homezones or at least with some homezone design principles.

The streets are arranged to reflect a simple but rich sequential experience, becoming increasingly pedestrian dominant toward the edge of the site and on north / south link spaces where possible.

A change in surface materials to distinguish the homezones / edge environs of the block layout is encouraged in accordance with OCC's Street Design Manual. Resin bonded gravel or contemporary forms of 'grass paving' (such as golpa block or fibre-turf) might

be suitable in some locations to create a distinctive and inviting character. Street design also supports legibility for users and orientation, as well as offering a canvas for soft territorial opportunities for street communities to actively use, engage and socialize within a safe street environment.

## 6.21 Design for Climate Change

The landscape design proposals have been prepared with consideration to climate change implications. Street trees offer shade for people, with some placed where practical, to offer solar shading to buildings. All trees are proposed to be deciduous, offer solar shading in summer months when most needed, and shedding leaves in winter months to allow natural light to penetrate buildings and spaces.

Green roofs to garages as well as some private dwellings and some commercial buildings helps to combat the heat island effect, as does the overall strong web of green infrastructure. In addition various SuDS

features from swales, to rills and channels, permeable paving, attenuation ponds and storage tanks for allotments and domestic rainwater harvesting, are all water management measures designed with good practice and climate change in mind.

## 6.22 Lighting

The Lighting Strategy Diagram sets out the principles for lighting the development and adopts a simple approach to reinforce the proposed route hierarchy of the development. Effective and efficient lighting of the road surface for traffic movement is not the only consideration as the external environment serves many different types of user and therefore the strategy seeks to achieve a balance between sometimes conflicting needs.

With reference to BS EN 13201 the lighting strategy has adopted two recognised lighting classes, which are considered to be appropriate in terms of the character of the area, taking account of the wider environment

and light spill beyond the development boundary and to ensure the lighting design will achieve secured by design for the primary routes. The lighting will be of a standard appropriate for residential areas as set out in the Homezones Characteristics for New Housing Developments, Guidance for developers, February 2002, Section N; “The location of street lighting columns should be such that all unusual aspects of road layout (narrowings, deflections, chicanes etc) are clearly illuminated”. The following lighting classes are proposed;

- CE class for drivers of motorized vehicles on the Spine Lane and at conflict areas such as the village centre and road / access intersections. This class has applications also for pedestrians and cyclists; and
- S class for pedestrians and cyclists for use on footways and cycleways, and other road areas lying separately or along the Spine Lane, homezones, parking areas, schoolyards etc reflecting the different priorities for lighting in these areas.

It is important to note that CDC and the representatives of the ‘Biodiversity Workstream’ have requested that areas of the green infrastructure i.e. the hedgerow buffers, the rivers and riparian corridors and the green open spaces (and habitats within) are retained as unlit corridors to benefit biodiversity and nocturnal foraging. This has been accommodated as far as practicable, within the green link, the perimeter hedgerows and buffers and the river corridors.

The lighting classes identified for the project comply with BS 5489 & BS EN 13201 and comprise;

- Lighting class CE2 (8 m columns) applies to the Spine Lane and village centre;
- Lighting class S7 (5 m columns) applies to the classic homezones and minor access ways; and
- Lighting class S7 (5 m columns supplemented by building mounted luminaries and bollards or ground level lighting) applies to the exemplar homezones
- Lighting class S7 (3 or 4 m columns

supplemented by building mounted luminaries and bollards or ground level lighting) applies to Green Streets and natural play / recreation areas.

The village centre would be supplemented by feature lighting to highlight the building facades at night which would help to improve the night environment. Here the principle would be to ensure that the lighting directly helps to create a pleasant and attractive after-dark atmosphere. At car parks lighting should be contained within the general curtilage of each car park to save energy and to minimise light pollution. Lighting to service areas would be based on an operational approach.

Lighting is an essential consideration in ensuing Secured by Design is achieved. Lighting is recognised as one of a number of aids to crime prevention as well as providing a safe and secure environment. One of the key points of Secured by Design is “Different lighting sources need to be considered for different environments – the character of the local environment must always be respected”. In this respect there are some situations

where lighting would only be required during the operation of a particular facility i.e. school / community sports pitches or. village centre service areas and at other locations where usage of a facility becomes very low during periods of the night e.g. village centre car parks, lighting levels could be reduced for those periods.

Lighting on the Spine Lane bridges requires careful consideration, particularly as they are associated with the important river corridors. Here the emphasis would be on the requirement to minimise light in directions where it is not required through the control of the light distribution. Light above the horizontal should also be minimised by controlling the intensity of the light from the luminaries at high angles.

The design and siting of lighting will be an important consideration at the detail design stage as a well designed scheme will make a great difference to the appearance of the road for road users and for other receptors who are some distance from it, during the day and at night.

The detail design would consider the following issues;

- During day time the style, shape and choice of materials, colour, scale and height, locations adjacent to features such as road layout, existing and proposed trees, buildings etc.
- During the night time the choice of luminaire, colour and appearance of the light, minimising light emitted in to the wider countryside, intruding in to properties and reducing light emitted above the horizontal.

## 6.23 Summary

The creation of well connected, good quality open spaces and public amenity space including recreation is a key ingredient to the success of the exemplar layout.

It is an integral part of the green infrastructure. The Exemplar Site includes the provision of attractive and safe walking and cycling routes which will help reduce the need to travel by vehicle and support the pursuit of healthy lifestyles. Access to open space and play areas is also achieved through the green infrastructure strategy for the site.



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FIG.91 Landscape Masterplan

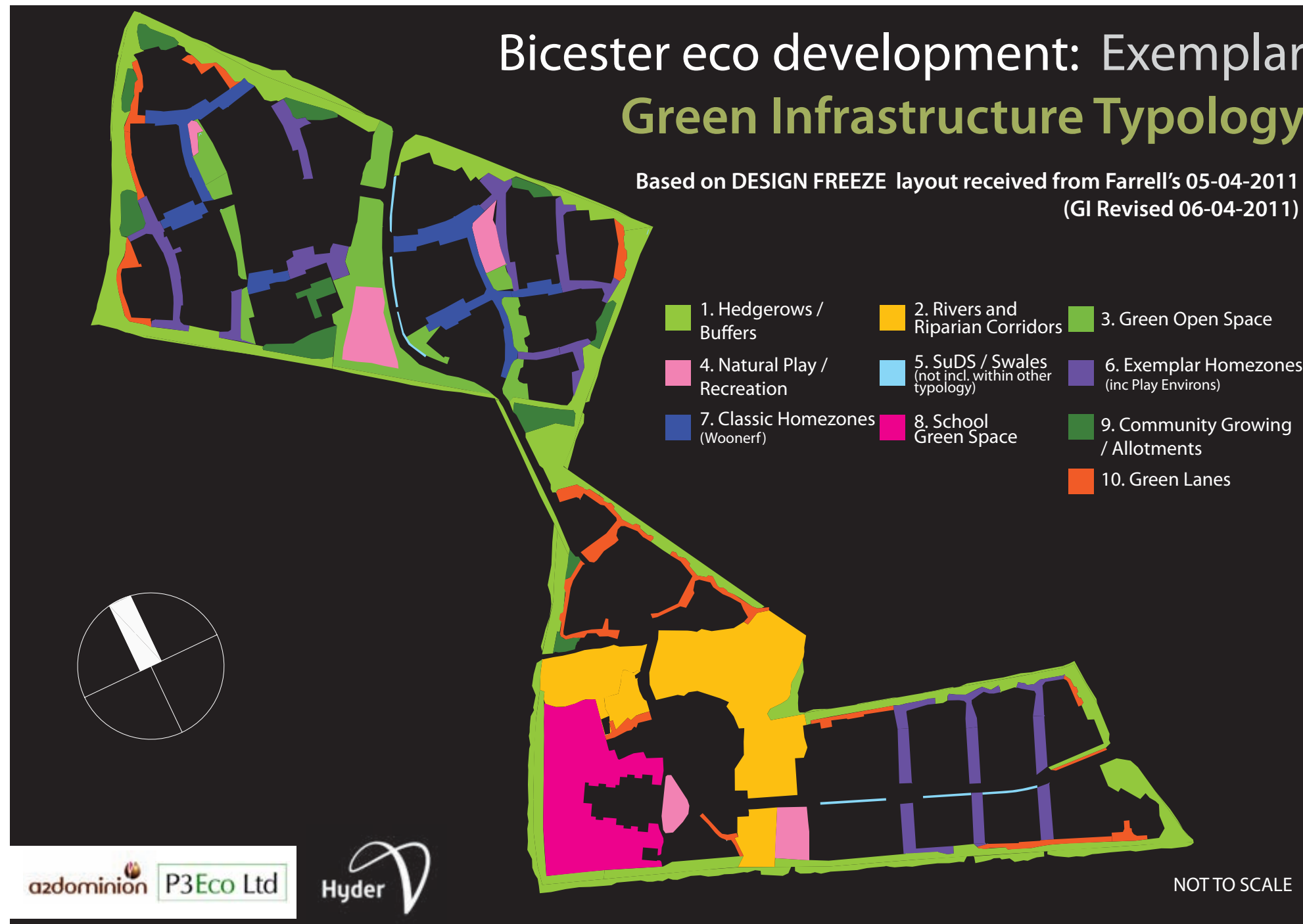


FIG.92 Green Infrastructure Typology

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Bicester eco development : Exemplar 06-04-2011						
Green Infrastructure Apportionment - Centre Hedge Boundary						
PUBLIC/PRIVATE					% GI	
	Areas for Exemplar		m2	ha	% EXEMPLAR SITE	% OF TOTAL GI
	Exemplar boundary		211246	21.1246	100%	
PUBLIC	Hedgerows / Buffers		25938	2.5938	12.28%	26.23%
	Rivers & Riparian Corridors		18700	1.87	8.85%	18.91%
	Green Open Space		9645	0.9645	4.57%	9.75%
	Natural Play / Recreation (to incl. all LEAPs & NEAP)		5695	0.5695	2.70%	5.76%
	SuDS / Swales (where not included within other typology)		690	0.069	0.33%	0.70%
	Exemplar Homezones (incl. play environs)		10502	1.0502	4.97%	10.62%
	Green Lanes		6093	0.6093	2.88%	6.16%
	Classic Homezones (Woonerf)*		6307	0.6307	2.99%	
	* (not included toward total GI contribution)					
PRIVATE	School Green Space		10197	1.0197	4.83%	10.31%
	Green roofs (meadow turf/wildflower)		5980	0.598	2.83%	6.05%
	Community Growing / Allotments		5458	0.5458	2.58%	5.52%
	(reqt is 0.31ha per person assuming 2.6 people per unit @ 393 units = 0.316ha)					
	Domestic* av 50m2 at 393 units		19650	1.965	9.30%	
	* (not included toward total GI contribution)					
	SUB-TOTALS		124855	12.4855	59.10%	100.00%
	(Classic Homezones)		6307	0.6307	-2.99%	
	(Domestic)		19650	1.965	-9.30%	
PUBLIC & PRIVATE (Excluding Classic Homezones & Domestic Private Gardens)					46.82%	
PUBLIC					36.57%	
PRIVATE					10.24%	

FIG.93 Green Infrastructure Apportionment

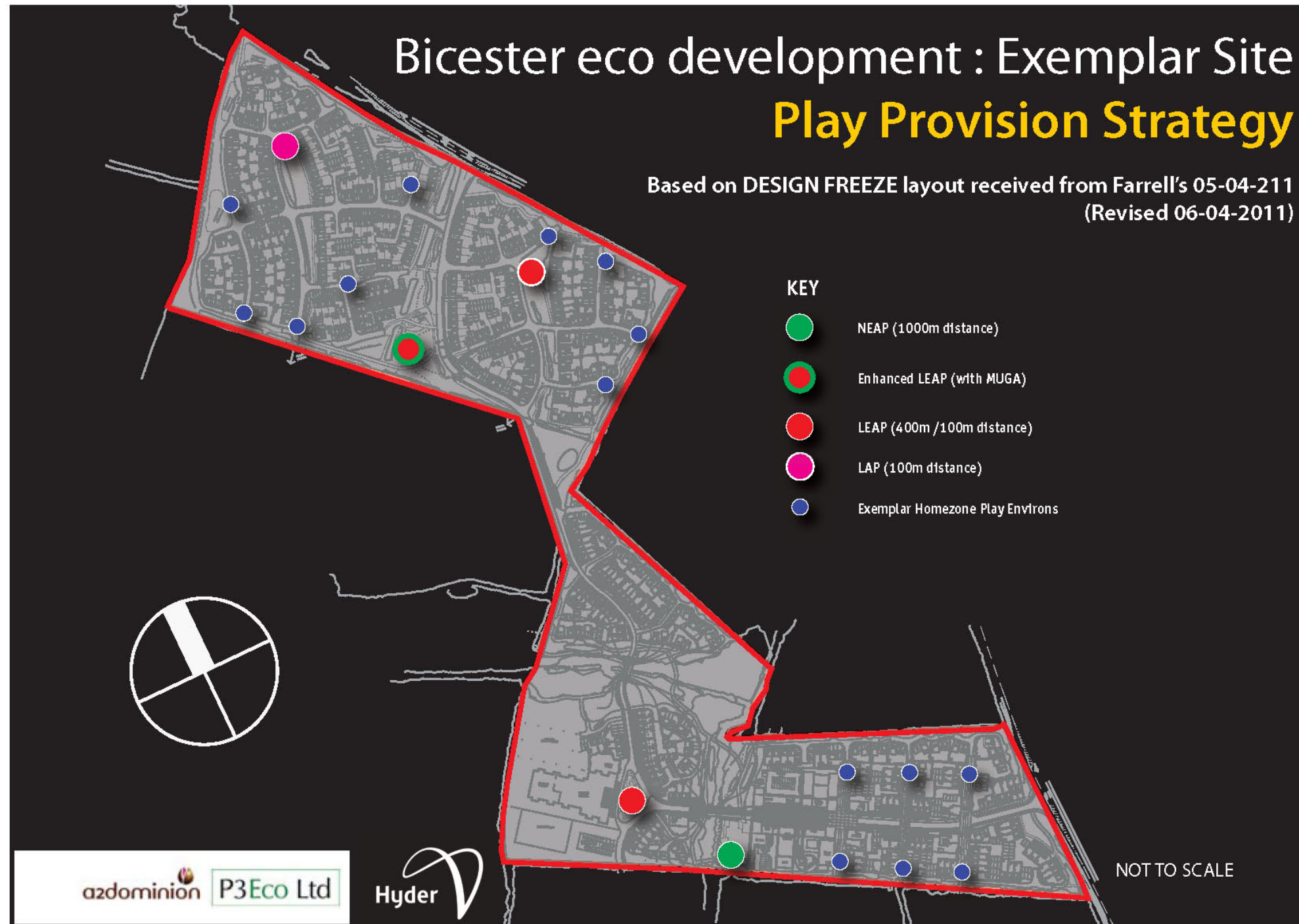


FIG.94 Play Provision Strategy



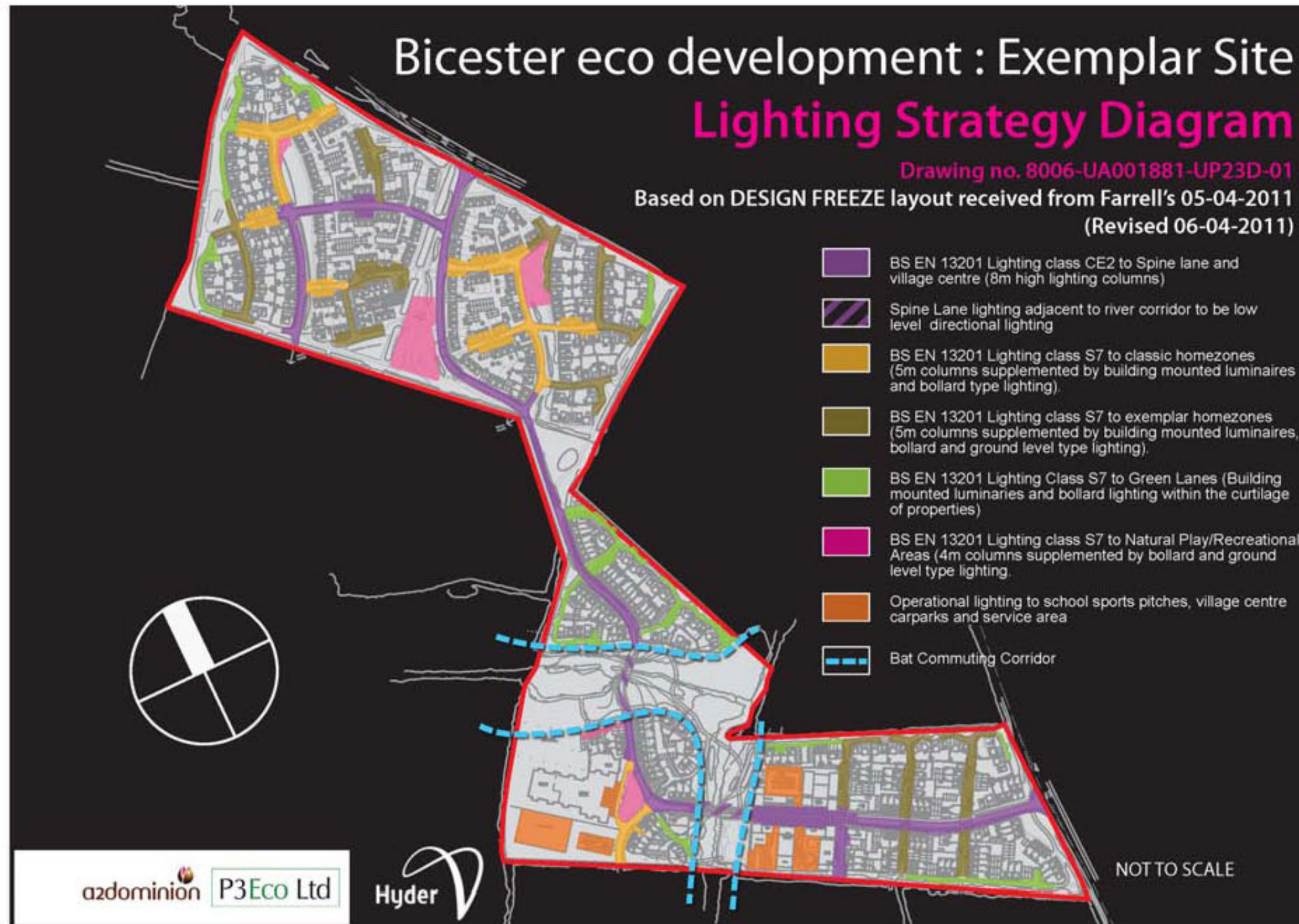


FIG.95 Lighting Strategy

## 7.0 Energy, Waste and Water

### 7.1 Energy, Waste and Water

#### 7.1.1 Energy

The energy hierarchy has been adopted as a starting premise to ensure the site can achieve its Eco-town zero carbon target. This requires the development to meet all energy used by and within buildings across the site through energy efficiency, clean and green energy.

This means that achieving high energy efficiency levels has been a fundamental design principle, and one that P3Eco and A2D have embraced through committing to develop all homes to Code for Sustainable Homes (CSH) level 5 homes, rather than the required level 4, across the Exemplar site. These homes will be built from highly thermally efficient materials and exhibit extremely high levels of insulation, to ensure they require less space heating than traditional homes. In addition, each home will be fitted with low energy lighting and appliances throughout.

To complete the strategy, a robust and economically viable zero carbon energy solution will also be employed across the eco-development that will incorporate:

- District heat network that will provide space heating and hot water to all homes, businesses and community facilities.
- Energy Centre where heat and electricity will be generated. Heat for space heating and hot water will be produced by gas CHP, solar thermal and biomass boiler. The gas CHP will be sized efficiently to meet baseload hot water and space heating demand during summer months. It will also generate clean electricity. The remaining space heating demand will be met by a biomass boiler. A thermal store will buffer peak demands. All plant will operate in parallel to enable operation efficiency.
- Building integrated photovoltaics will be placed on all southward facing roofs to generate green renewable electricity.

#### 7.1.2 Waste

Achieving zero construction waste to landfill is a key requirement and has been actively promoted through the design process; and will continue to be so through both materials selection and construction. As part of this, using locally sourced material with high recycled content; along with careful management, ordering and storage of material stock will be important to prevent wastage. On-site reuse and recycling of materials throughout the construction period will also minimise waste.

The Contractors selected to deliver this eco-development will belong to the Considerate Construction scheme, and in addition, the site will be submitted to the CEEQUAL (Civil Engineering Environmental Quality) assessment and award scheme to monitor the developments sustainability through improved environmental quality and social performance.

Minimising waste during the lifetime of the eco-development will follow the waste hierarchy of reduction, reuse and recycling of materials and products. All properties will be supplied with separate recycling bins for organics and recyclables, along with a smaller bin for residual wastes. An ambitious recycling target of 70% will be set for the development; rising to 80% in the future. As well as kerbside recycling collection, bring banks will be located within the centre of the development for glass and textiles. In addition, community swap shop days will be established to enable other goods to be reused and recycled.

The community governance organisation will promote awareness of waste minimisation, reuse and recycling initiatives across the site; including providing information packs, active promotion, campaigns and education programmes.

**7.1.3 Water**

A sustainable approach to the supply, efficient use, drainage and treatment of water across the Exemplar site has been adopted. Potable water supply infrastructure is under considerable strain as the area is considered to be water-stressed. To meet this challenge, significant water efficiency measures will be introduced, including rainwater harvesting and reuse (for toilet flushing), water efficient fixtures, fittings and appliances. These measures will enable the homes to achieve far less consumption of potable water than the regional average. A target of no more than 80 l/p/d of potable water will be achieved.

The design of the site has respected the River Bure and its tributary, which flow through the site and their limited flood risk potential. The widespread use of Sustainable Drainage Systems (SuDS), incorporating rainwater harvesting, permeable drainage and swales, will provide storm water management and help recharge the underlying groundwater resource, whilst ensuring that flood risk is reduced. The rate of discharge

to the River Bure will be greatly reduced during large rainfall events when compared to the natural state of the site, offsetting historical development within Bicester, and reducing the potential flood risk for areas downstream.

The use of SuDS will also enhance the creation of new wildlife spaces including wetlands, ponds and marginal habitats; as well as improve water quality standards through natural attenuation and biological treatment of storm waters.

Foul water will, through agreement, be discharged to Thames Water Utilities sewerage network and Bicester waste water treatment works.

## 8.0 Commercial and Employment

### 8.1 Commercial and Employment

The exemplar will create over 400 new jobs over a period of four to five years, with the potential for another 200 over a slightly longer timescale. It will also initiate new opportunities that will only be fully realised through the full Eco Development, to provide a better and more sustainable balance between type of jobs in Bicester and the skills and aspirations of local residents.

The Eco Development provides an opportunity to position Bicester as a hub for 'eco activity', leading to the development over time of a cluster of sustainable construction and other eco- businesses, and related training provision. The Exemplar is the first phase in realising that opportunity. The Exemplar and subsequent phases of the Eco Development will also help Bicester build on existing strengths such as advanced manufacturing and motorsports and to support the growth of business, financial and professional services.

The exemplar will put in place some of the key building blocks in this process, including; a partnership between P3Eco and Oxford and Cherwell Valley College (OCVC) to develop courses for the eco-economy; an 1,800 sqm Eco Business centre providing flexible workspace and specialist services for new and small firms and a focal point for home workers; an innovative partnership with the Co-Operative, and an Eco-Bicester Research and Innovation Centre (EBRIC), a partnership between P3Eco, Oxford Brooks University and Oxford Innovation.

The construction of the exemplar itself will provide construction jobs. Working on a basis of 0.7 person years per dwelling and an indicative rate of 100 dwellings a year, this equates to 70 jobs, of which we have assumed 50 will be taken by local residents (if necessary with training supported through OCVC). On site facilities are expected to provide 270 additional jobs,

excluding home workers. These will be primarily located in the eco-business centre, other office provision, retail units, a primary school, nursery and community facilities. Indirect job creation will result from spend by the exemplar's residents, mainly in service jobs, some of which will be best located in Bicester town centre.

The exemplar homes will include flexible space to encourage home working, alongside next generation broadband and social spaces within the development. These aspects will be marketed actively to encourage home-working amongst residents. Given this, and national trends for increased home working, an assumption of one home worker for every six dwellings is conservative. Allowing for those delivering services locally (and therefore already counted), this equates to 50 jobs on site once full occupancy is reached.



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As one of a handful of approved eco-towns, Eco Bicester constitutes an attractive location for inward investment, particularly in high-tech manufacturing, engineering and environmental industries. It is too early to quantify these jobs, but given the appeal of Bicester's offer and the mechanisms already under discussion to attract firms into the area, they could significantly boost local employment opportunities.

The exemplar development will also contribute to the wider economic context in three ways. First, it will provide an attractive and supportive environment for people to live and work locally, benefitting from Bicester's excellent connectivity and the strong economic opportunities in the wider Oxfordshire and south Midlands area. Second, the exemplar will support the first phase of developing of a new eco economy in the town, capable of serving a wider area. Third, the exemplar will provide much needed high quality business space for new and existing firms, and for inward investors seeking an initial foothold in the area.

## 9.0 Transport and Access

### 9.1 Transport and Access

The design of the site and the provision of walking, cycling and public transport links is such that a high level of non-car use is anticipated for the development. Many trips to the school, employment and local shops and services will be contained within the development as the village centre is in a reasonable walking distance of both the northern fields and the southern part of the site.

Two access points are proposed to the development from Banbury Road, the southern access south of Home Farm and the northern access to the south of the Banbury Road lay-by. Both junctions are proposed as priority junctions with protected right turning facilities, to minimise the road space required but provide a safe point of access. In the longer term, the southern access may be upgraded to a traffic signal controlled junction to access the further development to the south and west.

The whole of the site once accessed from the main road network will be designed to a speed of 20mph or lower, with appropriate alignment and traffic calming features to maintain low vehicle speeds. The central 'spine' route will provide access to the development from each of the junctions on Banbury Road. This will be a bus, taxi, cycle, emergency and refuse vehicle link. The middle section to the south of the northern fields, will be a lane in character with passing places to discourage through trips and short journeys from houses in the north to the village centre. The spine route has two bridges which will be narrow with one way priorities and serve as calming features on the route length.

Leading off the spine route will be streets designed to 15mph vehicle speeds. There will be access streets allowing all vehicle movements and with some on street parking within the street design. There will be home zones with a small number of properties fronting

a public space which will be restricted in access by physical design to accommodate occasional drop off/pick up parking, walkers and cyclists. These areas will be serviced from the adjacent access streets, thus giving a high priority to pedestrians and children's play.

The northern fields development is based on a permeable network of low traffic routes which will have priority for pedestrians and cyclists by virtue of speed, surfacing and layout. There are also a number of pedestrian/ cyclist only links proposed to provide direct connections leading to the focal open space and via a direct alignment to the school and village facilities to the south. Pedestrian routes will be surfaced and lit with directional and distance signing.

A 3m wide walking and cycling route is proposed on both sides of Banbury Road southwards from the southern access junction. Part of this will be

segregated from the carriageway by the hedgerow, with the remainder alongside the road. Toucan crossings are proposed to link to the eastern side of Banbury Road and connect to Caversfield and as a crossing of Lord’s Lane connecting to the main cycle route on the northern side of Bure Park and on to town centre linkages. In the longer term there will be linkages through the fields to the south of the proposed development, connecting to the public footpaths through Bure Park and adjacent to the rail line.

The central spine road will form a bus route through the development, giving access to the majority of properties within 400 metres walking distance. Bus stops are proposed in the village centre and in the northern residential area.

9.2 Parking provision

The approach to parking in each aspect of the development has required a careful balance between meeting the needs of residents/ businesses and not unduly encouraging car use. Whilst Eco-town good practice recommends a much reduced provision of parking over standard developments, it is recognised that the NW Bicester site is in a predominately rural County where car ownership levels are (often by necessity) high.

The provision of parking provides a balance whereby the Exemplar Site is vibrant and commercially successful but excessive parking provision does not encourage the use of the car for short or regular trips.

9.2.1 Residential Car Parking Provision

The parking strategy for residents recognises that the majority of households will own at least one car. It therefore seeks to ensure that the residential development does not significantly under-provide for parking and then suffer from problems of inappropriate/

overspill parking but does not encourage car use by providing parking immediately in front of every household’s front door.

The Cherwell DC standards set a maximum level of providing 1 space per dwelling for 1 bed properties, 2 spaces for 2, 3 or 4 bed properties plus an optional garage. With the anticipated mix of properties, the maximum would give rise to an average of 2 spaces per property plus garages.

For the exemplar site, it is proposed that there is an average of 1.59 spaces per property plus garages at a ratio of 0.47 per property. The parking for residential accommodation is as follows:

9.2.2 Private Accommodation:

- 2b housing: 2 parking spaces, one allocated, one unallocated;
- 3b housing: 2 parking spaces, or one space and a single garage;
- 4b detached housing: 1 parking spaces and 1 single garage or 2 parking spaces;

- 5b detached housing: 2 parking spaces and 1 double sized garage, half of which will be storage area.

9.2.3 Social Accommodation:

- 1 parking space to 1b and 2b flats;
- 2b housing: 2 parking spaces, one allocated, one unallocated;
- 3b housing: 2 parking spaces or one space and

- a single garage;
- 2 parking spaces to disabled bungalows. Bungalows to have on plot parking whilst parking facilities to social houses provided in parking courts;
  - 4b detached housing: 1 parking spaces and 1 single garage or 2 parking spaces;
  - 5b detached housing: 2 parking spaces and 1 double sized garage, half of which will be storage area.

Garages are being provided for 5 bed detached units and some of the 3 and 4 bed units. The single garages will be of the standard size 6m x 3m to accommodate a car and bicycle storage. The size of the garages for the 5 bed units will be double sized, but with a single garage door, thus providing additional storage area for the property. External parking spaces are to be provided in accordance with Oxfordshire CC standards.

Visitor spaces are to be provided in parking bays within the street design, primarily in Home Zone B (access streets) with a maximum of 87 spaces provided across the development, representing one space per 4.5 residential units.

9.2.4 Non Residential Car Parking Provision

Parking provision for other uses recognises the level of trips that will be on foot, cycle or by bus and the aim to discourage trips by car. The table to the right shows the provision of parking for each of the non-residential uses on site.

Land Use	Floorspace / pupils	Parking Provision	Max Provision in CDC standards
Primary School	135 pupils	9	9
Eco Business Centre	1,800sqm	20	60
Community Centre	350sqm	14	17
Children’s Nursery	350sqm	Shared with above	Unspecified
Co-Operative Food store	550sqm	22	39
Non Food Shops	220sqm	Shared with above	11
Offices	1,100sqm	Shared with above	37
Eco Pub	190sqm	3	18
Total	Above	68	191



10.0

# Secure by Design

Secured by Design Principles were closely considered from an early stage in development design.

A series of informal pre-application consultations were undertaken to discuss the designs and reference was made to Thames Valley Police’s ‘The Compendium’ publication. In turn we used guidance from CABE’s ‘By Design-Better Places to Live’ and ‘By Design-Urban Design in the Planning System’, ‘The Urban Design Compendium’, the Home Office’s ‘Safer Places-The Planning System and Crime Prevention’, The DLC’s ‘Manual for Streets’, English Partnerships’ ‘Car Parking-What works where?’ and Secured By Design ‘New Homes 2010’.

Throughout the layout care has been taken to clearly define private and non-private areas. The design response to the southern and northern fields, in particular, has been to create a legible network of streets and spaces that facilitate movement and self

orientation, making the development welcoming to visitors and residents alike. Trees and shrubs throughout public areas will be specified to allow unobstructed sight lines to facilitate this legibility, whilst shrubs will be approximately 1m in height to eradicate hiding places.

The Village Centre has been designed to be a vibrant and welcoming space with the impact of vehicles minimised to promote the public realm. The positioning of the car parks has been carefully considered and the provision is divided in two, to relate to the different functions provided. Each is gated and it is proposed that when the business centre, nursery and community spaces are not being used, the gates to the northern car park are closed. This means in the evening when the village store is still open the southern car park is in sole operation and therefore can be more easily monitored. The provision of an A3 unit to this side of the street also provides a greater level of activity which helps self policing. In addition CCTV ducting will be provided to

the car parks and it is noted that Thames Valley Police’s preference is for data to be fed to the County Council system control room.

Lighting has also been considered and this is documented in the Landscape chapter. The amount of lighting has been carefully balanced against the ecological impacts on bat commuting zones and habitat creation.

The housing has been organised to maximise overlooking and to create active frontages to the building plots. As a rule, throughout the development, housing is placed to face hedgerows and this helps for the maintenance of the planting, brings the vegetation into the public realm so that it is monitored and it prevents hedgerows being used as insecure boundaries to back gardens.

In a move to encourage interaction and overlooking to the streets, housing is placed close to back of pavement. Defensive zones are created using low level planting to ensure occupant privacy. Subsequently, in some instances cars are placed behind the housing but a number of measures have been introduced to ensure the car parking courts are safe and well monitored. The car courts have been considered not as car parks but as places that have parking in them and an amenity to the surrounding properties. Refuse and cycle storage are accessible from these spaces which increases activity to these zones. The entrance to each is gated (full height) whilst the size of the provision and the number of car spaces has been carefully controlled to limit the number of occupants using each. The familiarity of such an arrangement will alert occupants of people outside of their immediate circle. In addition, low level hedges and 45 degree spaced fencing to the courtyards will provide enclosure but allow for glimpse views and awareness of sounds coming from these areas.

Play areas have been designed generally within the guidelines for NEAP's and LEAP's but with adjustments agreed by the local planning authority, with proprietary installations fitting to aid natural play.

Housing will also meet Secured by Design criteria in terms of the detail specification of the doors, windows and their locks.

11.0

# Access Statement

11.1

## Accessibility

The design of the development seeks to provide accessibility for all. The design layout inherently offers high permeability in all directions within the Exemplar Site and also to the surrounding landscape and future wider Masterplan. The aim and objectives for the development in terms of access and travel are set out in the Draft Travel Plan and provide the applicant’s policy on access. These objectives have been developed in accordance with good practice for travel plans and support the specific requirements of the Supplement to PPS1. The overarching aim for the development is to:

“Reduce the need or desire to travel through integrated design and provide sustainable travel choice options that have less reliance on private cars and seek to relieve congestion.”

The specific objectives are:

- To create a high quality place in which people want to live and work
- To reduce the need to travel whilst ensuring access to a full range of facilities and services
- To promote the use of non-car modes e.g walking, cycling and public transport
- To manage traffic to reduce vehicle speeds and give priority to pedestrians, cyclists and public transport over cars
- To ensure there are no undue congestion impacts on the wider town and road network arising from the development

The aim and objectives for the development are met in the design of the development by the following:

- Creation of a permeable network of streets together with segregated walking and cycling routes between parts of the development;
- Provision of a range of facilities and services which meet many of the day to day needs of residents;
- Provision a bus service through the site to and from the town centre, with stops with real time information within 400 metres;
- Providing a hierarchy of streets with a central spine road designed for a 20mph speed limit and linking access streets and home zones designed for a 15mph speed limit and designed to discourage car use through alignment, width, hard and soft landscaping and traffic calming features;
- Providing a balanced approach to parking, which recognises that residents are likely to own

cars but seeks to encourage sustainable travel to and from the site, particularly by limiting parking for non-residential uses;

- To reduce impacts on the wider road network by travel planning measures and provision of public transport, walking and cycling linkages; and
- Mitigating impacts of traffic through junction improvements on the local road network.

The principles of accessibility for the site have been developed taking into account the planning policies of Cherwell District Council (prepared in conjunction with Oxfordshire County Council) as contained in the Non-Statutory Cherwell Local Plan 2011. Specifically, in relation to Policy TR19, the roads to serve the proposed development have been designed and constructed to give priority to pedestrians, cyclists and bus operators and to ensure a maximum design speed of 20 mph on principal estate roads and 15 mph on all other roads.

In addition, proposals for home zones are included which in accordance with Policy TR19a are located within a predominantly residential area and would result in a significant reduction in vehicle speeds. They are designed as areas where, as stated in the policy commentary “children can play or ...people can stand talking in safety, even if they have to move occasionally to allow vehicles to pass.”

The layout of footways and walking routes to facilities has been designed to ensure that they comply with the Disability Discrimination Act and relevant guidelines, in terms of gradient, widths and surfacing. Where there are short sections of paths which are of steeper gradient, then there is an alternative fully accessible route. The public areas of the village centre and around the school will be well lit, surfaced in suitable materials to assist orientation for those with visual impairments and will meet requirements for slip resistance.

Road crossing points and junctions will be identified with tactile paving and dropped kerbs or raised tables. Access to the non-residential buildings will comply with the DDA, including provision of ramped access, where necessary and appropriate standard lifts to upper floors. Within the village centre, a proportion of the parking spaces will be of extra width (3.6m) and set aside for blue badge holders. Bus stops will be kerbed to allow level access onto buses for wheelchairs as well as for prams and pushchairs. Bollards and other street furniture will comply with guidance to assist the visually impaired. Street furniture will be designed to minimise street clutter to retain clear space within the public realm as far as is practicable.

Several community routes have been designed into the overall route provision, the main route being on road as it is required by Oxfordshire County Council to be well lit at all times. Off road provision is also included, without lighting, to retain unlit corridors for biodiversity benefit.

Access Statement  
An application for the exemplar phase of the NW Bicester Eco Development  
Design & Access Statement

Home zones are designed to be shared surfaces to reduce the potential dominance of the motor vehicle and create streets for people, by design. Flush surfaces and / or low kerbs and drop kerbs promotes access for all including wheelchair users. Similarly, all play provision is designed for access for all and to accommodate wheeled activity as required by guidance.

The street network has been designed for emergency vehicles in accordance with Oxfordshire County Council Residential Design Guidance. The development has two access points to ensure that the 393 proposed homes are not served off a single access point. Access for fire tenders is provided to within a distance of less than 45 metres from all parts of the ground floors of all homes. Swept path analysis of the street layout has been undertaken and used as the basis for the design of turning areas and routes through the hierarchy of streets for refuse vehicles and emergency vehicles, in accordance with OCC guidelines. Where there are short sections of street which are designed to be generally vehicle free, sufficient area is provided for the occasional

use by removal vehicles, emergency vehicles etc. In such home zones, it is proposed that refuse is collected from the ends of the streets. This also applies where there are private drives serving up to five properties.





