

NW Bicester

An application for the exemplar phase of the
NW Bicester Eco Development proposals submitted by
P3Eco (Bicester) Limited and the A2Dominion Group

Revised

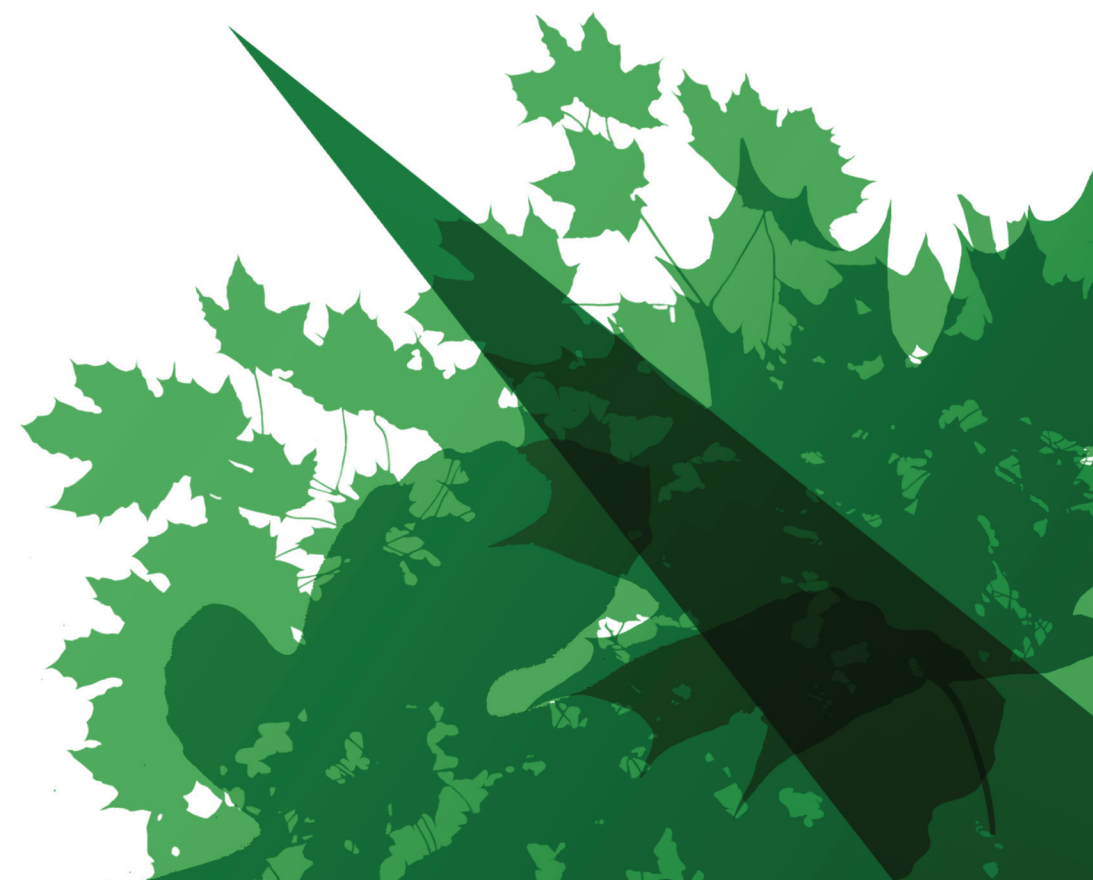
Design and Access Statement

FARRELLS



April 2011

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Revised Design & Access Statement

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1.0 **Introduction**

- 1.1 Summary
- 1.2 Location of Application Site
- 1.3 Application Description
- 1.4 Planning Context
- 1.5 Scope and Content of DAS

2.0 **Context**

- 2.1 Historical Context
- 2.2 Links and Transport

3.0 **Masterplan for NW Bicester**

- 3.1 Masterplan Analysis
- 3.2 The Site
- 3.3 Landscapae Analysis
- 3.4 Public Consultation

4.0 **Application Site**

4.1 The Application Site

4.2 Design Evolution

4.3 Illustrative High Street Elevations

4.4 Study Perspectives of High Street

4.5 School

4.6 Watercourses

5.0 **Housing Design**

5.1 Housing Design and Architectural Language

5.2 Materials

6.0 **Green Infrastructure/
Landscape**

6.1 Landscape Strategy

6.2 Landscape Character

6.3 Palimpsest & Local Distinctiveness

6.4 Conceptual Origins

6.5 Landscape Design Principles

6.6 Site Zoning

6.7 Street Hierarchy

6.8 Green Infrastructure

6.9 Hedgerows / Buffers

6.10 River & Riparian Corridors

6.11 Green Open Space

6.12 Green Roofs

6.13 Natural Play / Recreation

6.14 School Green Space

6.15 Sustainable Urban Drainage Systems (SuDS) / Swales

6.16 Classic Homezones (Woonerf)

6.17 Exemplar Homezones (Incl. Play Environs)

6.18 Green Lanes (Incl. Private Access)

6.19 Community Growing / Allotments

6.20 Connectivity and Permeability

6.21 Design for Climate Change

6.22 Lighting

6.23 Summary

7.0 **Energy, Waste and Water**

7.1 Energy, Waste and Water

8.0 **Commercial and Employment**

8.1 Commercial and Employment

9.0 **Transport and Access**

9.1 Transport and Access

9.2 Parking Provision

10.0 **Secure by design**

11.0 **Access Statement**

11.1 Accessibility

1.0 **Introduction**

1.1 **Summary**

This Design and Access Statement (DAS) is submitted in support of a planning application by P3Eco (Bicester) Limited (P3Eco) and A2 Dominion Group (A2D) to develop land to the north west of Bicester for a residential mixed used development as the exemplar phase of a wider proposal to develop land at NW Bicester as an Eco Development pursuant to The Supplement to PPS1 entitled ‘eco-towns’ and the emerging Core Strategy of Cherwell District Council.

The application was originally submitted in November 2010 and this document has been written to accompany an amended submission following comments received from officers, key stakeholders and local residents

1.2 **Location of the Application Site**

Bicester is a market town some 11 miles to the north east of Oxford and equidistant between London and Birmingham. The location of Bicester is indicated on figure 1.



FIG.1 Location of Bicester



FIG.2 Location of wider proposal to develop land to the north west of Bicester

Around the north western edge of Bicester it is proposed to create a new urban Eco-Town extension. The masterplan area for this extension is shown on figure 2.



FIG.3 Location of Application Site

The Application Site is along the northern edge of this new masterplanned extension and is shown on figure 3.

1.3 Application Description

The proposed development was defined in the original planning submission as follows:

“Development of Exemplar phase of NW Bicester Eco Development to secure full planning permission for 393 residential units and an energy centre (up to 400 square metres), means of access, car parking, landscape, amenity space and service infrastructure and outline permission for a nursery of up to 350 square metres (use class D1), a community centre of up to 350 square metres (sui generis), 3 retail units of up to 770 square metres (including but not exclusively a convenience store, a post office and a pharmacy (use class A1)), an Eco-Business Centre of up to 1,800 square metres (use class B1), office accommodation of up to 1,100 square metres (use class B1), an Eco-Pub of up to 190 square metres (use class A4), and a primary school site measuring up to 1.34 hectares with access and layout to be determined”.

This resubmission is supported by a number of technical assessments and related documents and these are set out in the original Parameters Document and the covering letter to this revised submission. This Design and Access Statement (DAS) should be read in conjunction with those documents, in particular the Planning Statement which sets out the planning context and policy Provisions for the proposals. The planning context is briefly summarised below.

1.4 Planning Context

In June 2009 P3Eco launched their ‘Vision for the future of Bicester’ prepared by Farrells, which promoted that the eco development at Bicester should contribute to the regeneration of Bicester as part of a holistic plan to transform the town into a stronger sustainable community.

The land at North West Bicester was identified in the Supplement to (PPS1) entitled ‘Eco Towns’ (July 2009) as a location for a potential Eco Town. The Supplement

sets out a range of criteria against which Eco Town proposals should be assessed.

P3Eco are promoting all the land at North West Bicester for an Eco development through the Cherwell Core Strategy DPD.

P3Eco have selected A2Dominion Group as its development partner for the promotion and implementation of the exemplar scheme, and also as affordable housing partner in respect of the wider master plan proposals. Representations were submitted in response to the consultation drafts of the Core Strategy dated April 2010.

Within the Core Strategy, Cherwell District Council has identified that an eco-development of 5,000 homes should be developed on land at North West Bicester with 3,200 homes to be delivered in the period to December 2026.

The emerging policy seeks to:

- Provide a development of 5,000 homes;
- Create a development that will be a zero carbon development as defined in the PPS;
- Deliver a high quality local environment taking into account climate change adaptation;
- Homes that achieve Level 6 of the Code for Sustainable Homes (Code level 5 for the exemplar scheme);
- Access to one employment opportunity for each new dwelling within easy reach by walking, cycling and / or public transport;
- At least 50% of trips originating from the

development should be made by means other than the private car with potential to rise to 60%; and

- 40% of the total gross site area will be provided as green space of which half will be public open space.

1.5 Scope and Content of the DAS

This DAS sets out the analysis and description of the site, the evolution and evaluation of the design and its context and highlights key generators for the design process, and how the final design responds to them

2.0

Context

2.1

Historical Context

A brief look at the history of Bicester shows there has been a settlement at or near Bicester for a long time.

The market town of Bicester we know today was established in the 13th Century as two smaller adjacent settlements, Kings End and Market End, grew together.

Located near the cross roads of two Roman roads and at a crossing point of the River Bure, evidence of settlement has been found in archaeological explorations dating back to the Ice Age.

The Romans established a fort nearby at Alchester and when the Romans left the Saxons and then the Normans maintained a trading settlement. Named in the Domesday Book, the entry identified two key manor lands and a population of about 200 residents.

Over subsequent years as routes improved particularly to and from London hunting lands became farming lands and land wealth grew. The area remained rural and despite the Victorian growth of the railways and other public services Bicester remained a typical small but important rural centre.

In the 20th Century a connection with the RAF and Army was created with the development of a new airfield and an ordinance depot and with it came alternative skills and employment.

The completion of the M40 between London and Birmingham nearby transformed access and Bicester has subsequently grown, providing homes and employment opportunities.

The new North West Extension, of which this application is the first part, seeks to build upon these recent changes and take Bicester into the future.

The OS plans opposite show how Bicester has grown significantly since WWII and how cohesive and sensitive plans for its future growth are essential.

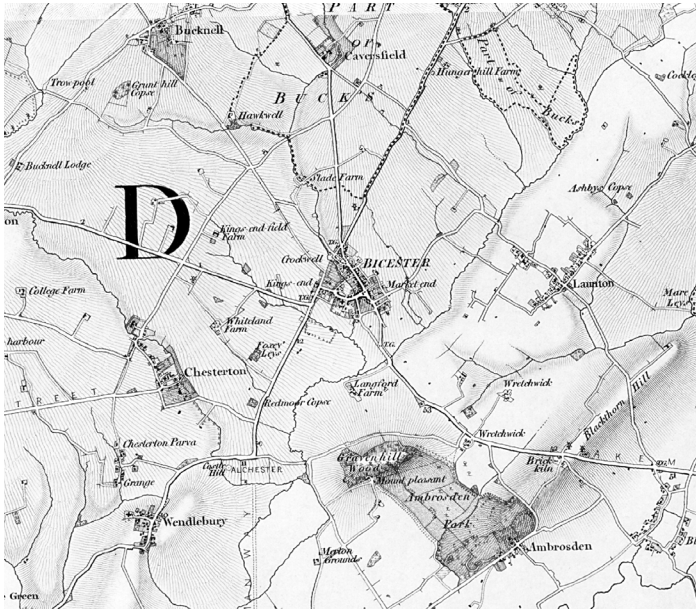


FIG.4 Bicester 1828-1833

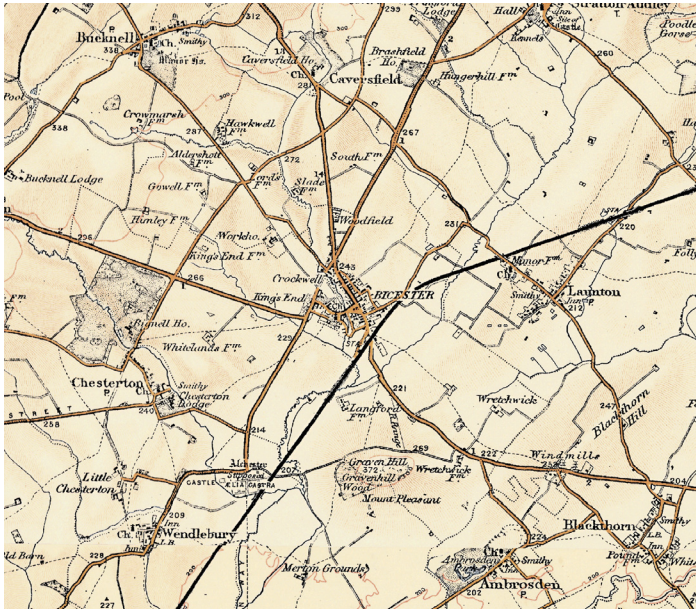


FIG.5 Bicester 1898-1899



FIG.6 Bicester 1919

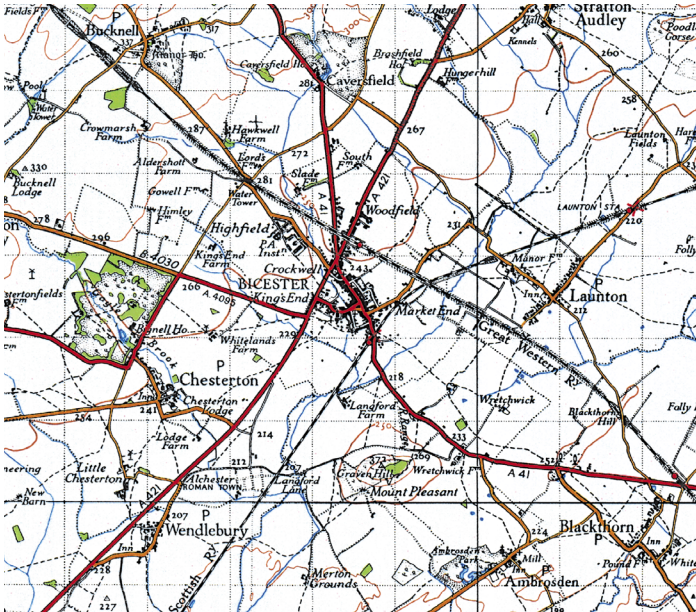


FIG.7 Bicester 1946-1947

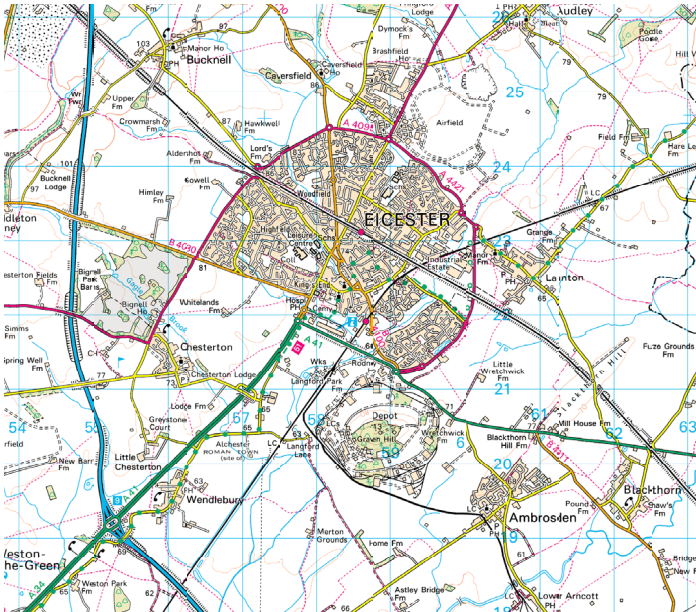


FIG.8 Bicester Today

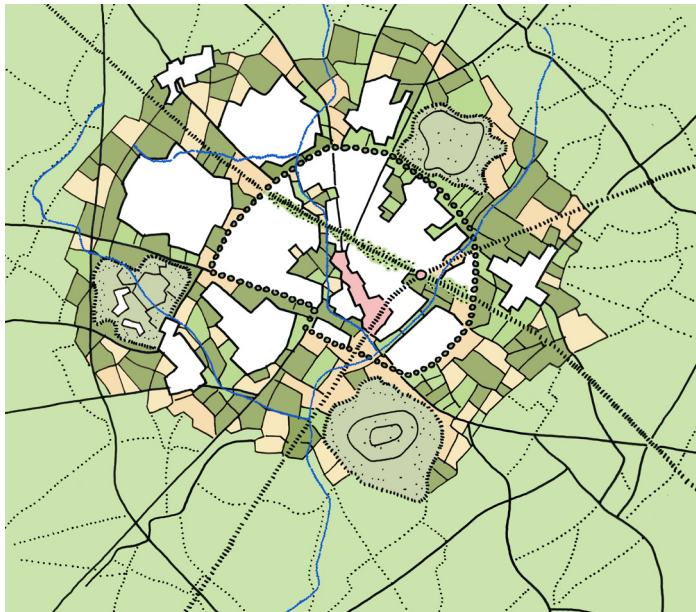


FIG.9 A holistic vision for Bicester

2.2 Links and Transport

Within close proximity to the M40, Bicester has easy and fast links to Britain’s motorway network and the whole of the country.

Its two railway stations also provide key north/south connections to London and Birmingham and east/west connections to Cambridge and Oxford.

Bicester also has local bus services to Oxford and Banbury, and is served by long-distance route X5 between Oxford and Cambridge.

Bicester’s proximity to junction 9 of the M40 motorway provides good road links to London, Birmingham and Banbury. It also has good road links to Oxford, Kidlington, Brackley, Buckingham, Aylesbury and Witney.

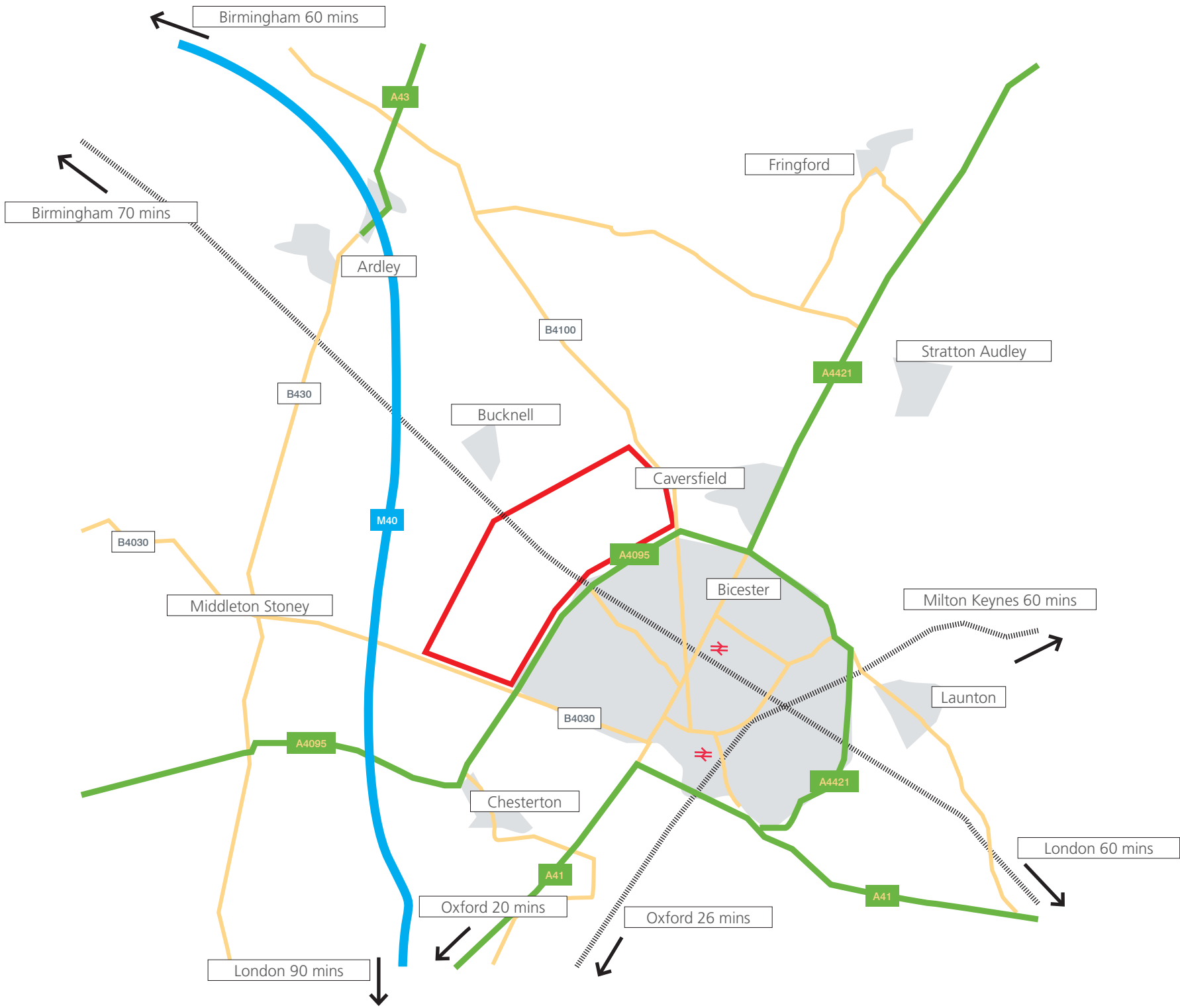


FIG.10 Key Links and Transport Routes

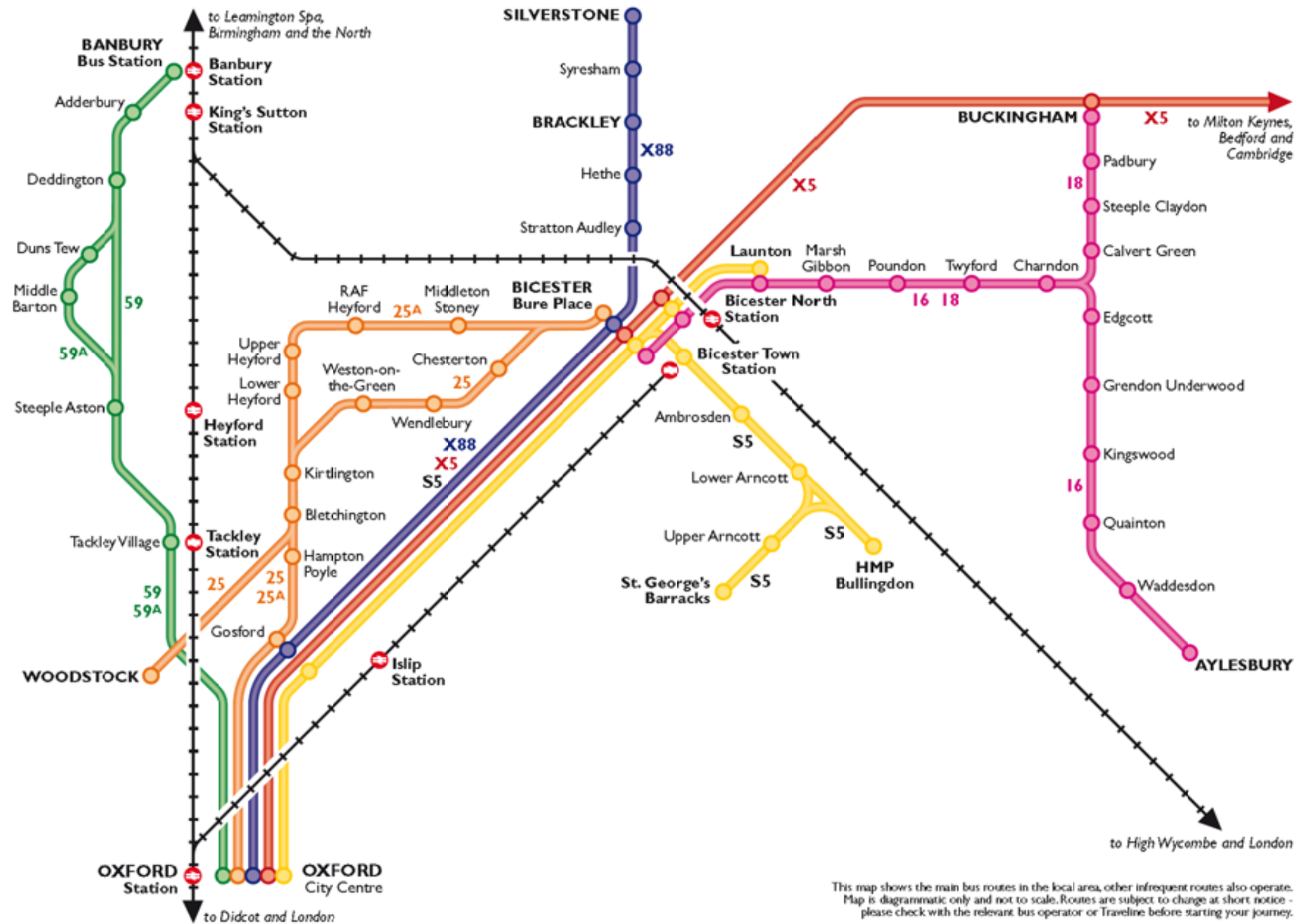


FIG.11 Bicester Town Bus and Rail Services

3.0 Masterplan for NW Bicester

3.1 Masterplan Analysis

As the Application site is part of a wider masterplan for the whole of North West Bicester it is important to understand how that overall masterplan was prepared.

A detailed analysis of the masterplan proposals and its design evolution are set out within the masterplan statement that accompanied the application submission. However an overview of the key aspects are set out as follows:

- Extend the town with 5000 zero carbon homes
- Enable the countryside to infiltrate the development with green open spaces linked into Bicester town
- Encourage the integration of new and existing communities with shared services and infrastructure
- Work with the laws of nature to create landscape as the primary infrastructure
- Link communities with the sites history creating local centres around existing farmsteads
- Create renewable energy production harnessed locally
- Retain existing businesses
- Create new employment through new starts, growth of existing firms and onward investment with emphasis on businesses in eco-construction, environmental goods and services and other high value areas.
- Disperse employment and community facilities

across new local centres

- Provide integrated transport links throughout the site and into the existing town centre and rail stations
- Ensure that all parts of the site are within 400m walking distance of a regular bus route
- Humanise the ring road by creating crossing and frontage designed to the scale of people not cars
- Community and service facilities to be distributed within close walking distances of all housing
- Build an existing bus and public transport infrastructure reducing the reliance on the private car



This Diagram identifies the land in north west Bicester that became the first part of Bicester's sustainable expansion proposed in the Farrell's holistic vision for the growth of Bicester.

FIG.12 A holistic vision for Bicester

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



FIG.13 Aerial of Bicester with NW Bicester Eco Development boundary

This Diagram places the boundary of the proposed north west expansion of Bicester on an aerial photograph. This is the area included within the new overall masterplan search area.

3.2 The Site

Parish Boundaries

The masterplan site is located within four parish boundaries, Bucknell, Caversfield, Bicester and Chesterton.

An analysis of the site boundaries is set out in the masterplan statement but to the south east is the A4095 (Howes Lane/Lords Lane) ring road. To the south west is Middleton Stoney Road, to the north east is Banbury Road and Caversfield. To the north west is open farmland and to the north is open farmland and Bucknell. The site is divided across the centre by the Birmingham to London railway embankment.

3.3 Landscape Analysis

3.3.1 NW Bicester Site Context Today

The masterplan area landscape can be broadly described as having a:

- 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

Landcover: Mixed farmland is the dominant landcover, with arable farming forming the principal use and pasture generally on the steeper slopes. The agricultural land is generally characterised by a geometric pattern of medium to large fields.

Settlement and communications: Settlement is characterised by scattered farmsteads generally with a strong vernacular character. This character is reinforced by features such as stone walls and stone buildings with stone or clay tiled roofs.

3.3.2 Topography and Natural features

Contours, Gradients and watercourses

The site generally slopes from north west to south east with a height above ordnance datum at the highest of approximately 95m AOD to the lowest at 75m AOD. The general slope of approx 20m in 2km creates average gradients of 1 in 100. There are streams subdividing the general slopes creating distinctive characters in different parts of the site. The streams

provide important habitats and are the location of some of the larger groupings of trees all.

Hedgerows and Woodlands

There are approximately 28km of existing hedgerows enclosing farm land in field sizes. The ecology and habitat survey has established that whilst there is a range of hedgerow quality from species rich and species poor, the hedgerows are the most significant contributor to the biodiversity of the site.

There are areas of existing species rich woodland in the masterplan site. The woodlands are generally large groups of trees adjacent to the streams. In the south of the site there is a woodland belt of approx 3.5 hectares which has been planted in recent years to screen Himley Farm.

The existing farm buildings will be retained to provide a major contribution to the diversity of the uses and character in the masterplan and will be subject of further landscape and design character assessment studies.

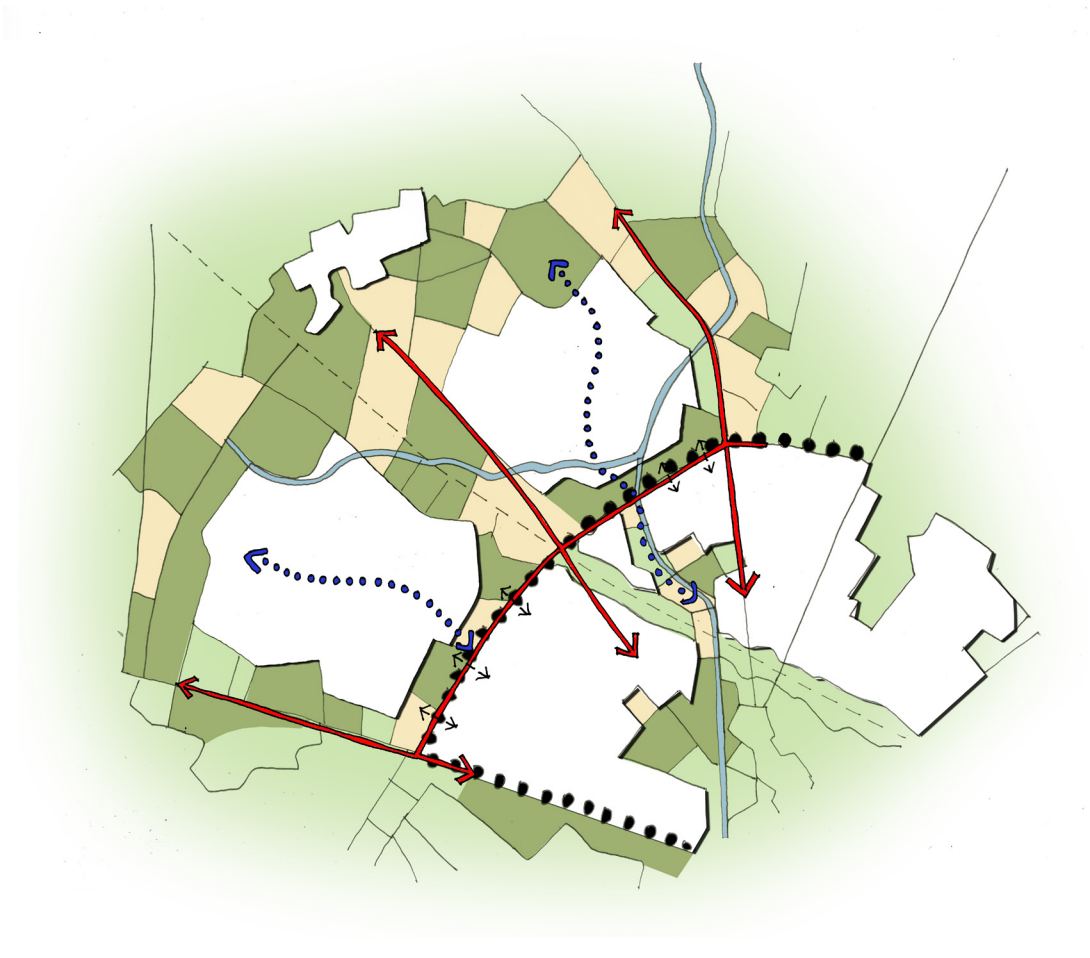


FIG.14 Key links to Bicester

One of the key drives for the masterplan was to ensure that it would be integrated into Bicester. This diagram highlights:

1. The potential crossing points over the ring road.
2. Key road connections
3. Indicative additional routes to break down the areas of land which might provide cycle/pedestrian and green links back to Bicester town centre.



FIG.15 Four Villages

Analysing the topography and existing landscape features, this diagram considers how the development could come forward around the key links back into Bicester. This arrangement creates four new potential 'villages'.

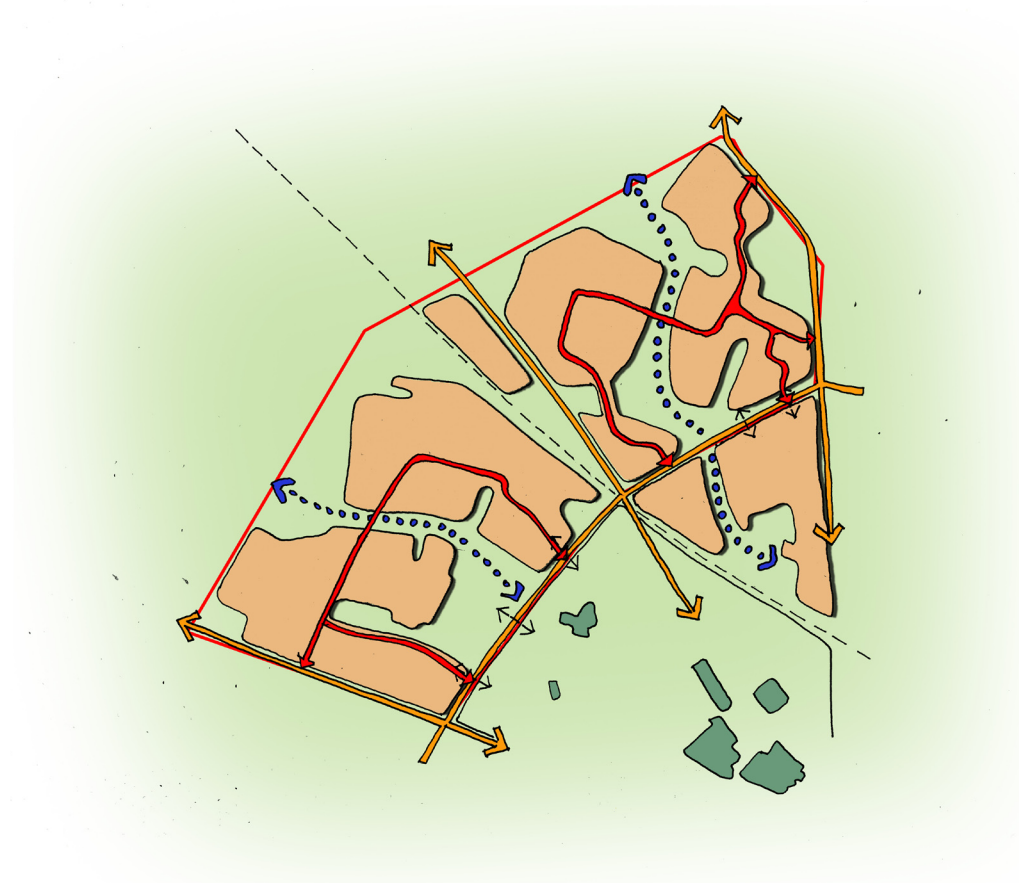


FIG.16 Main Routes

This diagram shows how a further layer of road connections could be applied over the potential villages.

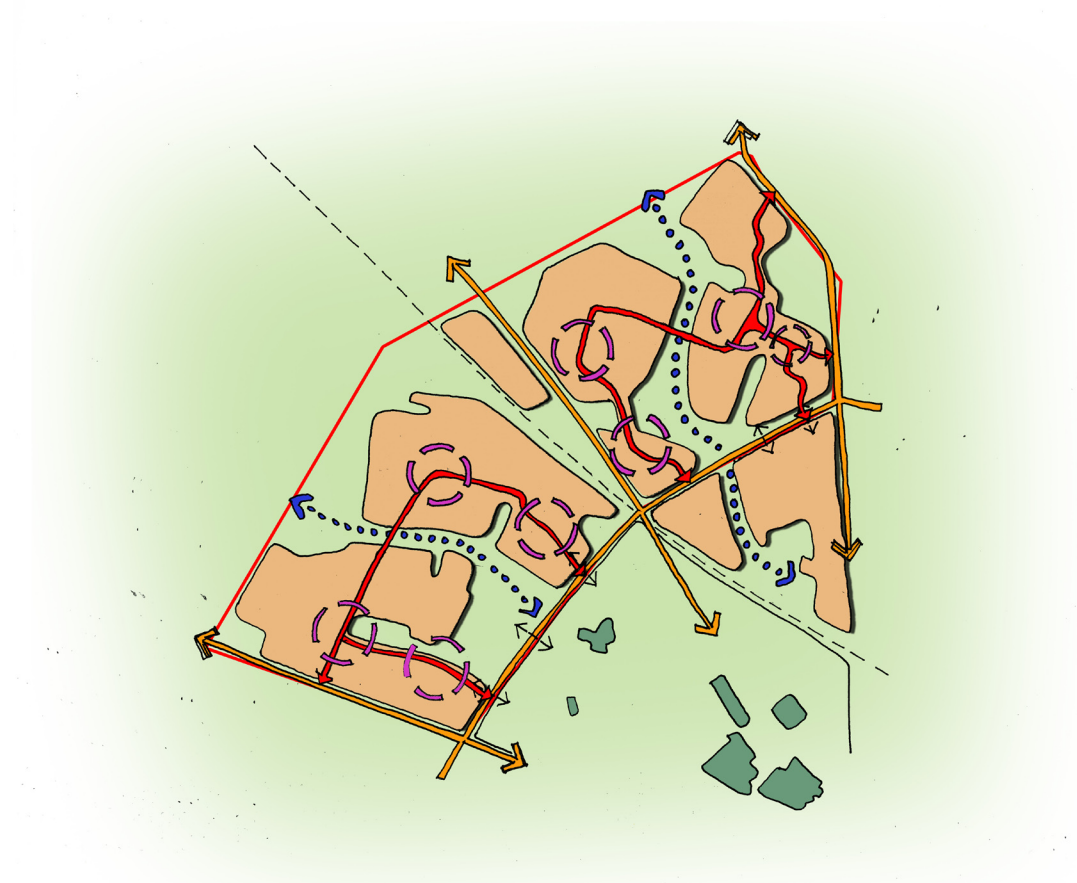


FIG.17 Village Hubs

This diagram shows where village hubs could be created.

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

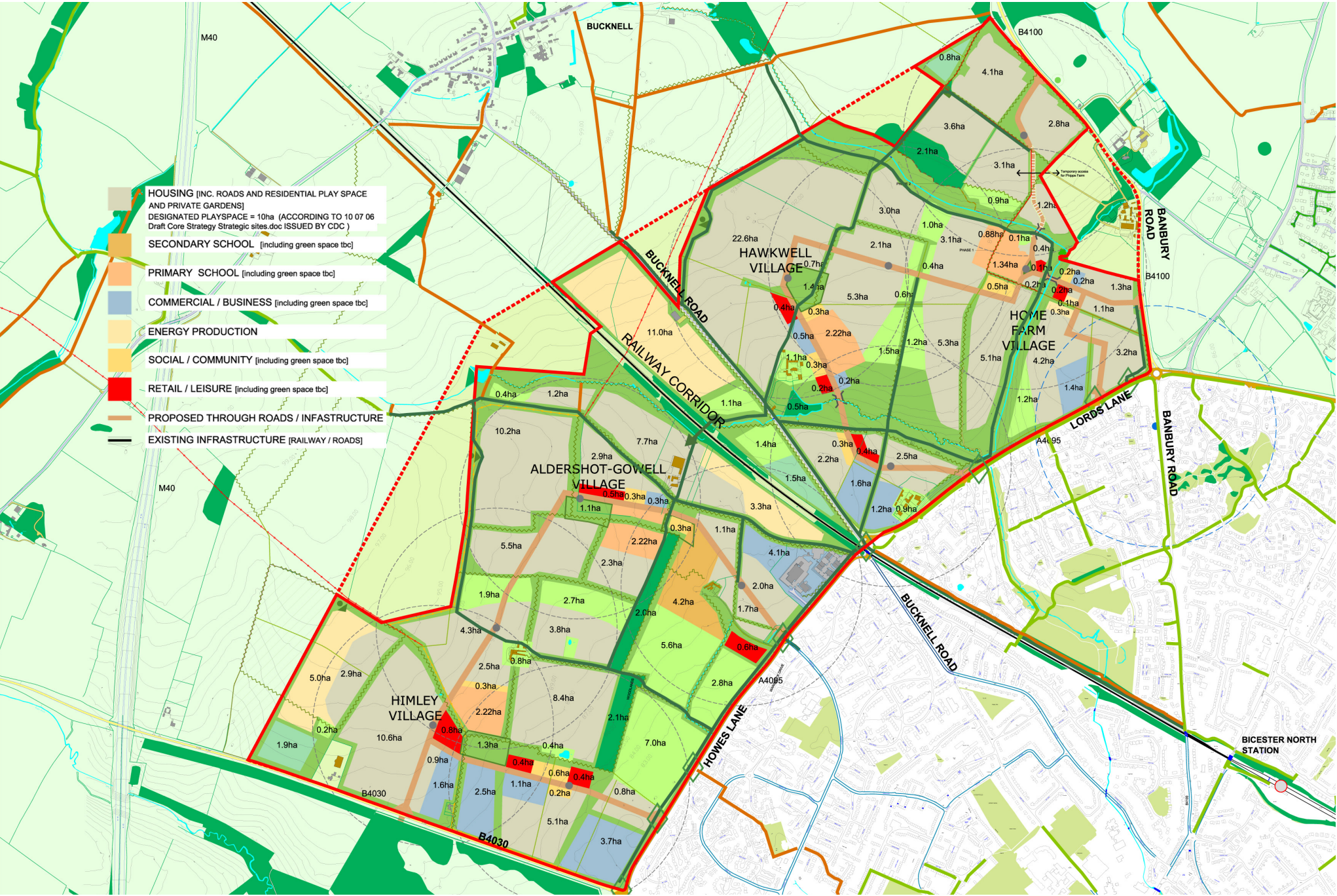


FIG.18 NW Bicester Masterplan Land-Use drawing

Having analysed the preceding factors including landscape, topography, road connections and the location of village hubs, it is possible to create a masterplan for NW Bicester that has been the subject of public consultation.

The masterplan creates a social infrastructure with the objectives:

- 4 Hubs / village centres for services located within walking range of a 400m radius of residential areas
- A new crossing over/ under the rail for pedestrians and cyclists
- The secondary school is to the south of the railway close to Howes Lane
- A 15 hectare area of green space is provided suitable for sports recreation space close to Howes Lane
- The area of non residential uses is approx 12% of the development area.
- A potential area for energy production has been identified adjacent to the railway
- The character of the layout and public open space in the new villages is based on similar size and scale of villages in the surrounding Oxfordshire area
- All parts of the site are within 800m walking distance of a regular bus route

- The village centres have a mix of land uses and the masterplan co-locates these where possible to allow flexibility for shared use of facilities and parking.
- Local centres are focused on village greens and market squares with primary schools, eco business centres, eco pubs, village stores, shops, nurseries and health centres
- Local centres based around existing farmstead
- Local centres vary in scale according to location
- Employment dispersed across all local centres

A learning and innovation campus linked to Oxford and Cherwell Vallery College will be located with good accessibility to Bicester Town station.

3.3.3 Four new villages become the focus for the social and cultural infrastructure

Existing farm buildings are to be retained and become the heart around which the new village centres are grown.

The NW Bicester eco development aims to be a catalyst for the wider regeneration of Bicester town by:

- Make the historic town centre the ‘heart’ of the place
- Get local people to shop locally
- Develop a variety of related new activities
- Create a destination for the local communities
- Improve the quality of the public realm
- Make the most of Bicester’s strategic position
- Create a sustainable transport plan for the town

3.4 Public Consultation

The masterplan and exemplar schemes have been developed in conjunction with the consultant team using a series of workstream-based workshops to discuss subjects such as design and sustainable construction, green infrastructure, transport and access, energy, waste and water, employment, training and local community facilities. The workshops have been attended by key stakeholders to allow for input at early stages and in turn to assist in the development of the proposals.



FIG.19 Public Consultation events

4.0 The Application Site

4.1 The Application Site

Having set out how the overall masterplan for north west Bicester was developed we now turn to the Application Site and the proposals for the exemplar scheme.

The Application site comprises approximately 21 hectares of farm land lying to the west of Banbury Road (B4100) and to the north of Bicester Town and its ring road.

The site is located at the north eastern edge of the wider masterplan proposals for NW Bicester, to the north east of the railway viaduct and Bucknell Road. To the north and east are the villages of Bucknell and Caversfield respectively.

The red-line boundary encloses the land of Home Farm and views are afforded from it to Caversfield House and the Anglo-Saxon St Laurence's Church.

The 'bow-tie' shape of the red-line line boundary contains a varying topography and sits within the

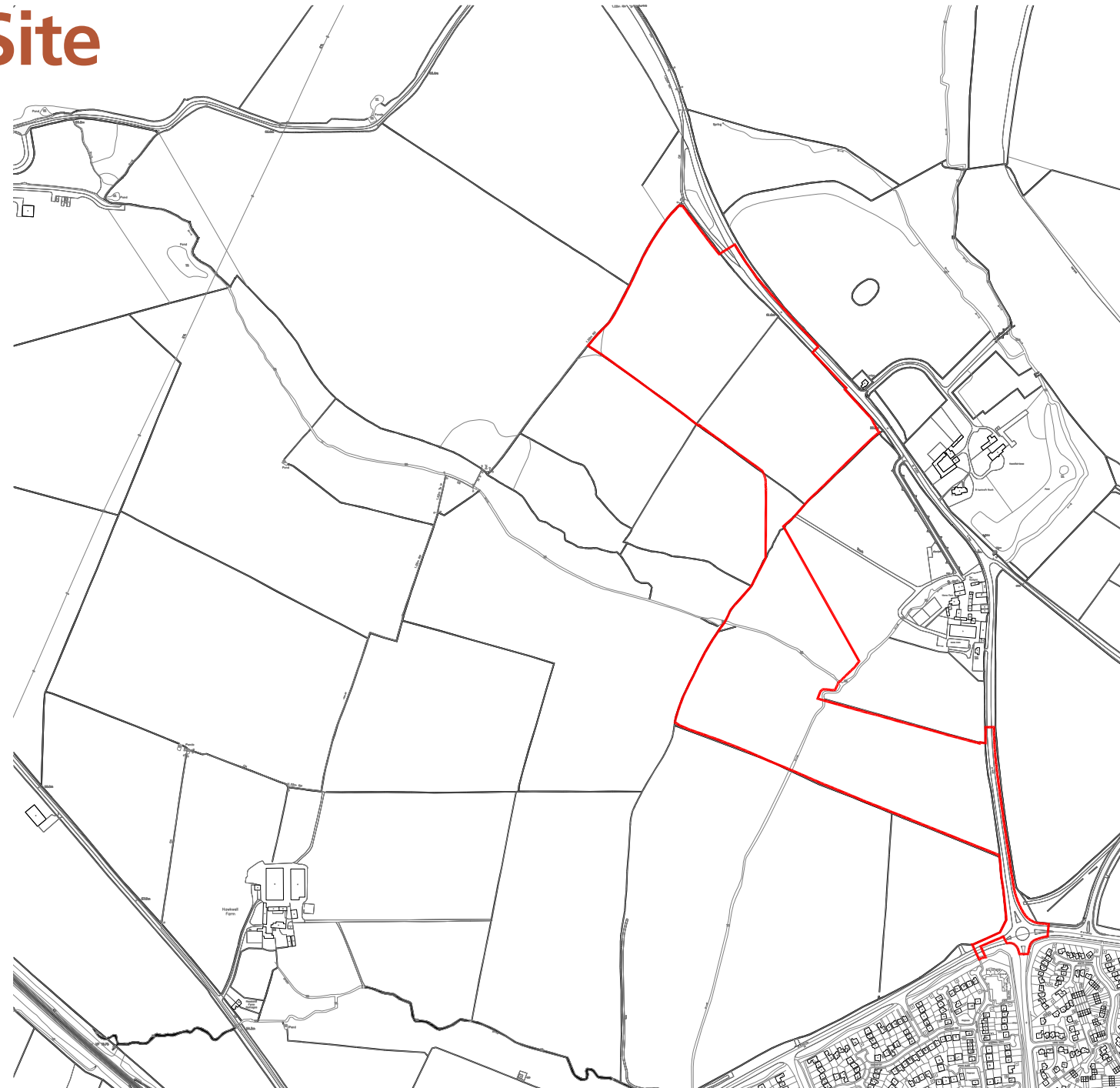


FIG.20 The Application Site

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

defined landscape character of Caversfield Valleys and Ridges. The land is predominantly pasture, is not publicly accessible and contains no built forms.

The site can be divided into three distinct zones; the southern field, the watercourse and the northern fields.

4.1.1 The Southern Fields

The southern fields front the Banbury Road as it extends northwards from Bicester town centre and is mostly flat before falling approximately 5m into a valley defined by a tree-lined watercourse that is dry for the majority of the year. The field has a sense of enclosure due to the established hedgerows to all sides with breaks for field access and farm activities.

4.1.2 The Watercourse Zone

The central watercourse zone contains the most interesting variation in topography within the site falling in two directions to the watercourses travelling north/south and east/west before rising up to meet the two fields to the north. The two watercourses that transect this area have different characters. One has low level reeds in contrast to the wooded character of the watercourse leading to Home Farm. Hedgerows are prevalent to the south and western boundaries. Views of Home Farm and the gable of St Laurence’s Church emerging from woodland are visible in this zone.



FIG.21 Panoramic of Southern Field



FIG.22 Photograph of wooded watercourse



FIG.23 Photograph of watercourse bed



FIG.24 Site Topography

The watercourse zone is also rich in ecology with a badger sett adjacent to the east/west watercourse and an annex sett adjacent to the north/south brook. There is also a bat roost in this location. Further information regarding the site's ecology can be found in Arup's Ecological report included in the Environmental Statement. At the edge of the northern fields there is an existing access from the farm to the two adjacent fields which will continue to be used for pasture for the livestock.

4.1.3 Northern Fields

The northern fields have their longest frontage onto the B4100 at the north edge of the Application Site. The fields are arranged within a perpendicular framework of hedgerows, which increase in depth as they meet the carriageway edge and in the northern most corner the hedgerows merge with woodland, masking a road lay-by. These top two fields are currently accessed by means of a track from Home Farm and also from a small entrance adjacent to the central hedgerow.

The setting of St Laurence's Church and Home Farm is a key consideration in the development of the upper northern fields.



FIG.25 Panoramic of middle zone



FIG.26 Location of badger sett



FIG.27 Panoramic of the northern field (west)



FIG.28 Home Farm



FIG.29 Home Farm



FIG.30 St. Laurence's Church

4.2 Design Evolution

The layout for the exemplar development has progressed through a series of iterations before arriving at the scheme that has formed the basis of this revised submission to the Council. The following section gives an over-view of how the scheme has evolved to include reference to key stages in the layout evolution.

Prior to preparing an initial layout an Open Planning Week workshop was undertaken with key stakeholders to ascertain what they expected of an eco-development and what they wanted to see provided within the NW Bicester eco-development. Whilst relating in the main to aspirations for the overall masterplan it was clear that local facilities such as retail units, a village pub, a community centre, a school and employment opportunities should be physically provided whilst also providing an attractive landscaped environment to recreate within.

Following the agreement of what should be contained within the exemplar phase agreement was reached

as to which part of the masterplan area was to form the application site for the exemplar phase. Whilst challenging in shape it was chosen due to land acquisition and also as it contained two water courses for which their treatment could be tested and assist in influencing the wider masterplan concept. The principle of the location of the exemplar site was agreed with officers of the Council at this early point in time.

4.2.1 Opportunities and constraints

A consideration of the constraints and opportunities of the site along with the client brief that set out what non residential uses are to be provided along with the aspirational housing mix enabled design work to be undertaken on the evolution of the layout design.

Once the application site had been resolved a constraints and opportunities assessment was undertaken to establish what restrictions existed on undertaking the development and also to establish development platforms i.e. those areas free from constraints.

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

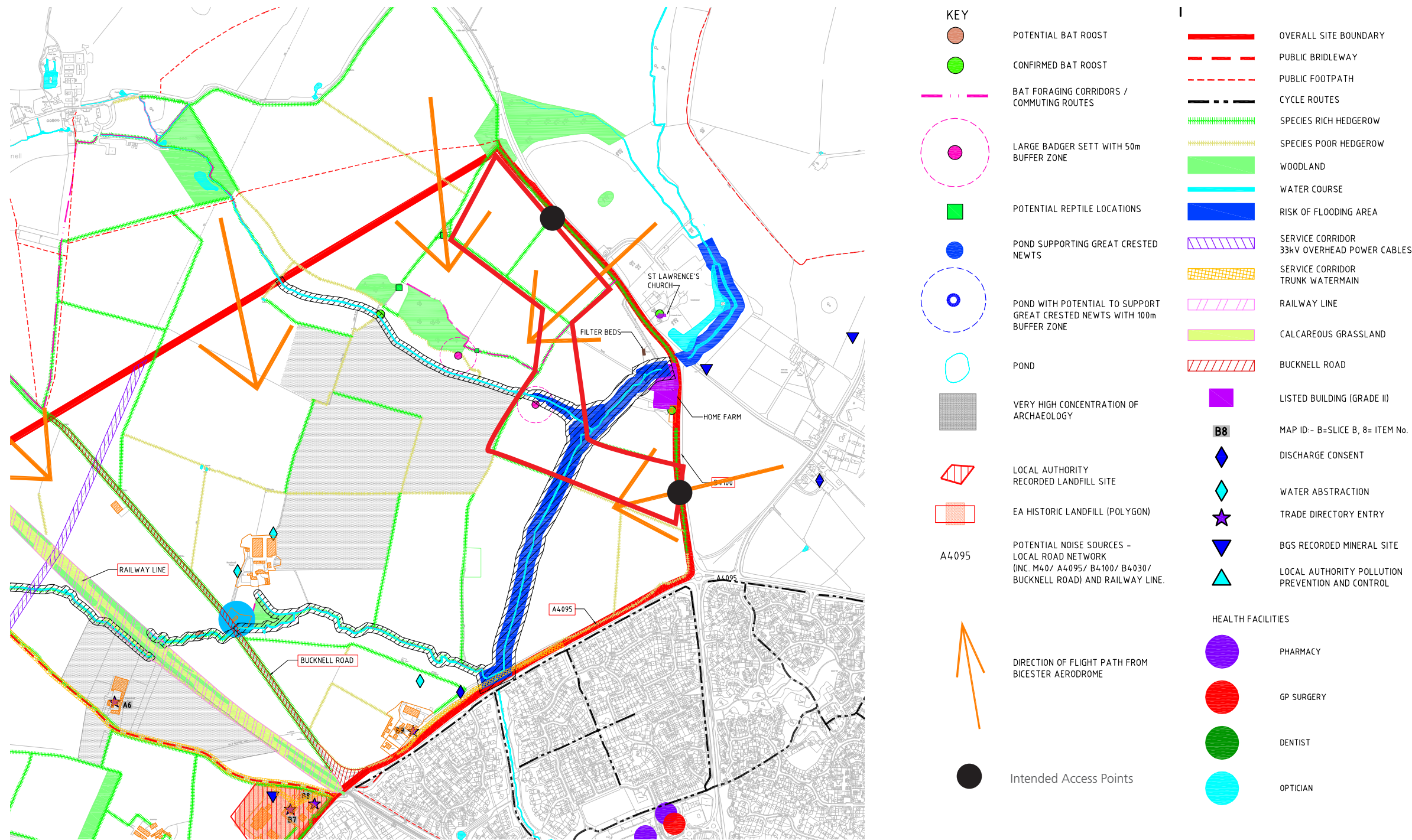


FIG.31 Opportunities and Constraints Plan

4.2.2 Initial Concept Drawing

Prior to considering an initial layout for any development on the site and having regard to the matters set out above a high level series of concept sketches were produced which sought to identify the key factors that should assist in considering any layout.

These concepts are set out in figures 32-37 and demonstrate how consideration was given to the: location of the village centre in the heart of the scheme, the potential connections to later phases, the use of topography and watercourses and the inter connectivity with Bicester. These factors enabled some initial concepts to be tested as to the marketability of the idea.

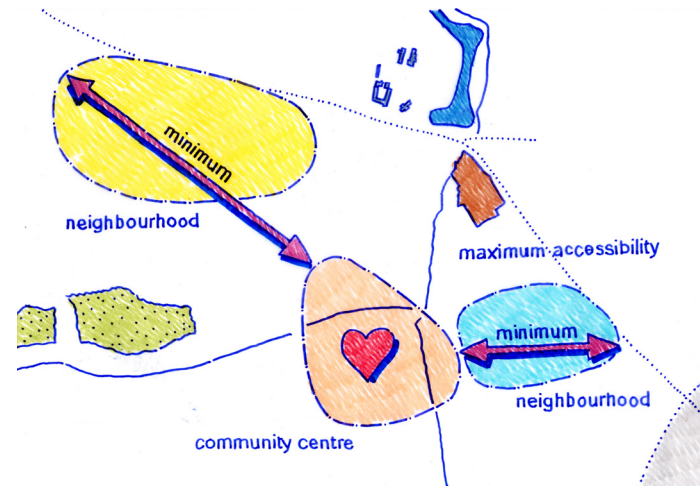


FIG.32 The village centre is placed at the heart of the scheme

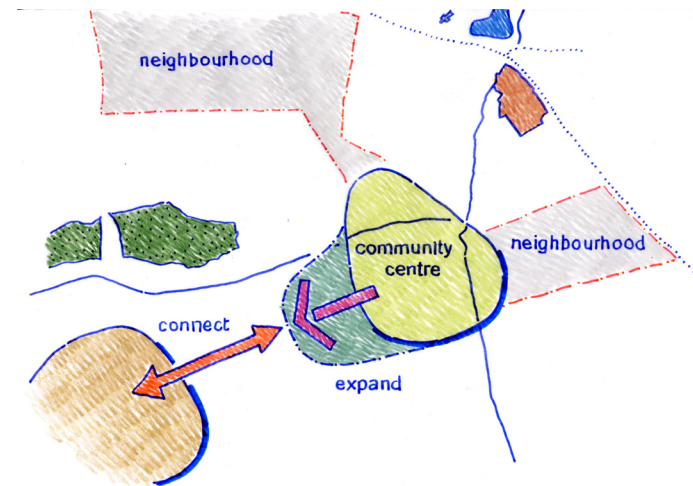


FIG.33 The centre is located to facilitate expansion and connection

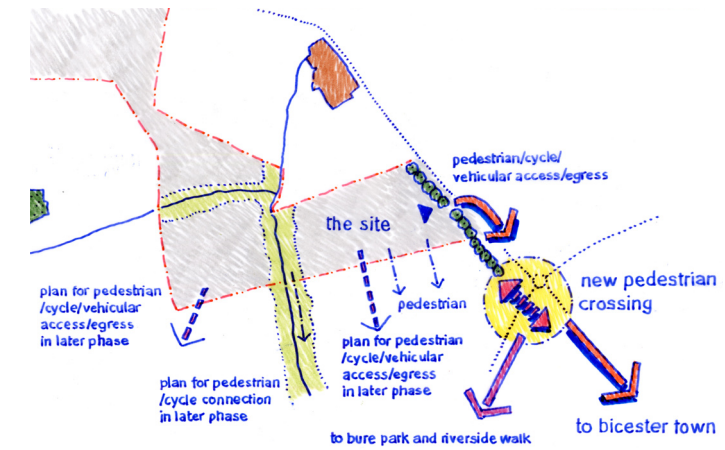


FIG.34 A new connection is made to Bicester

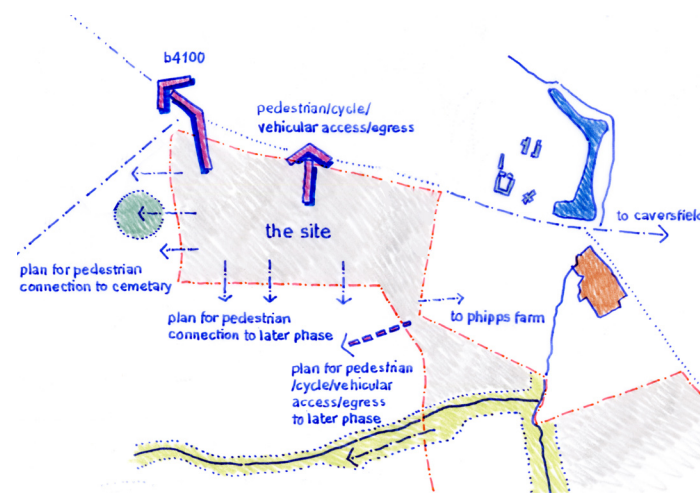


FIG.35 Connections are made to later phases

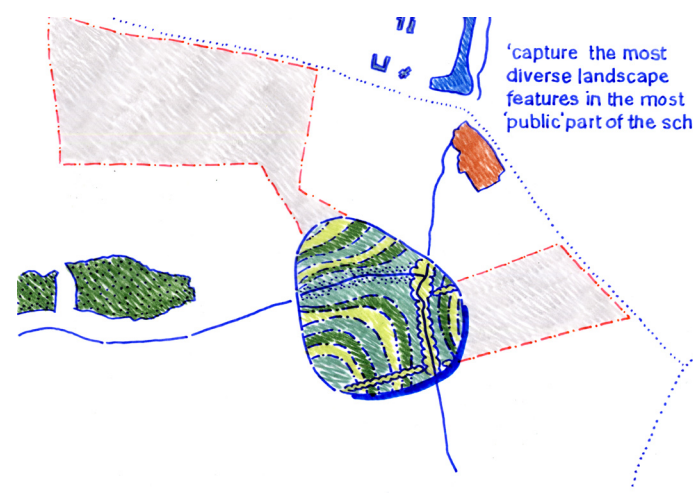


FIG.36 The central area is contrasted using the topography and watercourses for their inspiration

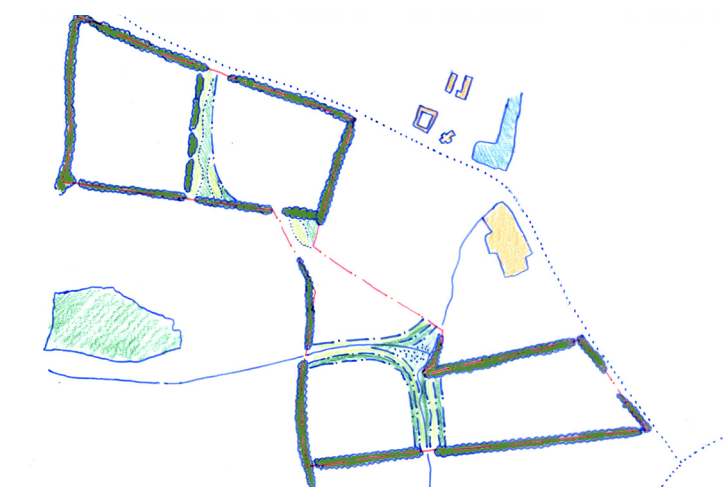


FIG.37 Hedgerows and existing habitats have been supplemented to create new landscape settings

4.2.3 Layout One

Following a review of the concept sketches it was resolved to test the concept of locating the village facilities to the south and in a central location to ensure they are located as close to as many properties as possible. Furthermore, their location here would ensure that as future phases of development emerged to the south of the exemplar phase those properties would then be in close proximity to the facilities established through the exemplar scheme.

A copy of layout one and the village centre studies are set out at figures 38 and 39.

When tested with a potential retail provider they supported the indicative location of the retail units to the east of the stream. This was on the grounds that the number of residential units set out on the site would not support a store in the heart of the scheme and passing traffic on the Banbury Road would need to be relied upon to make the retail units viable.

Moving forward, initial ecological information was emerging and the design team were beginning to form views as to how to respond to the watercourse. In parallel with these studies research on post medieval poly focal villages was being undertaken for national settlements and local villages. This analysis led to an arrangement with a market square to the east and a village green to the west, providing different settings for the retail based uses and a quieter environment for the school and care home. The road link to the south was placed next to the hedgerow due to the location of a badger sett.

Whilst the site area identified in this layout is different to that which forms the exemplar submission, the design concept provided for the following:

- Non residential uses in the southern / central section of the site;
- Protection around the identified badger sett;
- A residential development that followed the orthogonal pattern of the hedgerow;
- The retention of hedgerows and therefore biodiversity credentials; and
- The provision of a village green and market square.

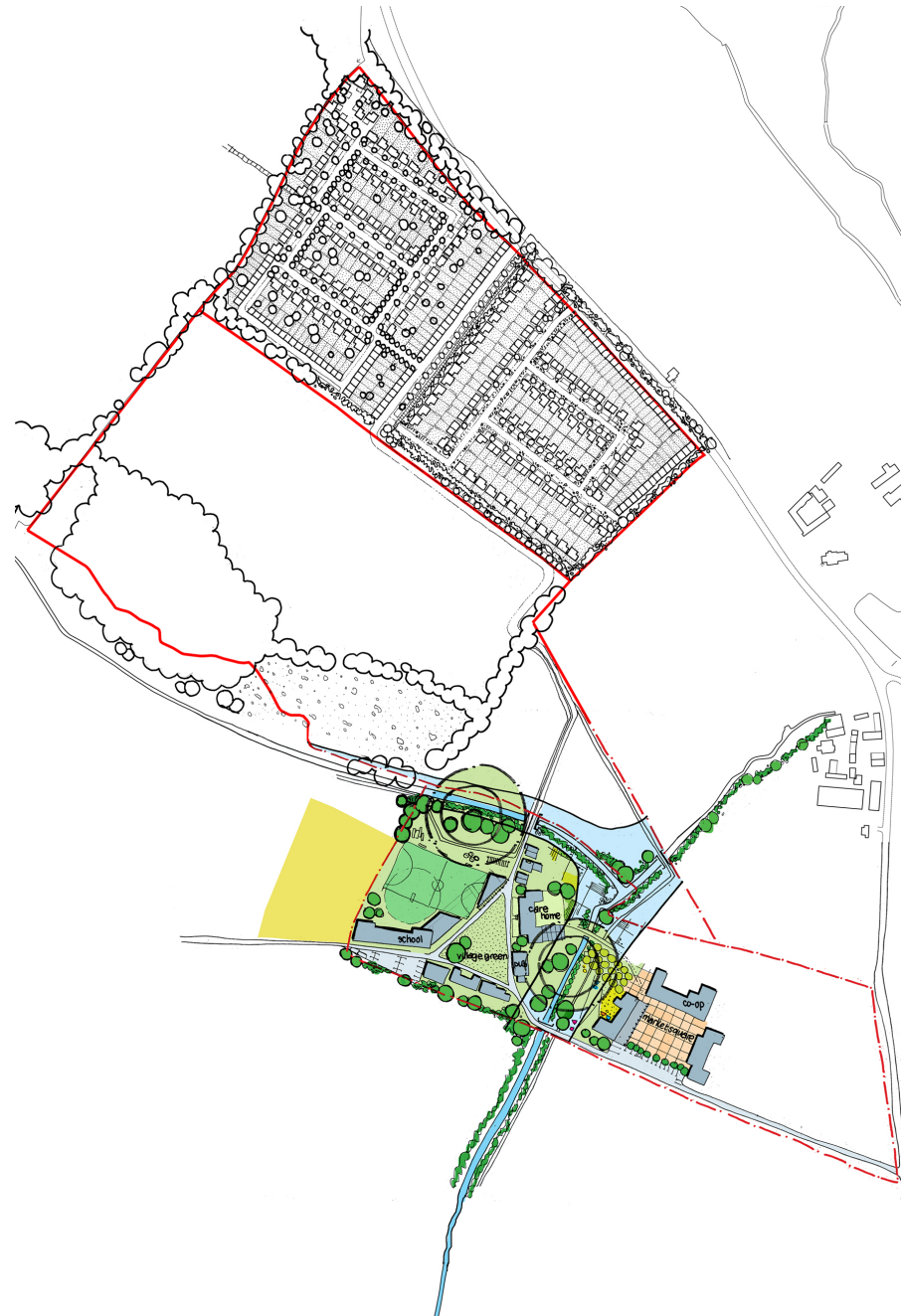


FIG.38 Layout One

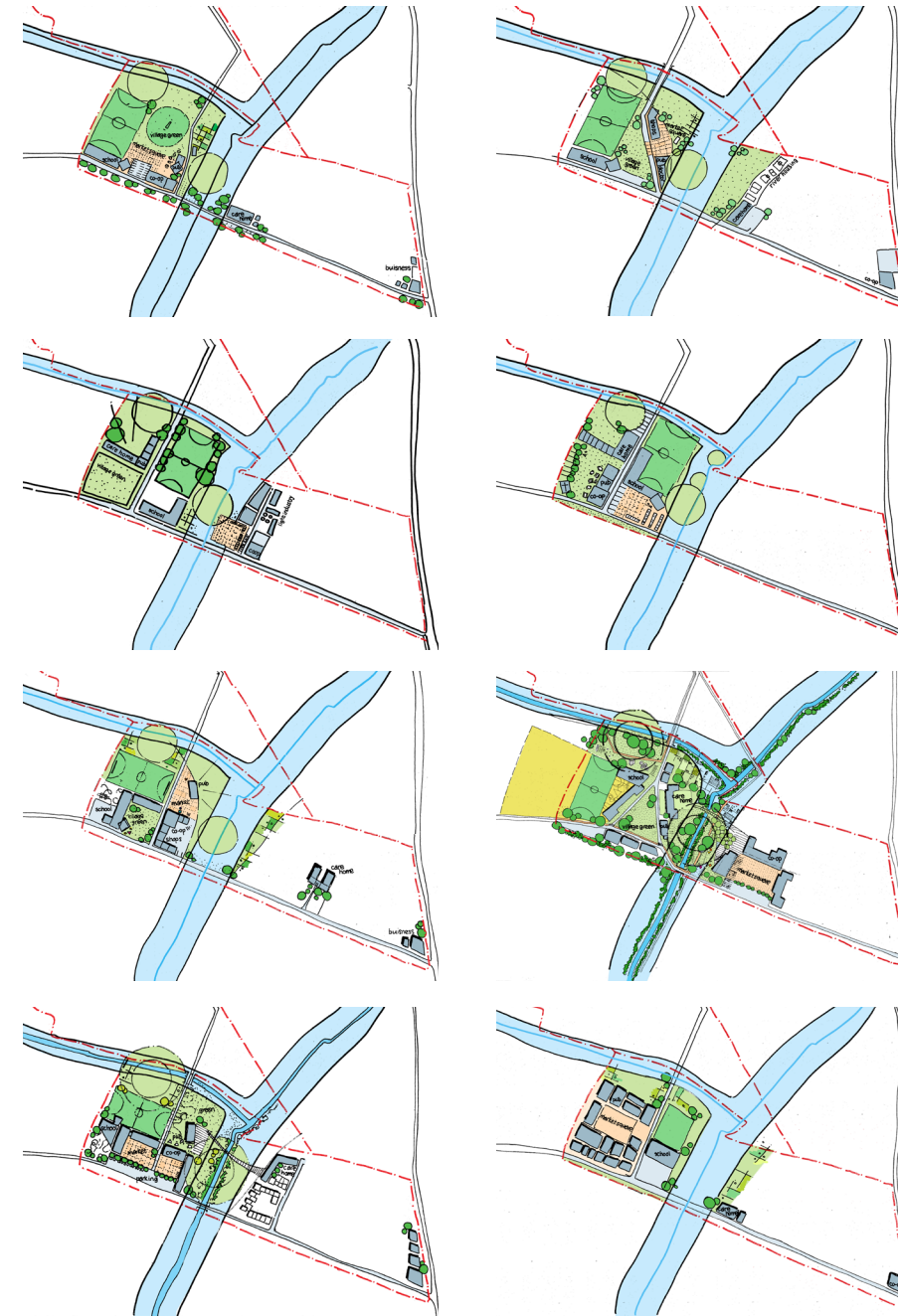


FIG.39 Village Centre Studies

4.2.4 Layout Two

Following the drafting of the initial layout it was the subject of a public consultation event entitled ‘Testing Ideas’. That event raised concerns that the suggested layout would result in the loss of hedgerows and trees and did not provide for the inclusion of allotments. Finally, local stakeholders and residents were concerned that the location of the exemplar scheme would create a detached settlement from Bicester thereby going against the aspirations of the PPS1 supplement.

Moving forward the design concepts sought to have further regard to the landscape assessment and ecology studies to influence the design by seeking to respond more clearly to the existing natural features and provide buffer zones to the hedgerows.

In addition, further analysis was undertaken of local village precedents to understand their size and the facilities contained within the village centre settings. A review of this analysis which can be seen in figures 40-42 and assisted in influencing the village square and the village green designs.

As a consequence of the above, the second layout sought to show refinement of the village setting and to create greater containment by placing accommodation to the south and opening the spaces to the watercourse.

Furthermore, the existing field patterns have been incorporated into the proposed layouts to thereby have regard to the rural nature of the site. In this regard the northern fields contains a green link supporting a wildlife corridor which connects with the ancient woodlands to the north and the vehicular access point has been selected following a review of the highway constraints.

These factors transpired into layout two (figure 43) which sought to respond more to the landscape assessment and the ecology studies for which results were coming forward and the suggested red edge boundary of the site had been amended to reflect negotiations with the current land owner. Furthermore a connecting route between the northern and southern part of the site had been introduced so as to allow for inter-connectivity within the development.



FIG.40 Village Green Studies

FIG.41 Village Square Studies

FIG.42 Landscape Studies



FIG.43 Layout Two

4.2.5 Layout Three

Following a review of layout two, the Planning Authority raised concerns relating to the narrowness of the green link and its ability to support allotments/ play space and provide ecological habitats. Furthermore, they expressed concern that the car parking in front of properties would lead to a suburban typology that was not in keeping with the local area or the aspirations of the eco-town concept.

Following the above comments, further work was undertaken into the village setting to enable consideration to be given to the gradient of the contours and also the need for a bridge crossing. This modelling assisted in promoting a robust green infrastructure strategy that would provide for an attractive space that meets the needs of the community in a compliant and accessible manner. Examples of the village green and village square concepts are shown in figures 44 and 45.

Whilst the village setting was considered further it is accepted that the housing continued to illustrate terraces to enable the design team to understand the street pattern and where key frontages were located that would need to be addressed. However due to the



FIG.44 Village Green



FIG.45 Village Square

aspiration to achieve circa 400 units within the exemplar phase car parking was retained on drives to the front of properties although this did cause concern in relation to the definition of the street edges.

It was therefore accepted that whilst this layout had benefits in terms of the larger school site, the retention of the village green and square and consideration having been given to green infrastructure and contours little progress had been made in terms of the housing typologies, parking and the layout of the residential units.



FIG.46 Layout Three

4.2.6 Layout Four

Following a review of the comments received on the previous layouts along with the detailed analysis of the site and its surroundings this layout has evolved with a large number of design changes.

To the north the green link and road link have been unified towards the centre of the plan making a more meaningful space with play facilities and a buffer habitat to the central hedgerow. Furthermore, the road network has become convoluted to increase car travel distances and the reinforcement of the edge buffer zones have softened the plan. A level of complexity has been achieved within the streetscape but this idea continues to develop. The homezones are established and the network of pedestrian and cycle routes are developed.

As a major variation to the previous layouts, the unit types are allocated with reduced massing to edges and significantly the housing is moved to the street edge by removing cars from driveways in front of the houses

and placing them to the side and behind in car parking courts. Finally, the other key factors that are identified on this layout include: the school site being expanded to 0.8 hectares; and the siting of school fields next to the badger sett in the east/west watercourse. Further, the energy centre and village store have been co-located to share the service yard and minimise the impact of the servicing requirements.

The above provisions enabled the formulation of layout four (figure 47) which was the subject of public consultation with residents and key stakeholders in October 2010.



FIG.47 Layout Four- October Consultation

4.2.7 Layout Five – Original Application Submission

Following a review of the preceding layouts an application was submitted to the Council in November 2010. That application was based around the site layout plan shown at figure 48. However the key factors that led to the changes from layout four were:

- Road link minimised to become less intrusive with improved road frontage from houses
- Car courts reduced in size
- Greater complexity and layering in the landscape settings throughout the scheme.
- SuDS proposal developed
- Flood risk information incorporated into layout design
- Ecological Assessments and interpretation made available to allow for development of habitats
- Non-residential uses grouped into a High Street concept that allows for reduced walking distances and car parking duplication.
- School site expanded to 1.34 hectares
- Entrance features developed to mark arrival and

departure from the site

- Village Green replaced by larger open green space along watercourse

The incorporation of the above followed extensive negotiation between the design team, the Councils and following responses to public consultation received from third parties.

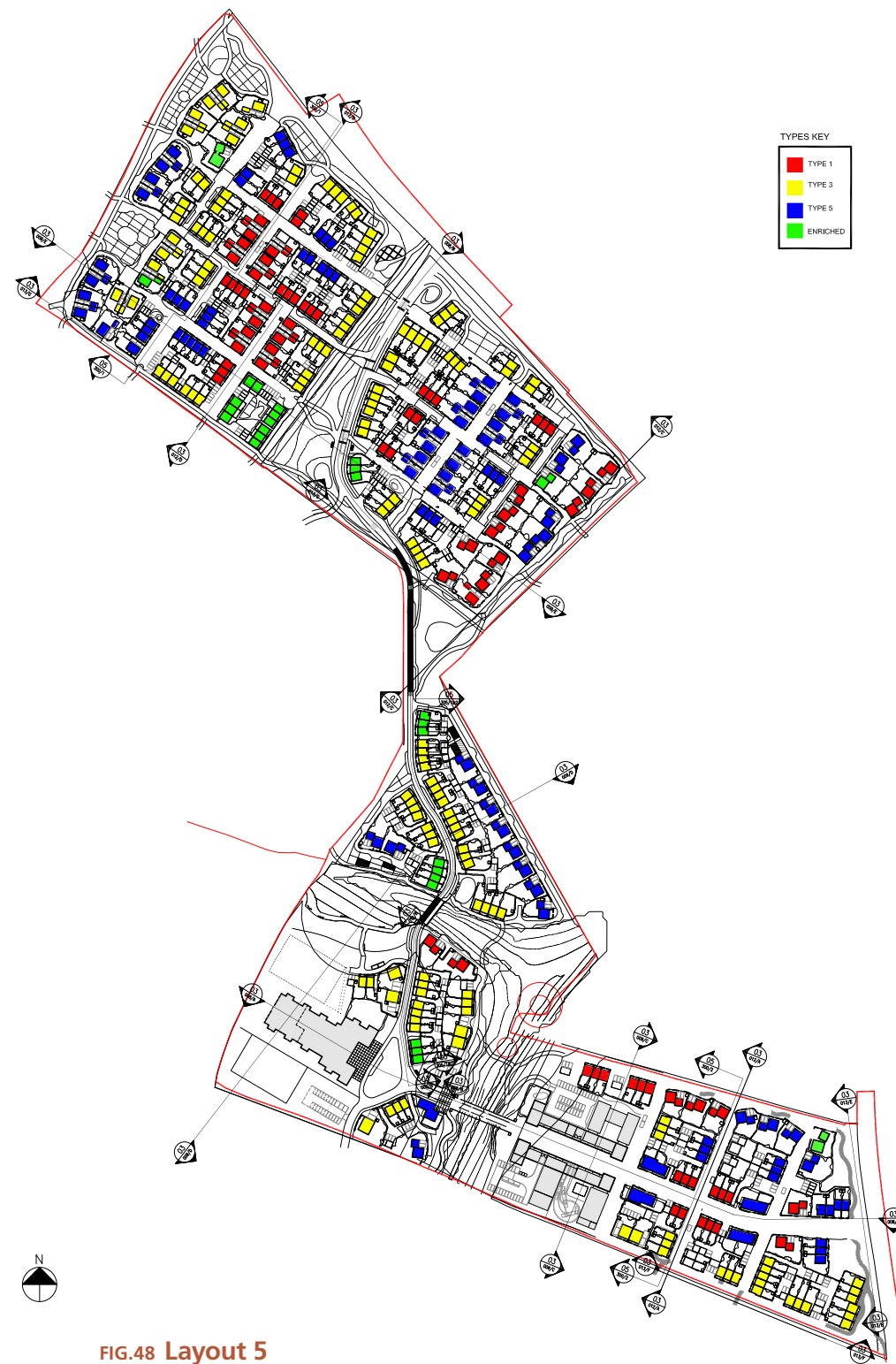


FIG.48 Layout 5

4.2.8 Layout Six – This Application Resubmission

Following the submission of layout five as part of an application pack in November 2010 the Council undertook a large amount of public consultation with a wide range of stakeholders and also local residents. Following this consultation and a review of the application submission a series of comments were raised in relation to design and the aspiration for the submitted application proposal to achieve the highest standards possible. In light of these the client and design team resolved to amend the submitted layout to address the majority of comments, a number of which could be achieved through the provision of further information.

The key design comments received from consultation responses were:

- Car parking is too dominant;
- There is insufficient green infrastructure and therefore no net biodiversity gain;
- The proposed layout looks too uniform

especially the northern fields;

- The north / south access road should only be for sustainable travel modes;
- Inadequate buffers are provided around the site boundary and the river corridor; and
- The inter-relationship of properties don't always reflect their scale and massing.

Following the comments received, the proposed site layout has been amended but the site area, housing numbers, mix and designs are primarily the same as within the original submission with the broad distribution of houses within the three areas. Furthermore, the non residential uses are in the same location along the village high street with potential future connections to further phases remaining the same.

North Fields

In the November application the north fields housing layout was designed with a rectangular grid of plots

and roads which followed the existing field boundaries which were aligned at approximately 45 degrees from north / south. This created a uniform appearance that raised objection from the Council and consequently the layout of these fields was reconsidered entirely whilst respecting the previously set out opportunities and constraints provisions.

In the first instance consideration was given specifically to the topography and natural features of the fields (figure 49), the ability to introduce green fingers and the need to have regard to orientation for solar gain (figure 50) and the need to allow for the green fingers to extend and link into future phases of development (figure 51). Collectively these provisions which revolve around landscape matters provided for an opportunities plan specific to the two northern fields as set out in figure 52. The content of these diagrams and how they have linked into the wider application site and the subsequent masterplan area is set out in figure 53.

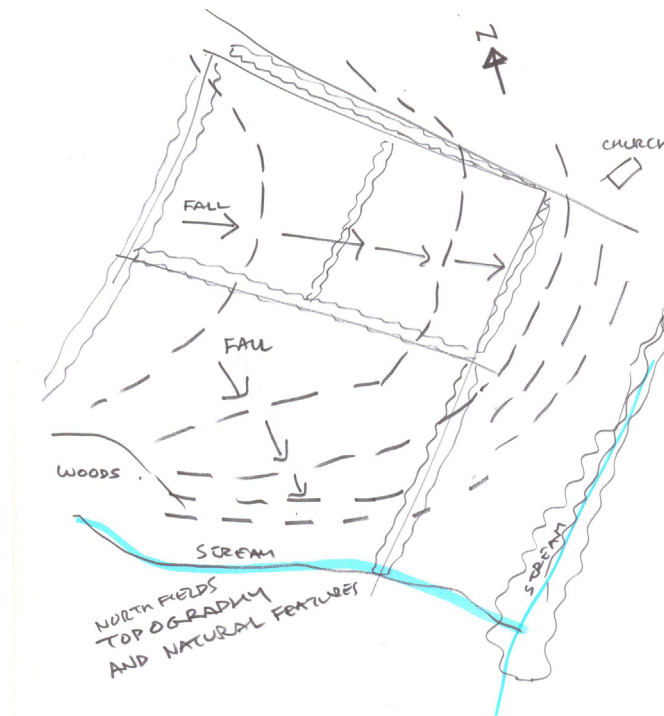


FIG.49 Topography and Natural Features

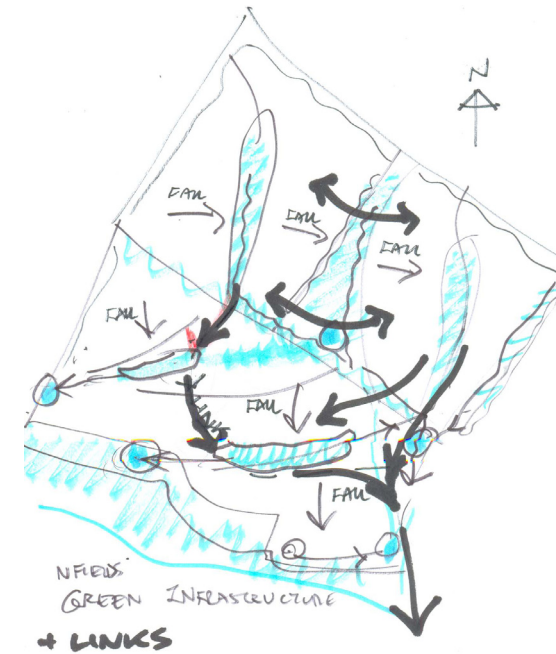


FIG.50 Green Infrastructure and Links

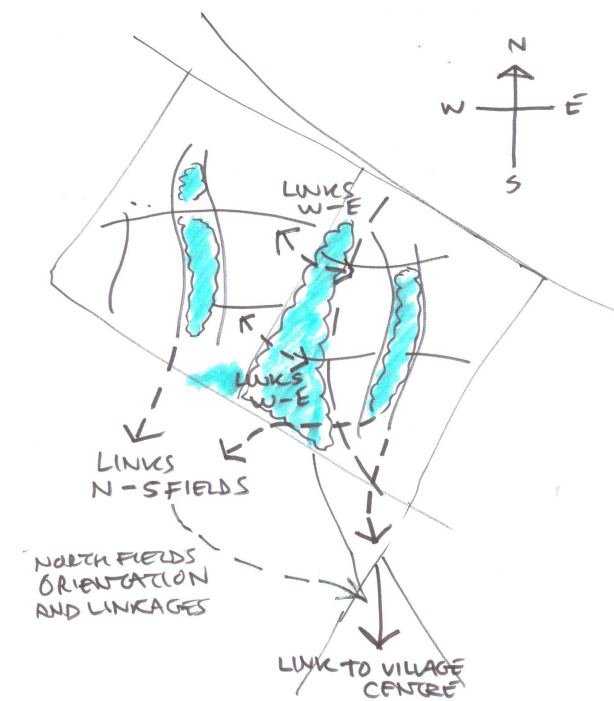


FIG.51 Connectivity to Future Phases

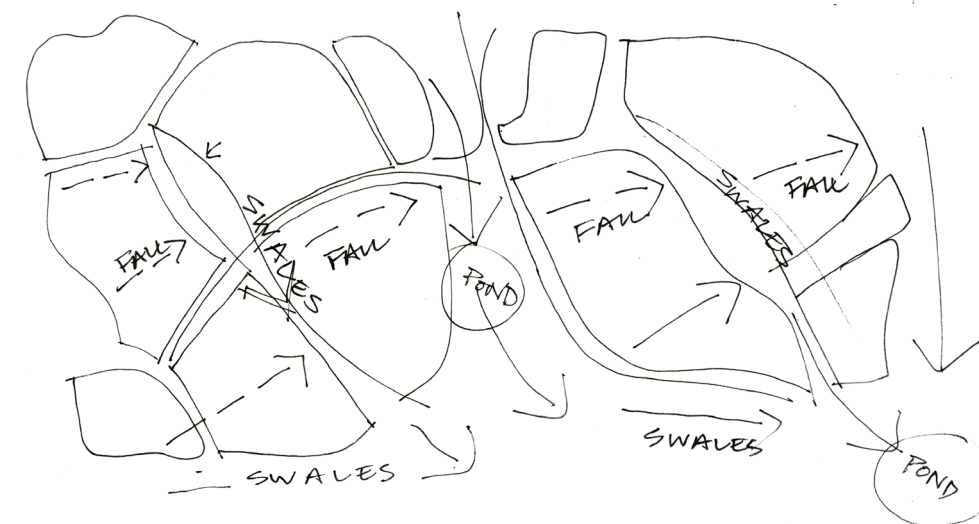


FIG.52 Concept Landscape Diagram

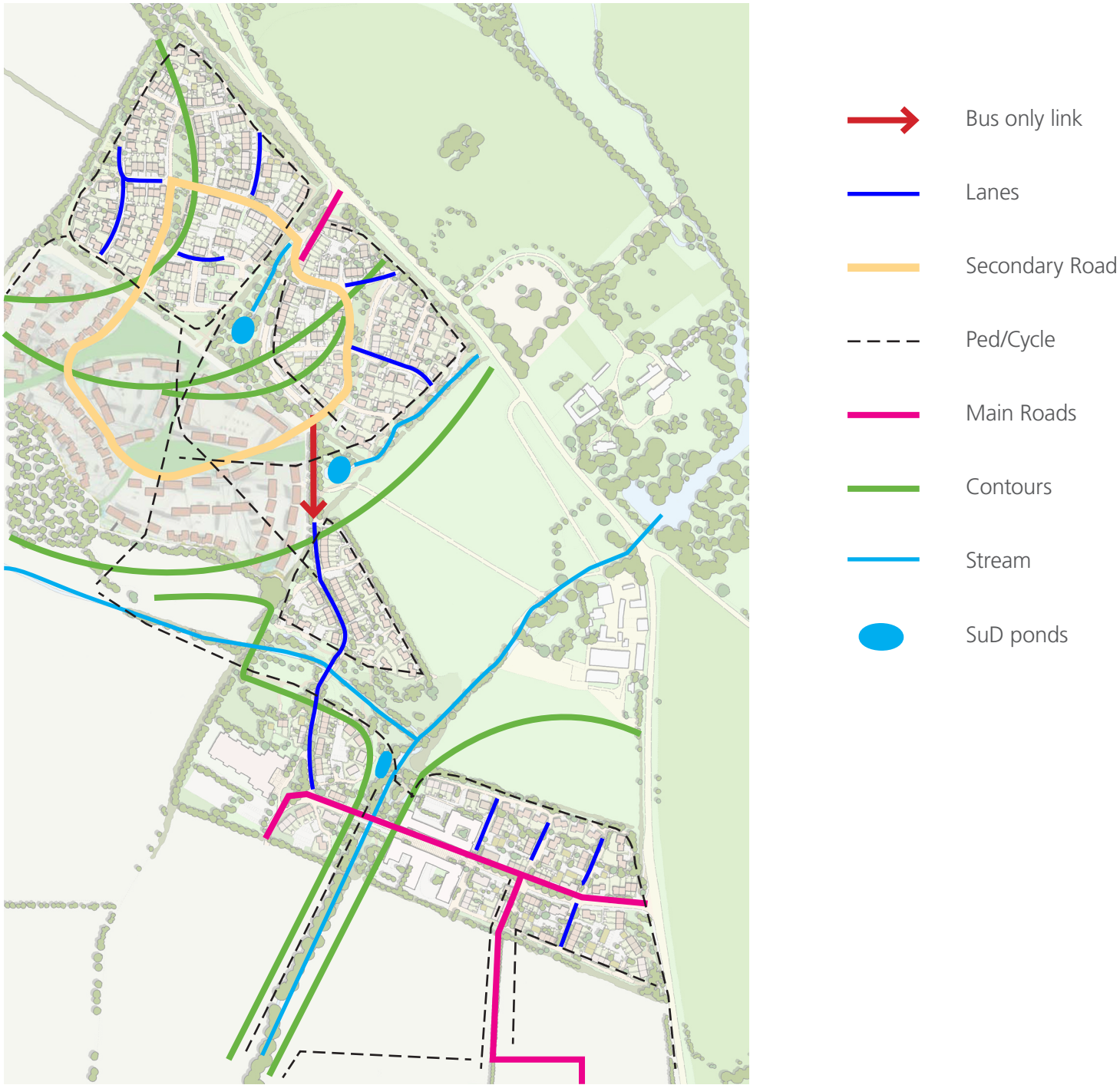


FIG.53 Key Layout Principles



FIG.54 Layout 6

Following a review of the above, the design concept for the northern fields was re-evaluated with the previous grid layout being substituted with a looser framework that takes account of: the west/ east slope of the land, existing field boundaries and hedgerows and also provides an improved orientation for houses to optimise passive solar gain and roofs slopes to the south.

This revised layout has enabled the foot and cycle paths to be realigned to create the most direct connections through the housing directly towards the village centre rather than the previous grid pattern of connections which forced the walking route against natural desire lines.

Whereas the original application had two types of residential character: a perimeter hedgerow facing house type and an inner street house type, the new layout creates more distinctive character areas using wider open green spaces with frontage housing in the residential areas to break up the plots and repetition

and to enable better orientation for residents. This philosophy has followed the need to ensure that landscape forms a key design consideration in the evolution of the application proposal. Finally, the green spaces are aligned with the contours across the slope in the land which enables the green areas to incorporate swales and significantly reduce the quantity of piped surface water drainage and create a more varied habitat and biodiversity.

The size of the perimeter blocks has been increased which allows the creation of longer terraces which provides a sense of enclosure fronting the spaces and a more flexible layout to create different areas of rear parking courtyards. This has enabled the perimeter landscape between the housing and the hedgerows to be revised and the housing perimeter no longer runs parallel to the hedgerows thereby creating a more varied width of buffer to assist the new habitat creation and amenity uses in the landscape.

The hierarchy of access is also revised from the original application so that within the housing area there is less repetition of similar street design and a more gradual hierarchy established from the spine road through to the access lane, the perimeter lanes and paths. Consequently, the layout gradually opens a sequence of views from the centre towards the perimeter thereby optimising the landscape value of the development proposals.

In terms of the perimeter building line which was previously uniform, the revised submission creates a varied building line with glimpse views of the development consequently being fragmented within the landscape screening.

The connecting route between the north and central fields has again been changed from the previous layout which had an all vehicle access road. The revised layout has connections between the north fields and the central area by footpath and cycle and vehicular access

only for bus, taxi and emergency and refuse vehicles.

This revised layout will significantly shorten the distance travelled to access the village centre, school and shops using alternative modes of transport to the private car for which journey distances will be exacerbated.

Furthermore, the bus route has been changed to a one way route picking up passengers in the north fields before travelling south to the village centre and returning to the Banbury Road.

Parking areas within the north fields have been redesigned to include a mix of car courts, off street and on plot parking, which creates flexibility to mix tenures and house sizes whilst providing a range of street environments including home zones and green streets.

Finally, other key changes to the northern fields are the revision to the design by providing a spatial framework for links through to the future development of two fields to the south in terms of both access and green open spaces.

Central and Southern Fields

The principles of the layout, number and mix of the residential units in the central and southern areas have remained the same as for the original submission.

The main change to the layout has been a revision of locations of a small number of houses to provide a wider landscape river corridor to benefit biodiversity and to introduce more variety in alignment and materials to reduce the repetition of similar houses on frontages facing Home Farm. The Pub has been relocated from within the housing areas to the east of bridge within the commercial to reduce impact on the landscape corridor, provide improved natural surveillance of neighbourhood play and enable shared facilities with other commercial uses.

In the southern area the village centre on the proposed high street and the housing area either side have been retained as the original layout with potential pedestrian links to the future development in fields to the south.

There have been revisions to the location of a few houses near the Banbury Road frontage to improve the frontage views and to vary the frontage the houses on the perimeter.

In terms of parking provision the proposed levels have been reduced from the original submission, with the larger dwellings having fewer on plot spaces and the smaller dwellings having the flexibility to have one unallocated parking space. The larger houses have therefore been provided with additional ground floor home working or storage space within the original attached garage space. The unattached garages in the parking courts have been increased in size and have all been provided with green roofs.

Collectively the changes to the layout have resulted in a significantly amended scheme to that which formed the original submission that has responded to the comments raised to date but whilst not forgetting the initial detailed analysis that was undertaken that informed the design concepts of the exemplar scheme.

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

In addition to considering the detailed layout evolution regard has been had to specific elements of the proposal and commentary on design evolution of these is as follows.

The High Street setting begins at the southern entrance onto the Banbury Road where the character for the whole southern field is established. A green landscape buffer is formally framed by terraced buildings providing a frontage onto on the Banbury Road and focusing the view along the High Street sequence (figure 55).

The impact of forming a junction at this point is mitigated by trans-locating the hedgerow by splaying the green edge and offering improved views into and out of the site.

The High Street sequence develops westwards with a 6m carriageway with large formal tree planting to the north (to afford a sunny environment to the thoroughfare) and an engineered SuDS feature to the south, that allows reed planting to grow from a metal

grid covered channel. The controlled nature of this swale system is intentionally contrasted with the looser organic form of the northern fields' swale system.

A procession of three storey corner buildings forms the progression to the high street centre, a sequence that is punctuated by a series of raised landscaped tables that connect the homezone areas north to south across the carriageway. The layout of the residential areas are inspired by the hedgerow pattern and face

onto this ecological resource, ensuring the scheme is outward looking whilst enabling the creation of new and adjacent habitat. Their response to the north and the south is different, as is to be expected. To the south the terraced housing sits parallel and perpendicular to the hedgerow but pre-empts the next phase of development forming a linear edge. To the north, detached properties are deployed in a softening of the arrangement, with subtle angle changes to create a less rigid frontage onto the farm fields and the settlement of Home farm beyond.



FIG.55 The green entrance space

The key junction between the road linking the southern field with Lord's Lane and the High Street is marked by the formation of a space framed by trees and defined by three storey corner buildings. The space also marks the start of the community centre and the non-residential amenities that form the core of the village (figure 57).

The village centre is organised along the principal route but embraces the north/south watercourse as a major green feature, like a green or village pond may occur in a historic settlement. The High Street captures this landscape feature by extending beyond it, by means of a linear bridge, before finishing with a landscaped space defined by a pair of buildings on the far bank and a termination of the vista with the school beyond. The parade of shops, offices and first floor entrances are given cohesion by protruding corner blocks that help to define the space. The parade buildings sit back from the pavement edge to create generous footpaths that will allow for people to stop and meet and others to pass and continue with their daily business. The streetscape is further layered with the potential inclusion of a continuous arcade that provides the setting with a greater level of architectural cohesion.



FIG.56 Arcades are often employed along high street frontages



FIG.57 High Street axonometric view (illustrative)

A single landscape treatment is applied across the road with lowered kerb edges and parking deterrents to create a generous and quality public realm. Similarly car parking and servicing is placed at the rear of the parade to minimise the impact of cars and delivery vehicles on the space. The western boundary of the non residential uses is softened by allowing the watercourse landscape to blur the edges. In contrast a bus stop has been placed at the heart of the High Street along with bike stands to promote these modes over private car use. The parade forms a strong edge to the High Street whilst the buildings that sit perpendicular to it and form it have an inconsistent unaligned rear footprint, which mirrors the traditional form of single street settlements.

The uses along the parade have been carefully considered. A village store provided by the Co-op Group anchors the centre of the High Street, with two retail units and a pub leading to the watercourse. With the pub enjoying views of the landscape feature. Above the retail units is office space. The service yard’s efficiency is maximised by sharing its use with the village store and the biomass deliveries to the energy centre. The latter is placed adjacent to the hedgerow boundary to allow

for future expansion to support the next phase to the south. The Eco Business centre is located to the north of the street and this facility shares its parking/drop off provision with the nursery located overlooking the watercourse. The nursery provides community space at first floor level and is located to the western end to minimise journey times to the primary school.

The bridge sits formally on axis with the High Street as the height of the land falls towards the watercourse. This allows for a dramatic opening of views (upon stepping beyond the closed end of the parade) of the watercourse and along the valley in both directions. There are footpaths either side of the carriageway leading to the school. The bridge design has a duality fitting of its context. Its surface is a continuation of the High Street with a hard landscape palette whilst its light balustrading allows for views up and down the watercourse.

The arrival space to the end of the bridge is framed by residential accommodation acknowledging the transition over the green space.

An informal village green concludes the High Street sequence in this phase, with the school sat on axis terminating the view and presenting its main entrance and coach bay area to the green space in front. The village green marks the transition point northwards and in the later phase southwards forging a connection with Hawkwell Village (as set out in the masterplan framework).

The non-residential facilities provided within the first phase form the outline element for the application.

A palette of materials has been established to ensure consistency and quality is achieved along the High Street. The selection has been based on the Oxfordshire vernacular, deriving from its geological positioning and traditions. No assumptions are made as to the stylistic application of the materials but the selection responds to the high standards required by the Client and the setting of the exemplar scheme (figures 58,59 and 60).

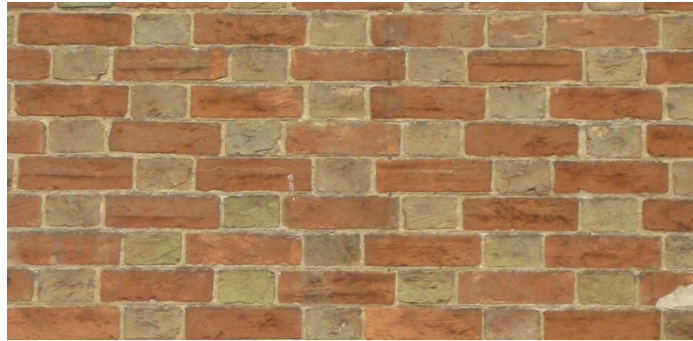


FIG.58 Brick

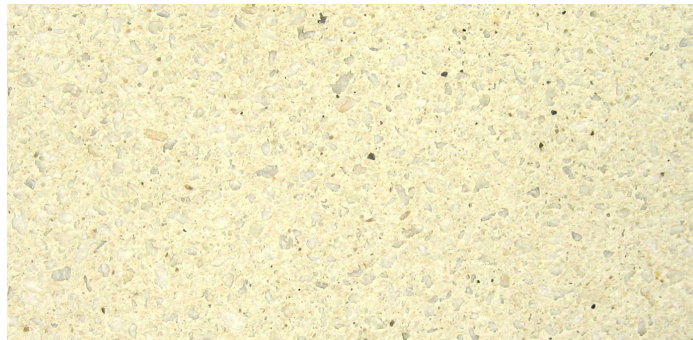


FIG.59 Reconstituted Stone



FIG.60 Slate

To achieve consistency and a statement of quality along the high street experience it is proposed to front the arcade, first floor accommodation, watercourse frontages and high street frontage of the school with a warm coloured reconstituted stone. This responds to the limestone walls of St Laurence's Church and Home Farm, buildings of significance in the locality. Alec Clifton-Taylor states in Pevsner's guide to Oxfordshire, "Whereas the sandstones play no part in the Oxfordshire picture, the limestone is paramount. The whole of the western and northern part of the county fall within the Jurassic belt."

In contrast the facades to the sides or rear of the thoroughfare will deploy brick or render, signifying the importance of the high street frontages and the hierarchical ordering of the side or back lanes. Brick is typical of the Bicester area as it is clay country, Pevsner's guide states, "In the C18 and C19 bricks were made in the Vale at, among other places, Bicester, Wheatley and Great Milton..."

The roofing material when pitched is proposed to be slate. Historically welsh slate was used extensively in the region as local stonesfield slate production subsided and improved infrastructure allowed for its import from the west.

4.3 Illustrative High Street Elevations

The following drawings in this chapter document the extents and key features that set the principles for the High Street sequence but allow for creativity and flexibility to further enhance the design during a detailed design process.

The following images identify how the High Street could be designed if the framework and principles set out in the preceeding section are followed.

It is possible to identify the arcade form of development with three storey book-ends with steps in the ridge height to reflect the change in levels.



FIG.61 Street Elevation Options



NORTHERN BLOCK SW ELEVATION



SOUTHERN BLOCK NE ELEVATION

FIG.62 Village High Street Elevations 1:250

4.4 Study Perspectives of High Street

The preceding images have identified how the High Street elevations could be viewed and the two study perspectives shown here illustrate the views of the High Street in a 3D perspective. It is clear that these show an attractive and welcoming environment that will compliment the eco development whilst providing facilities for local residents.



FIG.63 Study perspectives looking west along the High Street

4.5 School

To satisfy the needs of the development and its future residents a primary school is to be provided within the application site. At this stage the school will exist on a 1.34 hectare site (figure 64) but that has the capability to expand to a full 2.22 hectare facility (figure 65) by extending to the west.

The school design has been provided by Oxfordshire County Council and it is envisaged that the south-eastern frontage facing the green and the watercourse beyond would be of reconstituted stone to provide a conclusion to the high street sequence. In turn and in keeping with the high street approach the remaining elevations would be in red brick. It is proposed that the building will accommodate a brown roof.



FIG.64 Primary School Plan, Phase 1- 1.34 hectares



FIG.65 Primary School Plan, Phase 2- 2.22 hectares

4.6 The Watercourses

The central hamlet exhibits three settings that inform its distinct character.

The first is its transitional nature organised along the Lane and its location between the High Street procession and the relaxed northern fields.

The second is its response to the watercourses. The contour change and landscape features generate a varied frontage to these valleys, allowing the greenery to constrict and expand to create a softer heart to the settlement. Subsequently a variety of housing typologies are deployed, with bungalows, terraces and detached properties running northwards along the watercourse to one edge whilst terraces are brought forward and detached properties recessed to another. Significantly both the flood risk zone and ecological buffer have influenced the layout, manipulating the edges. The expansion of the greenery at this point

pre-empts the next phase and the connection with the woodland copses to the west. Leisurely paths edge the watercourse and connect with a simple foot and cycle bridge linking the two residential groupings.

The final feature of the watercourse zone is the invented diagonal boundary that fronts the retained Home Farm pastures. The lack of hedgerows in this location is acknowledged with a tree planted edge fronting a post rail and stock fence, which draws from the vernacular of the working farm.



FIG.66 The central watercourse zone

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.

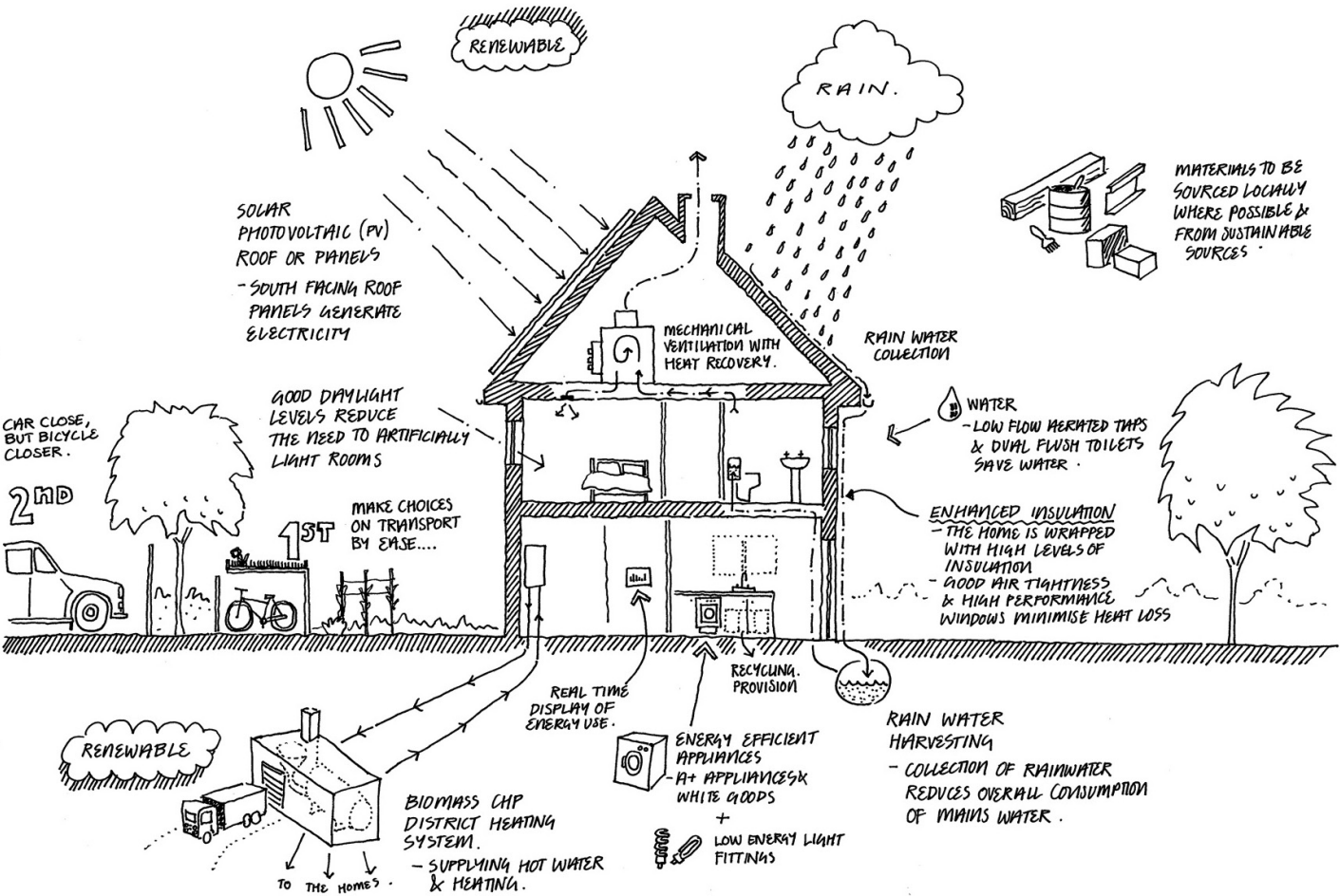


FIG.67 Code Level 5 House

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.

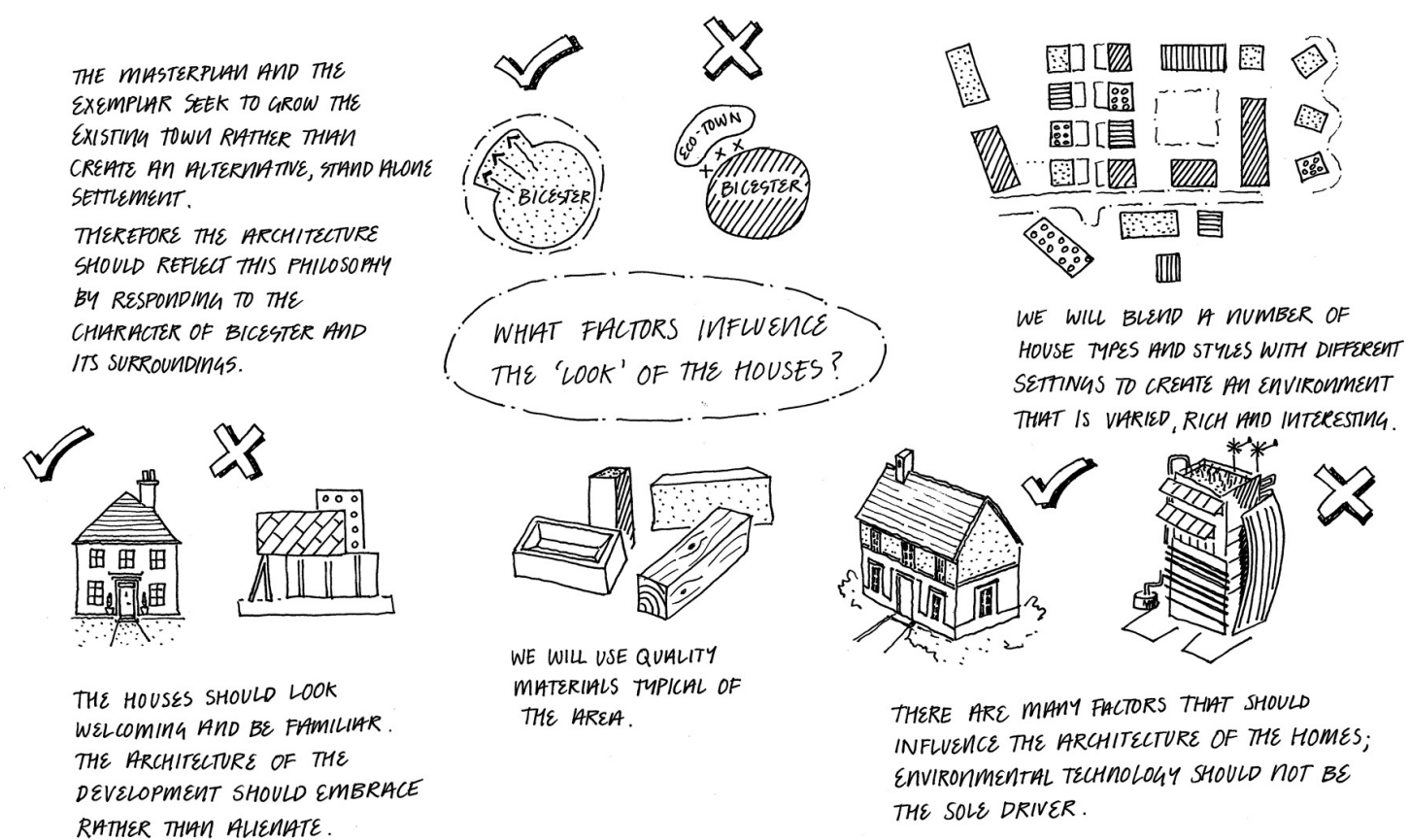


FIG.68 Housing design influences

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

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

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.

Green Infrastructure/Landscape
An application for the exemplar phase of the NW Bicester Eco Development
Design & Access Statement



FIG.91 Landscape Masterplan

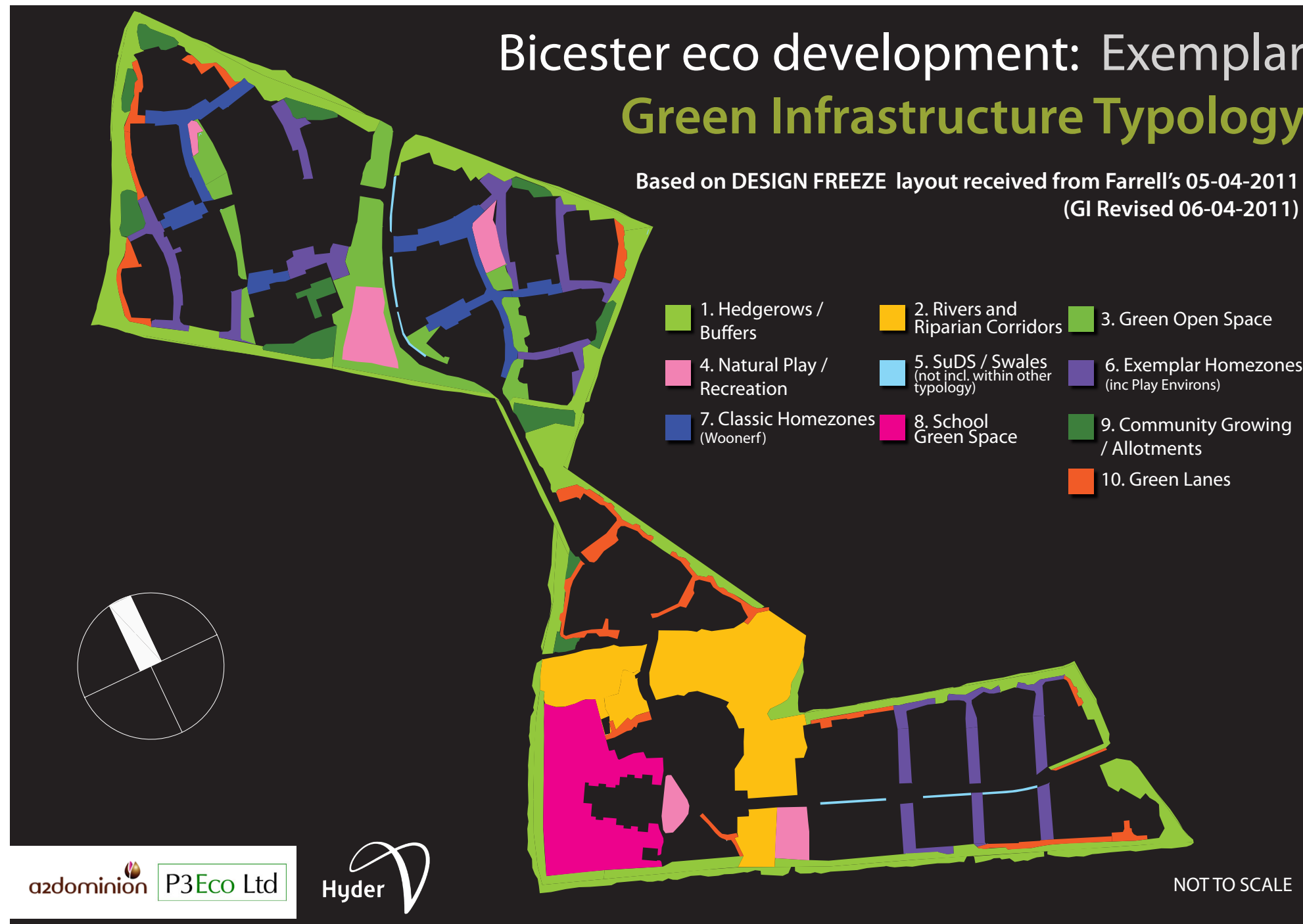


FIG.92 Green Infrastructure Typology

Green Infrastructure/Landscape
An application for the exemplar phase of the NW Bicester Eco Development
Design & Access Statement

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

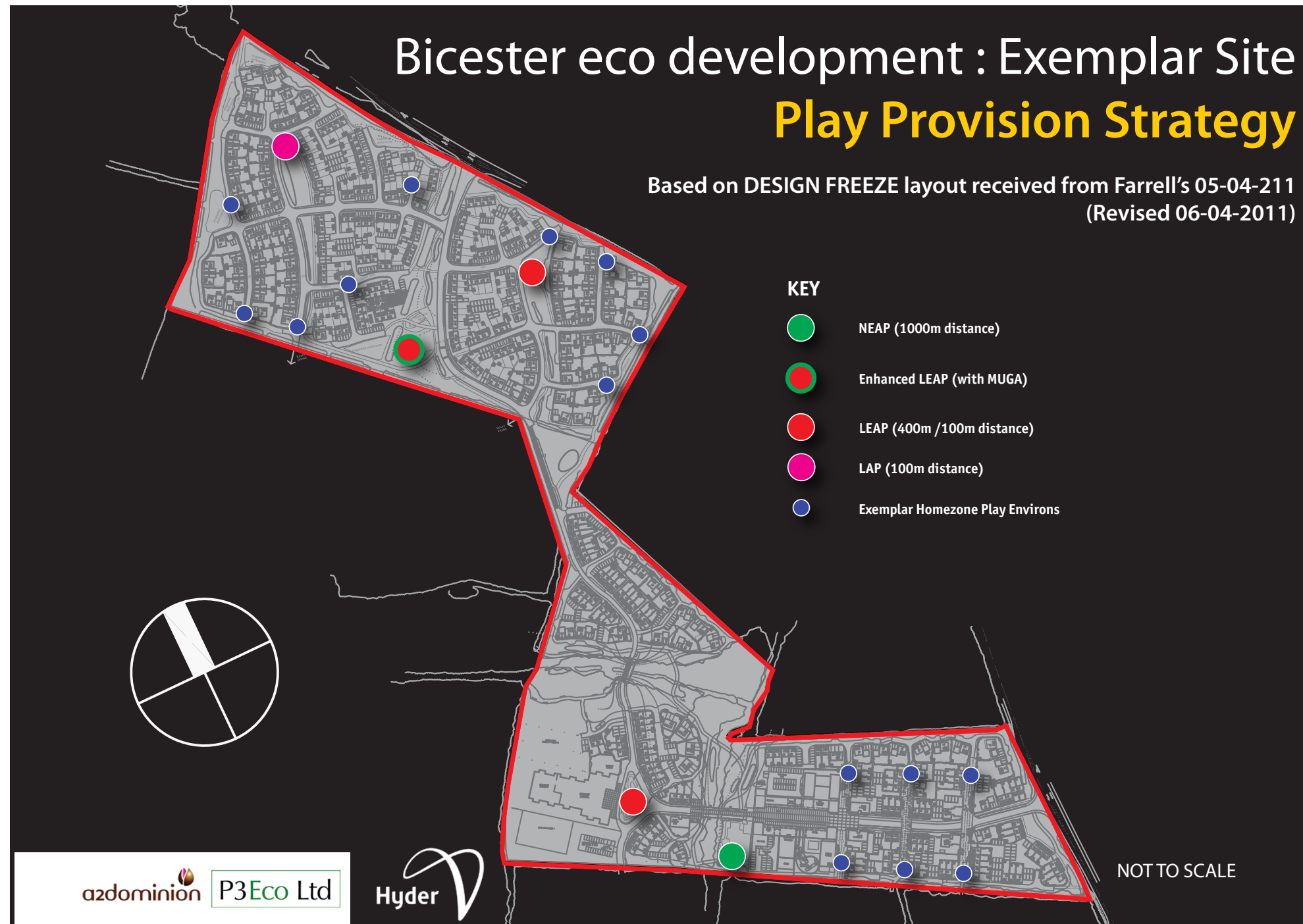


FIG.94 Play Provision Strategy

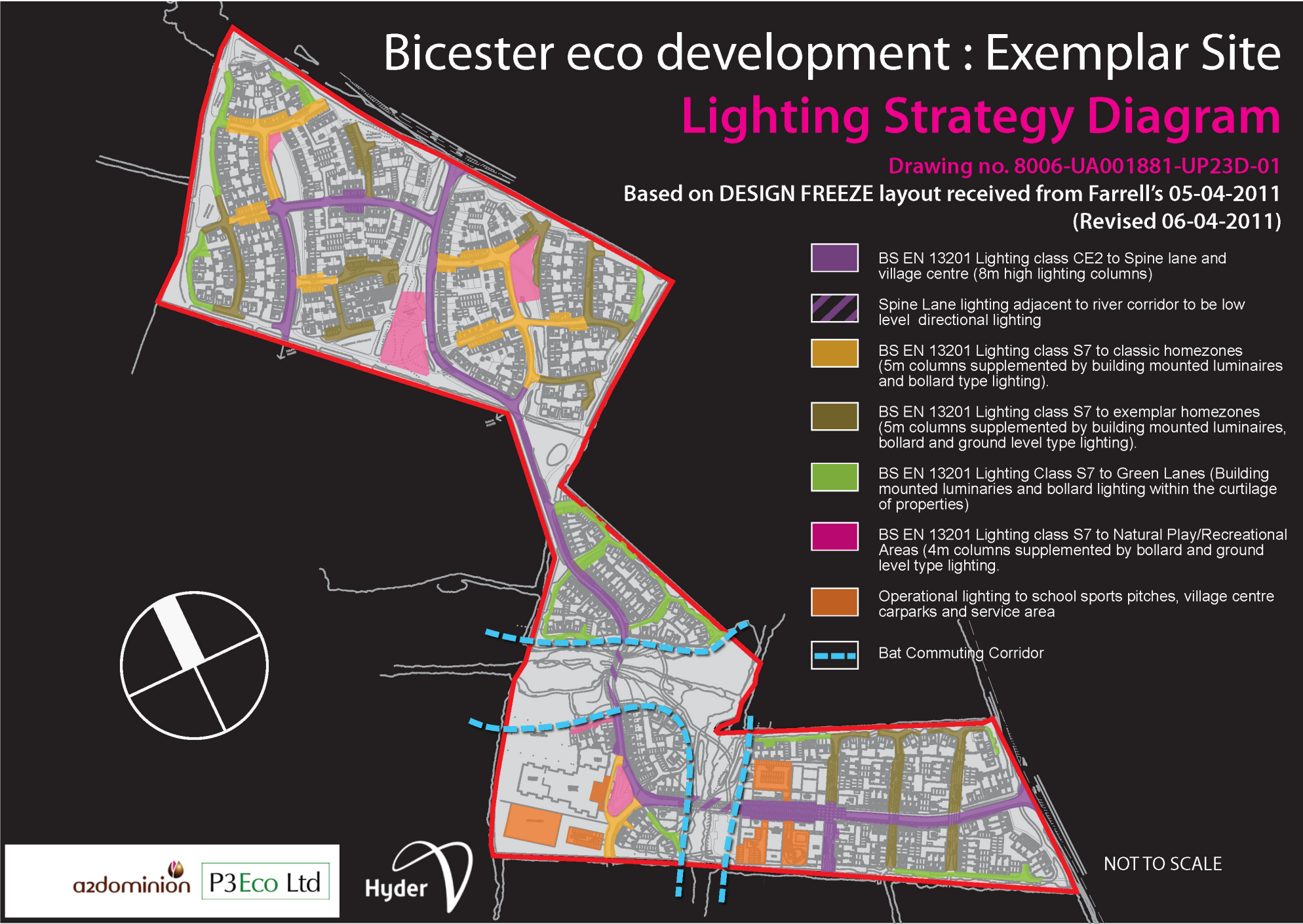


FIG.95 Lighting Strategy

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.

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

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.

