

Outline Application

NW Bicester Planning Application 1

Sustainability Statement



A2Dominion

NW Bicester

Application 1 - Sustainability Statement

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Application 1 - Sustainability Statement

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1 Context

This report presents the sustainability strategy for the proposed NW Bicester Application 1 development. This strategy is based upon the PPS1 supplement that identifies a number of standards that holistically respond to the environmental, social and economic factors and demonstrate sustainable development.

The PPS1 supplement standards are represented below and collectively embrace the key principles of sustainable development; and by the very nature of being the key criteria contained within the PPS1 supplement directly respond to national policy. These sustainability standards have been used to guide the formation of design principles that have been embedded into the proposed development as submitted.



2 Introduction

This report presents the Sustainability Strategy for the proposed NW Bicester Application 1 site. It has been produced following a review of key policy and guidance and series of workshops with the design team with the aim of delivering a robust strategy that addresses the sustainability principles of the proposed development.

2.1 Development Context

The town of Bicester lies approximately 24km to the north-east of Oxford, and 28km to the southeast of Banbury. The M40 runs approximately 2km to the southwest, with Junction 9 providing access to the town via the A41.

Bicester is served by two railway stations; namely Bicester North and Bicester Town. Chiltern Railways operate services from Bicester North between Birmingham Snow Hill and London Marylebone. Branch line services to Oxford (via Islip) operate from Bicester Town. This lies to the south of the town and uses the old Varsity Line track between Oxford and Cambridge.

The Development which this Sustainability Statement relates to is referred to as the Application 1 Site, and lies within the area identified for the NW Bicester Eco development. The Application 1 Site boundary is illustrated on Figure 2-1 below. The Site lies approximately 1.5km north west of Bicester town, between the B4030 and the B4100. The Site's southern boundary runs alongside the A4095 (Lords Lane), the western boundary runs along the railway line and northern boundary runs briefly along the B4100 before connecting with the Exemplar Site boundary.

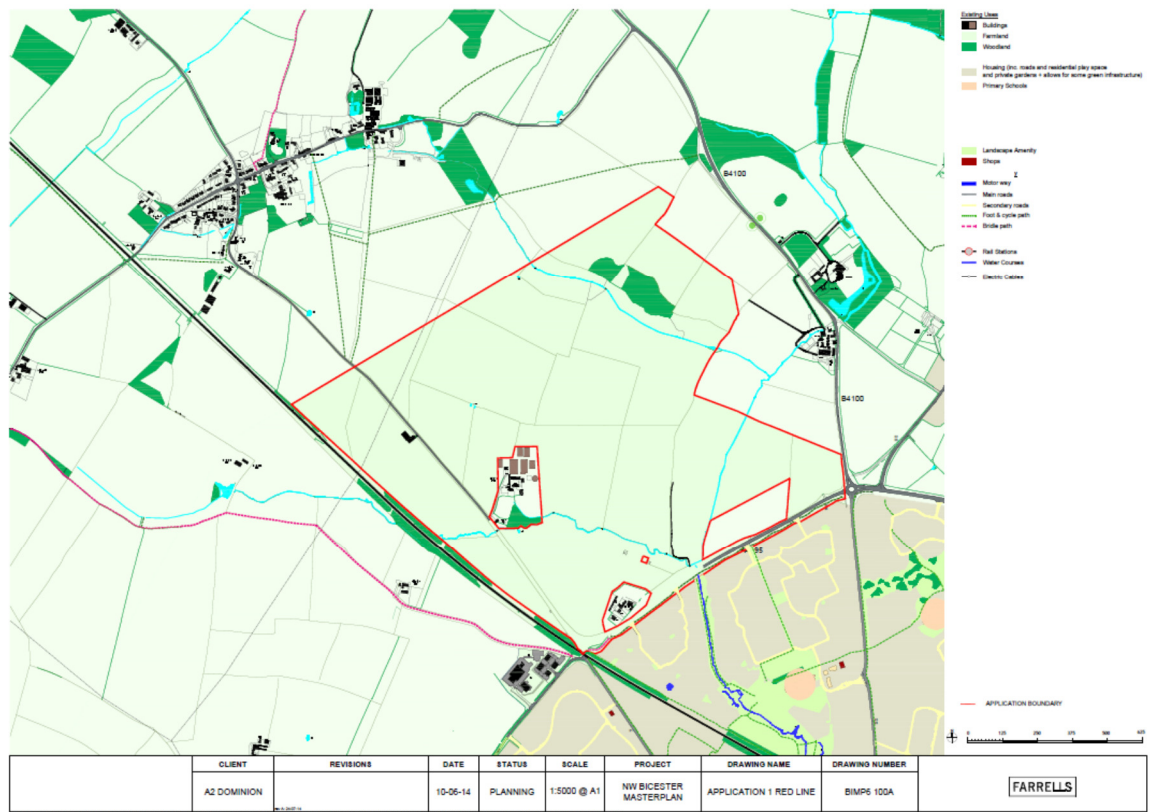


Figure 2-1 Application 1 area

The Application 1 Site currently comprises areas of Grade 3a agricultural land and surrounds a number of farmhouses and associated buildings. The railway line runs in a north west to south east direction through the middle of the Masterplan site. The villages of Bucknell and Caversfield are located to the north and east of the site respectively.

The Exemplar Site, located on the north eastern edge of the Masterplan area is the first phase of the Masterplan Area development. Development has commenced and will provide 393 residential units, an energy centre, a nursery, community centre, retail units, eco-business centre, offices and land for a primary school.

2.2 Description of the Development

The proposals, within a total site area of 154.82 hectares, can be summarised as follows:

- Retention of the existing storage building adjacent to Bucknall Road;
- Provision of up to 2,600 new homes (Use Class C3) across 66.97 hectares of net residential land, to include up to 250 homes to be provided on an 'Extra Care' basis (Use Class C3);
- 1.02 hectares of land to accommodate commercial uses (falling within Use Classes A1-A5, B1 and B2) within a new local centre;
- 0.47 hectares of land to accommodate social and community facilities (Use Class D1) including a community hall;
- 2.22 hectares of land to accommodate a new two form entry primary school and playing fields;
- 0.88 hectares of land to accommodate an extension to the primary school approved as part of the Exemplar (LPA reference 10/01780/HYBRID);
- Provision of 67.26 hectares of green infrastructure (circa 45% of the total site area) excluding school playing fields but including 4 hectares to be offered to the Council as a burial ground, 2 hectares of allotments and 1 hectare of community farm;
- 0.2 hectares of land to accommodate an energy centre where on-site energy will be generated through low carbon technology such as a biomass boiler and/or biomass or gas Combined Heat and Power plant ('CHP');
- Quantum and tenure split of affordable homes to be determined through viability assessment;
- New homes to be constructed to achieve a minimum of Code for Sustainable Homes Level 5;
- All residential units to be designed to Lifetime Homes standards;
- Commercial buildings constructed to achieve BREEAM 'excellent';

- Development as a whole to be 'true' zero carbon (taking in to account regulated and unregulated energy as defined in the PPS1 Supplement) to be achieved through a range of measures including high performance building fabric, reduced energy consumption, renewable and low carbon energy generation;
- Water Treatment Works to be provided on-site subject to technical considerations;
- Retention of the majority of existing trees and hedgerows and provision of strategic landscaping;
- Adoption of a range of measures to encourage a net gain in biodiversity;
- New roads, cycle routes and pedestrian footpaths including the partial realignment of Bucknell Road with routes designed to give priority to buses, cyclists and pedestrians.

The planning application for the Development will be submitted in outline with all matters reserved. All such development shall accord with the Application Plans and Development Parameters Schedule.

3 Approach to ensuring sustainability

3.1 Policy and Guidance

Fundamental to ensuring a sustainable approach is to understand how the development relates to key policy and guidance, and ensure that the appropriate standards and principles are adopted. The key policy and guidance used to frame, understand and support this approach are briefly summarised below.

3.1.1 National Planning Policy Framework (March 2012)

The National Planning Policy Framework (NPPF) was published on 27th March 2012. It replaces a long list of existing guidance including all Planning Policy Statements (PPS) with the exception of PPS1 eco-towns: A supplement to PPS1 and PPS10 Planning for Sustainable Waste Management, all Planning Policy Guidance notes (PPG), all Mineral Planning Statements (MPS), some Mineral Planning Guidance notes (MPG) and some Ministerial Circulars and Letters.

The main change and first policy of the NPPF is a presumption in favour of sustainable development, which it states “should be seen as a golden thread running through both plan-making and decision-taking” (page 4, paragraph 14 NPPF).

The NPPF sets out the government’s planning policies for England and how they are expected to be applied. It provides guidance for local planning authorities and decision-takers, both in drawing up plans and making decisions about planning applications. The core theme of the framework is ‘the presumption in favour of sustainable development’ and is made up of thirteen principles, all with the aim of achieving sustainable development. These are identified below:

- Building a strong, competitive economy;
- Ensuring the vitality of town centres;
- Supporting a prosperous rural economy;
- Promoting sustainable transport;
- Supporting high quality communications infrastructure;
- Delivering a wide choice of quality homes;
- Requiring good design;
- Promoting healthy communities;
- Protecting Green Belt land;
- Meeting the challenge of climate change, flooding and coastal change;
- Conserving and enhancing the natural environment;
- Conserving and enhancing the historic environment; and

- Facilitating the sustainable use of minerals.

The NW Bicester development responds to the principles contained in the National Planning Policy Framework.

3.1.2 Planning Policy Statement: eco-towns, A supplement to Planning Policy Statement 1

The land at NW Bicester is identified in the Supplement to PPS1 entitled 'Eco-towns' (July 2009) as one of four locations for a potential Eco-towns. A2 Dominion Group is promoting the overall site for a mixed use residential led development.

3.1.3 Emerging Cherwell Local Plan

Within the emerging Cherwell Local Plan, Cherwell District Council (CDC) identified land to the NW of Bicester as a strategic allocation to provide for circa 5,000 new homes. The applicant has made a number of comments in respect of the detail of the policy. During the Examination in Public on the emerging Local Plan, the Inspector requested that CDC objectively assesses its housing needs against the Oxfordshire Strategic Housing Market Assessment (2014). Accordingly, the Examination in Public was suspended whilst the Council explores options to increase the housing delivery within the plan period. Moving forward, the Council is reviewing its evidence base. As part of this, CDC consulted on its Strategic Housing Land Availability Assessment (SHLAA) Update in June 2014. A2 Dominion submitted representations as part of this consultation setting out anticipated housing delivery at NW Bicester up to 2031. It is anticipated that the emerging Local Plan (Main Modifications) will be consulted on in August 2014 and submitted in October 2014, with the Examination in Public resuming in Winter 2014. Subject to Examination, we understand the emerging Local Plan is likely to be adopted in 2015.

The emerging Local Plan Policy Bicester 1 – North West Bicester Eco-Town, as set out in the Cherwell Local Plan Submission (January 2014), seeks to:

- Provide a development of 5,000 homes.
- Provide approximately 5,000 jobs (about 1,800 to be delivered by 2031).
- Create a development that will be a zero carbon development as defined in the PPS and the Eco Bicester One Shared Vision (Ref 2-3).
- Deliver a high quality local environment taking into account climate change adaptation.
- Create homes that achieve Level 5 of the Code for Sustainable Homes.
- Provide 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 car.
- Provide 40% of the total gross site area as green space of which half will be public open space. These open spaces would be publicly accessible and

consist of a network of well managed, high quality green/open spaces which are linked to the countryside.

In response to the PPS1 supplement, the Council and A2Dominion have agreed a master plan brief. This seeks to take forward the guidance set out in the PPS1 supplement in the context of the specific example of NW Bicester, as informed by local circumstances and the wider aspirations for Bicester and the District. The Masterplan for NW Bicester was submitted to CDC in March 2014 with additional information provided in May 2014. The Masterplan is intended to set out the framework for the future development of the area and will be used to help guide forthcoming planning applications. CDC has been invited to adopt the NW Bicester Masterplan as non statutory policy.

The District Council has instructed White Young Green (WYG) to prepare a master plan for the wider Bicester area. This will address the policy issues arising from the local plan allocations at Bicester. A draft has been published and a further draft is to be published for consultation over summer 2014. Once finalised, it is anticipated that the Council will adopt the WYG Masterplan as non statutory policy.

Adoption of both master plans as SPD is dependent upon adoption of the local plan. If the adoption of the local plan is delayed, it is open to the Council to adopt both documents as non-statutory interim policy. This is a matter for the Council. However, in the absence of an up to date local plan, the applications, in policy terms, primarily fall to be considered against the terms of the PPS1 supplement and the NPPF. Little weight should be attached to the emerging local plan given the stage that it has reached, whilst the adopted local plan (1996) addressed the period to 2001 and is considered out of date in terms of housing land supply.

3.2 Masterplan Objectives

The Vision for NW Bicester development is “to achieve more sustainable ways of living through low carbon lifestyles” (ref: Cherwell District Council, August 2010. Eco Bicester – One Shared Vision). The proposals will be developed around community hubs to provide facilities to meet the day to day needs of residents and opportunities for employment. The development will promote walking, cycling and use of public transport over the use of the private car. This vision will be underpinned through a number of fundamental principles established through the Masterplan. The principles include:

- Seeing a minimum of 6,000 homes built.
- Ensuring a mix of affordable housing is included in line with CDC’s requirements.
- Ensuring 40% of the overall area comprises open spaces and green landscape infrastructure.
- Creating one job per home within a sustainable travel distance.
- Ensuring homes are built to Code for Sustainable Homes Level 5 and BREEAM excellent standards.
- Delivering zero carbon energy across all buildings.

- Allow for future climate change adaptation by incorporating forward thinking technologies and design within homes.
- Providing real time energy and travel monitoring in every home.
- Ensuring high levels of energy efficiency in the fabric of the buildings and their design.
- Providing primary schools located within 800m of all homes.
- Enabling and encouraging local food production.
- Attaining a net gain in local biodiversity.
- Striving towards water neutrality.
- Creating a management program to ensure zero waste goes into landfill during construction.
- Making a commitment towards a Local Management Organisation.

3.3 PPS1 eco town supplement: Sustainability Standards

Crucial to developing a sustainable vision and strategy for the eco development, is the ability to understand the often complex and varied environmental, economic and social impacts and interactions.

The PPS1 supplement sets 16 standards that when considered holistically represent sustainable development. These standards have been used as the guiding principles for the NW Bicester development; setting the vision and design objectives that have directed the approach of the overarching masterplan and application submission. This generates a robust sustainability strategy driven from specific sustainability objectives.

Utilising these key principles has enabled the alignment of all key design aspects, such as building design, transport, energy, ecology and water etc; set within an overall framework that identifies key objectives and targets to ensure delivery of a sustainable development. Furthermore, this enables the scheme's sustainable credentials to be viewed and measured throughout the planning and development process against the PPS1 supplement.

As the scheme develops, and more certainty around key aspects is revealed, such as the amount of carbon emissions saved, then the detail within the model will be refined. As an initial basis, the model provides the framework within which the scheme can progress by setting the various sustainability targets that can be achieved.



Figure 3-1 PP1 Eco town Sustainability Elements

3.4 Sustainability Design Workstreams

A series of design Workstreams were established jointly with CDC, OCC and other key stakeholders; focused around the major PPS1 supplement sustainability standards. These were designed to explore and test the options to deliver the sustainability standards and to ensure that the design ethos and outputs fully considered the key sustainability principles.

These design Workstreams have been a central mechanism to ensure that key stakeholders have been engaged, through a series of workshop events, and ensure that the sustainability objectives have guided and been incorporated within the overarching Masterplan designs and Application submission.

The design Workstreams have focused on translating the sustainability standards within the PPS1 supplement into key sustainability objectives, targets and measures that ensure the NW Bicester development is able to be delivered as a truly sustainable development.

3.5 Stakeholders involvement

Key stakeholders have been involved in the sustainable design workshops, including CDC, OCC, BioRegional, Environment Agency, Natural England, and the Wildlife Trust. As identified above active engagement through the sustainable design Workstreams has taken place to help gather information, test design principles and gain feed-in to the design process and sustainability objectives.

3.6 Specific Analysis and Reports

In addition, the sustainability strategy both informs and is informed by a series of specific analysis and reports that consider various key themes, such as the site specific Flood Risk Assessment, Site Waste Management Plan and Energy Strategy. These are referenced within the text of the document.

3.7 Developing the Sustainability Strategy

As mentioned above, the Hyder Heartbeat model and design workshops combine together to provide a unique framework that steers the sustainability strategy and enables the process to be continually measured against it.

Firstly, to achieve a robust and comprehensive approach to sustainability it is important to have an overall vision, and a series of clear and defined objectives and targets. The following list outlines the approach taken.

- 1 Developing a **Vision**.
- 2 Identifying key **Objectives**.
- 3 Setting stretching **Standards / Targets**.
- 4 Developing and agreeing **Commitments** to achieve the vision, objectives and standards / targets.

3.7.1 Vision

The PPS1 supplement identifies a vision for eco towns and Cherwell District Council has provided a vision for Bicester as a whole (ref: Cherwell District Council, August 2010. Eco Bicester – One Shared Vision).

In addition to this A2Dominion submitted a vision within the Masterplan for NW Bicester that was submitted to CDC in March 2014 with additional information provided in May 2014. The Masterplan is intended to set out the framework for the future development of the area and will be used to help guide forthcoming planning applications. CDC has been invited to adopt the NW Bicester Masterplan as non statutory policy.

These are presented in Section 4.1 below.

3.7.2 Objectives

The PPS1 supplement identifies key objectives which focus on sustainability standards. These have been adopted as part of the overarching implementation of the PPS1 supplement by the design team

The objectives are presented in Section 4.2 below.

3.7.3 Standards

The PPS1 supplement identifies key sustainable standards that effectively translate into key targets. These were used as the basis for the terms of reference for the sustainable design Workstreams (as referred to above) and have been the guiding principles of the overarching masterplan design and application submission.

The eco town standards are listed in the following Sections 5 to 20.

3.7.4 Commitments

The design team, in conjunction with the Workstream members, have developed, tested and formulated a set of clear measures, initiatives and actions that will deliver the objectives and sustainability standards of the PPS1 supplement – these are the sustainability commitments that will be delivered as part of this Application. This effectively forms the backbone of how the eco town standards will be achieved within the NW Bicester development.

The measures by which the eco town standards will be met are described, in brief, in the following sections.

4 Sustainability Strategy

The sustainability strategy for the Bicester eco development is presented below divided into the PPS1 supplement standards that collectively represent the overarching strategy and seek to meet the vision.

4.1 The Vision

The PPS1 supplement identifies a vision that:

“eco-towns should be exemplar projects that encourage and enable residents to live within managed environmental limits and in communities that are resilient to climate change”

Cherwell District Council (ref: Cherwell District Council, August 2010. Eco Bicester – One Shared Vision) have a vision for Eco Bicester, this being:

“to achieve more sustainable ways of living through low carbon lifestyles”

A2Dominion has set out a vision for the future of the NW Bicester development, this being:

“To make it easy, attractive and affordable for people of all ages to live healthy, sustainable lifestyles without compromising the needs of our future generations”

These complementary visions have clear intent and, in the case of the PPS1 supplement vision, have been translated into a series of sustainability standards that provide a framework that can deliver sustainable development.

Translating the vision and sustainability standards into a series of deliverables measures relative to the loci genus of NW Bicester has been essential. To achieve this, the design team have worked collaboratively with CDC, OCC and key stakeholders to draw out key issues, and propose a series of measures that ensure the sustainability standards are achieved.

Furthermore, to ensure that sustainability has remained the foundation of NW Bicester; regular design Workstream sessions and separate design challenge session have been undertaken during the formation of the overarching masterplan and application to ensure that the objectives are not lost during the design evolution process; but continue to set the standards which all aim to exceed.

Of particular importance has been the early decisions with regard to place shaping and the integration of the urban form with landscape / biodiversity, transport networks and supporting infrastructure. All too often many aspects are considered as constraints only rather than the opportunities that they present; resulting in a “same as always” approach. This has not been the case with NW Bicester, which instead has sought to deliver an exemplar of sustainable living.

4.2 The Objectives

The PPS1 supplement identifies key objectives, as set out below:

“to promote sustainable development by:

- **ensuring that eco-towns achieve sustainability standards significantly above equivalent levels of development in existing towns and cities by setting out a range of challenging and stretching minimum standards for their development, in particular by:**
 - o **providing a good quantity of green space of the highest quality in close**
 - o **proximity to the natural environment**
 - o **offering opportunities for space within and around the dwellings**
 - o **promoting healthy and sustainable environments through ‘Active Design’ principles and healthy living choices**
 - o **enabling opportunities for infrastructure that make best use of technologies in energy generation and conservation in ways that are not always practical or economic in other developments**
 - o **delivering a locally appropriate mix of housing type and tenure to meet the needs of all income groups and household size, and**
 - o **taking advantage of significant economies of scale and increases in land value to deliver new technology and infrastructure such as for transport, energy and community facilities.**

to reduce the carbon footprint of development by:

- **ensuring that households and individuals in eco-towns are able to reduce their carbon footprint to a low level and achieve a more sustainable way of living.”**

4.3 Sustainability Standards and Commitments

The following sections identify the sustainability standards and how the overarching masterplan and application have responded in relation to the development of key commitments to meet these standards.

5 Zero Carbon

5.1 Standard

The PPS1 supplement identifies the following standards:

ET 7 Zero carbon in eco-towns

ET 7.1 The definition of zero carbon in eco-towns is that over a year the net carbon dioxide emissions from all energy use within the buildings on the eco-town development as a whole are zero or below⁶. The initial planning application and all subsequent planning applications for the development of the eco-town should demonstrate how this will be achieved.

ET 7.2 The health and social care needs of residents, and the resulting energy demand, should be taken into account when demonstrating how this standard will be met.

ET 7.3 This standard will take effect in accordance with a phased programme to be submitted with the planning application. It excludes embodied carbon⁷ and emissions from transport but includes all buildings – not just houses but also commercial and public sector buildings which are built as part of the eco-town development. The calculation of net emissions will take account of:

(a) emissions associated with the use of locally produced energy

(b) emissions associated with production of energy imported from centralised energy networks, taking account of the carbon intensity of those imports as set out in the Government's Standard Assessment Procedure, and

(c) emissions displaced by exports of locally produced energy to centralised energy networks where that energy is produced from a plant (1) whose primary purpose is to support the needs of the eco town and (2) has a production capacity reasonably related to the overall energy requirement of the eco town.

ET 7.4 This standard attempts to ensure that energy emissions related to the built environment in eco-towns are zero or below. Standards applicable to individual homes are set out in policy ET 9.

Notes:

6. This definition of zero carbon applies solely in the context of eco-towns, and applies to the whole development rather than to individual buildings.

7. i.e. carbon emissions resulting from the construction process – see ET19.1.

5.2 Commitment

The strategic energy approach, proposed within the Energy Statement for Application 1 to meet the true zero carbon target as defined in ET 7.1 above follows the energy hierarchy principles outlined below:

1. **Be Lean:** Use less energy. Minimise energy demand through efficient design and the incorporation of passive measures;
2. **Be Clean:** Supply energy efficiently. Reduce energy consumption through use of low-carbon technology; and
3. **Be Green:** Use renewable energy systems.

The first principle stresses the primacy of seeking to reduce energy consumption. Within the built environment this comprises adopting energy efficiency measures in both the design and construction of new buildings. The second principle addresses the 'clean' supply of energy issue. This will require 'decarbonising' and improving efficiency in the generation and distribution of energy. The third principle comprises the use of 'green' energy systems. These are renewable sources of energy with low or zero carbon emissions and include, amongst others, solar generated heat and power, wind energy and biomass.

In accordance with the energy hierarchy above the preferred strategic approach identified within the Energy Strategy to achieve the true zero carbon target is to implement:

- Enhanced Fabric Energy Efficiency standards,
- Site wide District Heat Network (DHN) providing all thermal demand across the site; linked to Energy Centres,
- On-site Energy Centres that include low / zero carbon (LZC) technologies that will meet thermal demands and provide sufficient carbon emissions reduction to meet zero carbon target; in combination with,
- Roof mounted solar Photovoltaic (PV) optimised relative to layout and building design.

The approach was selected because:

- Technically it can achieve the true zero carbon target (i.e. delivering carbon emission savings relative to both regulated and unregulated emissions).
- Ability to be delivered entirely on-site and therefore not have any reliance on any third party agreements.
- Experience of delivering a similar solution, utilising DHN and Energy Centre with LZC, on the first phase Exemplar site of NW Bicester.
- Ability to deliver homes that maintain a traditional design approach.
- Inclusion of a DHN within the preferred option enables future proofing relative to new technology (which can be plugged into the energy centres) and/or potential connection to waste heat from the Ardley EfW facility.

In order to establish the approximate baseline energy demand (both thermal and electrical) for the development, from which to establish the energy and carbon reductions required on site, an energy model has been produced. This is based upon the energy consumption of 'notional' domestic and non-domestic buildings which are

compliant with Part L 2013 Building Regulations. The following methods have been used to calculate the site wide baseline figures:

- Residential units: The Government's Standard Assessment Procedure (SAP) for Energy Rating of Dwellings.
- Non-domestic units: Chartered Institute of Building Services Engineers (CIBSE) Energy Benchmark TM 46 - 2008

Table 5.1 below provides a summary of the energy demand and carbon emission relative to the anticipated accommodation schedule of Application 1 of the NW Bicester development and Building Regulations 2013.

Table 5.1 Baseline Energy Demand and Carbon Emissions (Building Regulations 2013)

All Buildings	BR2013 Building Demand	BR2013 Building Emissions
Total Regulated Electricity	1,957,739 kWh	1,016,066 kgCO ₂
Total Regulated Gas	15,796,893 kWh	3,412,129 kgCO ₂
Sub Total Regulated	17,754,632 kWh	4,428,195 kgCO₂
Total Un-regulated Electricity	8,946,005 kWh	4,642,977 kgCO ₂
Total Un-regulated Gas	937,125 kWh	202,419 kgCO ₂
Sub Total Un-regulated	9,883,130 kWh	4,845,396 kgCO₂
TOTAL	27,637,762 kWh	9,273,591 kgCO₂

The FEES of a building is a performance standard to measure the heating and cooling demands of the building and is measured in kWh/m²/year. As mentioned previously the baseline has been considered to demonstrate compliance with current 2013 Building Regulations. However, due to the anticipated build out period for this development, it is reasonable to consider how the development may be future proofed relative to the 2016 Building Regulations and zero carbon building requirements. As such appropriate FEES criteria have been adopted in accordance with the FEES targets identified in Table 4.2.

The heat loss of building elements is dependent upon their U-value. The lower the U-value the better the level of insulation which will improve the thermal performance of the building and help to reduce the CO₂ emissions due to reduced space heating demands. The proposed residential units will incorporate high levels of insulation and high efficiency glazing.

Another cause of heat loss is air infiltration / permeability. In 'leaky' buildings the heat loss can occur through wind, internal / external pressure difference, stack effect etc. However, the careful design of appropriate air tightness can significantly reduce heat loss and save energy. The table below provides the breakdown of proposed U values and air tightness to attain the FEES targets.

Table 5.2 Proposed U Value and Air Tightness

Property Type	Floor (W/m2.K)	Wall (W/m2.K)	Roof (W/m2.K)	Window (W/m2.K)	Door (W/m2.K)	Air perm (m3/h.m2)
1 Bed Apartment	0.15	0.20	-	1.2	1.1	5.0
2 Beds House	0.15	0.20	0.11	1.2	1.1	5.0
3 Beds House	0.15	0.20	0.11	1.2	1.1	5.0
4 Beds House	0.15	0.18	0.10	1.2	1.1	4.5
5 Beds House	0.15	0.18	0.10	1.2	1.1	4.5

Attaining these U Values and air tightness will be a significant improvement upon existing Building Regulations, and will enable the following FEES to be achieved for each dwelling type. This will future proof the build quality of this development and enable true zero carbon targets to be achieved.

Table 7.3 Fabric Energy Efficiency Standard (FEES) results for each building type

Property Type	FEES (kWh/m ² /yr)	ZCH FEES (kWh/m ² /yr)
1 Bed Apartment	38.5	39
2 Beds House	38.6	39
3 Beds House	41.78	46
4 Beds House	40.09	46
5 Beds House	44.6	46

The proposed energy efficiency measures surpass the Fabric Energy Efficiency Standards set by the Zero Carbon Homes Hub and result in reduced energy demand and carbon emissions. The table below gives the breakdown of energy consumption and carbon for domestic buildings and non-domestic units.

Table 5.2 Enhanced FEES Energy Demand and Carbon Emissions

All Buildings	Enhanced FEE Demand	Enhanced FEE Emissions
Total Regulated Electricity	1,960,497 kWh	1,017,498 kgCO ₂
Total Regulated Gas	14,203,671 kWh	3,067,993 kgCO ₂
Sub Total Regulated	16,164,167 kWh	4,085,491 kgCO₂
B'Regs 2013 Baseline	17,754,632 kWh	4,396,947 kgCO₂
Total Un-regulated Electricity	8,946,005 kWh	4,642,977 kgCO ₂
Total Un-regulated Gas	937,125 kWh	202,419 kgCO ₂
Sub Total Un-regulated	9,883,130 kWh	4,845,396 kgCO₂
TOTAL	26,047,297 kWh	8,930,886 kgCO₂
B'Regs 2013 Baseline	27,637,762 kWh	9,273,591 kgCO₂

By adopting enhanced fabric efficiency standards, the total energy demand across the site is reduced by circa **6%**. This reduces the sites carbon emission by 3.7% over Building Regulations (2013). Following the FEES enhancements the remaining carbon reductions required for Application 1 are 8,930,886 kgCO₂.

It is proposed to install a district heat network (DHN) across the site to provide all heating and hot water requirements to buildings, and to utilise Gas Combined Heat and Power (CHP) engines as the lead engine(s) within an on-site Energy Centre. CHP integrates the production of usable heat and power (electricity), in one single, highly efficient process, as the CHP generates electricity and produce usable heat at the same time.

The proposed Gas CHP for Application 1 has been sized to meet 90% of the thermal demand, allowing for maintenance and downtime. The remaining thermal demands (10%) will be met by highly efficient conventional gas boilers. This will reduce the carbon emissions by approximately 6,084,750 KgCO₂.

It is proposed that the remaining carbon reductions required to achieve the true Zero Carbon target will be achieved through the provision of roof mounted Solar PV. Solar PV systems convert energy from the photons within sunlight into electricity through the aid of photocells; made of semi-conductor material, usually Germanium or Silicon. PV systems are suitable for any type of building but they require significant unshaded south facing space as even a small shadow may significantly reduce output. The maximum total annual solar radiation is usually at an orientation due south and at a tilt from the horizontal equal to the latitude of the site minus approximately 20 degrees. The latitude of Bicester is 51.9 degrees. Therefore 32 degrees is the optimal tilt in Bicester, south facing

The provision of solar PV to 35% of the available residential roof space (i.e. circa half of traditional south facing roof) and 40% of the available commercial roof space would achieve an approximate reduction of 2,927,243 KgCO₂.

The strategy outlined above and detailed within the Energy Statement supporting the Application achieves the true Zero Carbon target through on-site technology rather than any significant reliance on off-site/off-set allowable solutions.

6 Climate Change

6.1 Standard

The PPS1 supplement identifies the following standards:

ET 8 Climate change adaptation

ET 8.1 Eco-towns should be sustainable communities that are resilient to and appropriate for the climate change now accepted as inevitable. They should be planned to minimise future vulnerability in a changing climate, and with both mitigation and adaptation in mind.⁸

ET 8.2 Developments should be designed to take account of the climate they are likely to experience, using, for example, the most recent climate change scenarios available from the UK Climate Change Impacts Programme. Eco-towns should deliver a high quality local environment and meet the standards on water, flooding, green infrastructure and biodiversity set out in this PPS, taking into account a changing climate for these, as well incorporating wider best practice on tackling overheating and impacts of a changing climate for the natural and built environment.

Notes:

8. In line with Planning Policy Statement: Planning and Climate Change (supplement to PPS 1) and supporting practice guidance.

6.2 Commitment

There is now widespread scientific consensus that accelerated climate change is happening and that human activities are the principle cause. Adapting to climate change is therefore an essential design component to ensure that infrastructure and buildings remain fit for purpose. Climate projections for the design life of the NW Bicester Development indicate that weather conditions are going to alter significantly, and it is therefore no longer suitable to design to historic trends.

As part of the first phase Exemplar site at NW Bicester Research work undertaken, funded by the Technology Strategy Board (TSB), working alongside Oxford Brookes University and BioRegional, to identify future climate change risks for NW Bicester (utilising climate data from UK Climate Change Impacts Programme 2009). Key future climate risk were identified as:

- a) Higher summer temperatures
- b) Changing rainfall patterns
- c) Higher intensity storm events
- d) Impact on comfort levels and health risks

This work also identified adaption measures that could be implemented to reduce the impact of future climate change. These included measures associated with the spatial layout and design, green infrastructure, water resources, infrastructure design and building materials and building comfort design. Whilst some of these elements are

associated with detailed design, many are influenced by the early spatial design and strategic approach taken in developing the masterplan. As such, the learning from this TSB funded project has been one of the key influencing factors in the design relative to this Application.

As such climate change is considered and discussed across a many of the supporting reports and documents to this Application, including the Energy Strategy, Water Cycle Strategy, Flood Risk Assessment, Landscape and Biodiversity Strategy; and a comprehensive narrative relative to climate change adaptation for the application area is included within the Design and Access Statement.

From a landuse and masterplan design perspective; climate change adaption and resilience has been instrumental in that:

- The development is designed to ensure that all buildings are located outside of the 1:100 year plus climate change and 1:1000 year flood zones.
- Landscape design leads the design form and function of areas, with the retention of hedgerows, riparian corridors, woodland and ponds plus the creation of interconnecting green and blue corridors and places that provide shade and shelter, manage water and help regulate the urban temperature.
- Delivers a development that has reduced its carbon emissions by delivering zero carbon buildings; that will also respond to future climate change issues such as overheating through the provision of appropriate insulation, shading and ventilation.

In order to increase the resilience of biodiversity to climate change and ensure it can adapt in the long term the following elements have been incorporated into the masterplan design, including:

- Maintaining the ecological diversity of habitats already present on site.
- Providing a range of open spaces would allow for the creation of a diversity of habitats (to include ponds, woodlands, species-rich grassland and wetland habitats) that would provide a diversity of ecological niches.
- Ensuring that existing watercourses are given sufficient space to adapt by allowing for natural processes of erosion and deposition.
- Providing ponds and a SuDS treatment system that would ensure water resources within the site are controlled and maintained for the future. It is anticipated that future rainfall events would be more erratic and SuDS features would be designed to cope with such events.
- Ensuring that retained habitats and newly created habitats form linear corridors that would provide for the migration of species across the site and into the wider countryside as they change their range in response to changes in climate.
- Incorporating measures to control the micro-climate within the developed areas include the provision of interconnected green spaces and corridors, which would help to provide evaporative cooling effects.

- Retaining and improving the riparian corridor, the hedgerows, the woodlands, more recent tree planting and the ponds, and the creation of interconnected green corridors, to help to regulate ambient temperatures across the site.
- Increasing in the area of tree and shrub planting across the built area together with SuDS features to provide green networks and regulate water flow within this area.
- Using native species adapted to the current climate which can cope with the stressed environments that may be created by climate change, where appropriate, within the landscaping, providing habitats that are beneficial to biodiversity and resilient to climate change.

The public realm, landscape and water management adaptive measure that will be incorporated within the design include:

- Creating shade to public spaces and transport infrastructure (such as bus stops), and ensuring pedestrian and cycle routes are sheltered from severe weather and intense sun through the integrated use of street trees and soft landscaping
- Selecting materials for use within the public realm that are permeable to reduce surface water flood risk and also reduce heat absorption to negate heat island impacts
- Extensive use of swales, including both urban rills and green swales to manage increased rainfall / storm events and provide urban heat sinks to help regulate summertime overheating
- Creation of integrated and interconnecting green and blue corridors and areas, including strategic attenuation ponds, throughout the site that combine together to manage surface water flood risk and provide areas of cool landscape

7 Homes

7.1 Standard

The PPS1 supplement identifies the following standards:

ET 9 Homes

ET 9.1 As well as being zero carbon as part of the whole built environment, homes in eco-towns should:

(a) achieve Building for Life⁹ Silver Standard and Level 4 of the Code for Sustainable Homes¹⁰ at a minimum (unless higher standards are set elsewhere in this Planning Policy Statement)

(b) meet lifetime homes standards and space standards¹¹

(c) have real time energy monitoring systems; real time public transport information and high speed broadband access, including next generation broadband where possible. Consideration should also be given to the potential use of digital access to support assisted living and smart energy management systems

(d) provide for at least 30 per cent affordable housing (which includes social rented and intermediate housing)¹²

(e) demonstrate high levels of energy efficiency in the fabric of the building, having regard to proposals for standards to be incorporated into changes to the Building Regulations between now and 2016 (including the consultation on planned changes for 2010 issued in June 2009 and future announcements on the definition of zero carbon homes), and

(f) achieve, through a combination of energy efficiency and low and zero carbon energy generation on the site of the housing development and any heat supplied from low and zero carbon heat systems directly connected to the development, carbon reductions (from space heating, ventilation, hot water and fixed lighting) of at least 70 per cent relative to current Building Regulations (Part L 2006).

ET 9.2 The intent of the energy efficiency and on-site carbon reduction standards is to ensure that, without being too prescriptive as to the means employed to achieve the overall zero carbon standard, reasonable opportunities for energy efficiency and on-site carbon mitigation (including directly connected heat systems) are utilised.

Notes:

9. Building for Life – www.buildingforlife.org/ (Note – this is now Building for Life¹² at www.designcouncil.org and is no longer scored but uses a series of ‘traffic light’ indicators).

10. Code Level 4 contains within it standards to be achieved for: household waste recycling, construction waste, composting facilities, water efficiency measures, surface water management, use of materials, energy & CO₂, pollution, health & wellbeing, ecology & ongoing management of the development.

11. *Space standards refer to the Space Standards published by English Partnerships which are now encapsulated in the HCA's Design Quality Standards.*

12. *See PPS 3 for definition and policy approach*

7.2 Commitment

The application Design and Access Statement identifies that a range of differing accommodation types and forms will be developed; including at least 30% affordable homes. All homes will be built to achieve Building for Life Building for Life 12 (80% green lights; zero red lights) and Level 5 of the Code for Sustainable Homes as a minimum (exceed the criteria ET9.1(a) above), as well as meeting lifetime homes standards and space standards.

As mentioned previously, in Section 5, the application has a supporting Energy Strategy that confirms the approach to be taken with regard to energy efficiency and building energy carbon reduction. The proposed building fabric energy efficiency will be equivalent to CSH level 5 and the anticipated future 2016 Building Regulation Target Fabric Energy Efficiency (TFEE); therefore future proofing the development relative to future Building Regulation standards.

The Energy Strategy identifies that all homes will achieve 100% carbon reduction relative to regulated energy (from space heating, ventilation, hot water and fixed lighting) and unregulated energy in accordance with the PPS1 definition of zero carbon, which significantly exceeds the criteria identified within ET9.1(f) above. As mentioned previously, this will be achieved firstly through adoption of enhance fabric energy efficiency standards within buildings, then through connection to a low carbon district heat network providing all the building heating and hot water demands and lastly by the provision of roof mounted solar PV to provide renewable energy.

The Energy Strategy also identifies that to enable residents and occupiers to understand and adapt their energy use; real time energy monitors will be provided to each building. These monitors may be combined with systems that also enable real time passenger information in relation to public transport serving the development.

8 Employment

8.1 Standard

The PPS1 supplement identifies the following standards:

ET 10 Employment

ET 10.1 It is important to ensure that eco-towns are genuine mixed-use communities and that unsustainable commuter trips are kept to a minimum. An economic strategy should be produced to accompany planning applications for eco-towns that demonstrate how access to work will be achieved. The strategy should also set out facilities to support job creation in the town and as a minimum there should be access to one employment opportunity per new dwelling that is easily reached by walking, cycling and/or public transport.

8.2 Commitment

The NW Bicester masterplan Economic Strategy identifies ways to accommodate at least as many jobs as homes, most of them on site but all within Bicester and therefore within easy reach by public transport, walking or cycling. This includes land for employment uses (i.e. B Use Classes), local services which will generate jobs (e.g. shops, schools, extra care homes, primary health care, creches, etc.), and houses which are designed to be easily adapted for home working.

The economic strategy is supported by an action plan setting out various ways to support job creation (e.g. through apprenticeship schemes and other skills training, promotion and marketing of the scheme to firms providing environmental goods and services, etc.) in addition to the provision of employment land. These actions will support employment growth throughout Bicester, not just within the NW Bicester masterplan area.

A supporting Economic Strategy for this Application has been prepared that identifies how it meets the requirement in the context of the overarching masterplan. This economic strategy includes the provision for different types of employment (office, workshop, retail, other local services) within the application area, and how that relates to overall provision for the full masterplan area.

The full economic strategy and action plan, which will accompany and support the Application submission, includes actions which support employment growth throughout Bicester, not just within the Application 1 area.

9 Transport

9.1 Standard

The PPS1 supplement identifies the following standards:

ET 11 Transport

ET 11.1 Travel in eco-towns should support people's desire for mobility whilst achieving the goal of low carbon living. The town should be designed so that access to it and through it gives priority to options such as walking, cycling, public transport and other sustainable options, thereby reducing residents' reliance on private cars, including techniques such as filtered permeability. To achieve this, homes should be within ten minutes' walk of (a) frequent public transport and (b) neighbourhood services¹³. The provision of services within the eco-town may be co-located to reduce the need for individuals to travel by private car and encourage the efficient use of the sustainable transport options available.

ET 11.2 Planning applications should include travel plans which demonstrate:

(a) how the town's design will enable at least 50 per cent of trips originating in eco-towns to be made by non-car means, with the potential for this to increase over time to at least 60 per cent

(b) good design principles, drawing from Manual for Streets¹⁴, Building for Life¹⁵, and community travel planning principles¹⁶

(c) how transport choice messages, infrastructure and services will be provided from 'day one' of residential occupation, and

(d) how the carbon impact of transport in the eco-town will be monitored, as part of embedding a long term low-carbon approach to travel within plans for community governance.

ET 11.3 Where an eco-town is close to an existing higher order settlement, planning applications should also demonstrate:

(a) options for ensuring that key connections around the eco-town do not become congested as a result of the development, for example by extending some aspects of the travel plan beyond the immediate boundaries of the town, and

(b) significantly more ambitious targets for modal share than the 50 per cent (increasing to 60 per cent over time) mentioned above and for the use of sustainable transport.

ET 11.4 Where eco-town plans intend to incorporate ultra low carbon vehicle options, including electric car schemes to help achieve a sustainable transport system, planning applications should demonstrate that:

(a) there will be sufficient energy headroom to meet the higher demand for electricity, and

(b) the scheme will not add so many additional private vehicles to the local road network that these will cause congestion.

ET 11.5 Eco-towns should be designed in a way that supports children walking or cycling to school safely and easily. There should be a maximum walking distance of 800m¹⁷ from homes to the nearest school for children aged under 11, except where this is not a viable option due to natural water features or other physical landscape restrictions.

Notes:

13. Specific proposals for the location of health and social care services should reflect the particular local circumstances and be made following discussions with the Primary Care Trust.

14. Manual for Streets – Department of Transport – <http://www.dft.gov.uk/pgr/sustainable/manforstreets/>

15. Building for Life – <http://www.buildingforlife.org/>

16. See Building Sustainable Transport into New Developments (DfT 2008) and Good Practice Guidelines: Delivering Travel Plans through the Planning Process (DfT/CLG 2009)

17. The distance should be measured by the shortest route along which a child may walk in reasonable safety.

9.2 Commitment

The NW Bicester masterplan Access and Travel Strategy sets out how the development meets the PPS eco town criteria. This is achieved through:

- Limiting the need to travel: A masterplan that incorporates local centre, education and employment strategically located limits the need for vehicular travel and enables greater levels of transport containment.
- Providing high quality walking and cycling: The masterplan has been developed to ensure a high level of accessibility within the site on foot and cycle and strong connections to off-site destinations; providing multiple and direct walking and cycling routes to key destinations, such as local centres and employment areas, within the development area.
- A development that is part of Bicester and, through design of connecting routes, will enable and encourage walking, cycling and public transport to be used to access wider Bicester.
- High quality Public Transport: Through establishing a successful bus service that is accessible, frequent, direct, affordable and connects to key destinations. The masterplan incorporates bus only links to promote greater priority to buses.
- Promoting Sustainable Travel Choices: by providing a travel plan co-ordinator to work with businesses and organisations to develop travel plans, promoting walking and cycling, providing cycle storage at homes and cycle parking facilities at key destinations, school travel plans, real time passenger information for buses, and car club schemes.

The Access and Travel Strategy provided within the Transport Assessment for Application 1 sets out how the development meets the PPS eco town criteria. This is achieved through:

- Creating a highly permeable network of walking and cycling routes across the Development and a bus route on the primary route. The large majority of housing plots are within a 400m, 5 minutes walking distance and there are some plots towards the NW edge of the development and close to the Exemplar phase that are between 600- 800m away. Thus all homes are within a 10 minutes' walk of a bus service. All of the housing plots are with 800m or a ten-minute walk of the Home Farm local centre, the small local shop located in the centre of the development and the facilities co-located with the extra care village;
- A frequent bus service of every 15 minutes is proposed to serve the development rising to every 10 minutes subject to viability;
- A Framework Travel Plan accompanies the application, demonstrating how the design will achieve the 50% mode share by non-car modes, how transport choices and infrastructure will be provided from the outset and how the carbon impact will be monitored;
- A traffic impact assessment and ES chapter on traffic and transport provides an assessment of where there will be congestion impacts and what mitigation is required as a result of the development and measures will be agreed with OCC and the Highways Agency;
- It is acknowledged that the standards seek to achieve a higher target of 60% non-car modes for Eco towns where they are adjacent to a higher order settlement. The targets set for NW Bicester seek to achieve the 50% non-car as a minimum, but it also needs to be recognised that the town of Bicester currently has high car use given its location close to the strategic motorway network and therefore achieving 50% already represents a substantial shift in travel towards non-car modes.
- Measures to support electric/ low carbon vehicles are proposed in the Framework Travel Plan including provision of charging points for any residents who request them, free electricity for charging electric vehicles and special deals to purchase electric cars and scooters.
- The primary school has been located so as to maximise the potential for walking and cycling. All houses are within 800m as the crow flies to either of the primary schools on the eastern side of the masterplan. The small areas that may be outside are likely to be low in density and thus impact on few households.

10 Healthy lifestyles

10.1 Standard

The PPS1 supplement identifies the following standards:

ET 12 Healthy lifestyles

ET 12.1 The built and natural environments are an important component in improving the health and well-being of people. Well designed development and good urban planning can also contribute to promoting and supporting healthier and more active living and reduce health inequalities¹⁸. Eco-towns should be designed and planned to support healthy and sustainable environments and enable residents to make healthy choices easily.

Notes:

18 See also – Promoting and creating built or natural environments that encourage and support physical activity. – National Institute for Health and Clinical Excellence – Nice Public Health Guidance 8

10.2 Commitment

The NW Bicester masterplan has been developed to create an integration of built and natural environment, based on landscape led design concept of “Space to Live” which specifically incorporates health and wellbeing principles contained within the Landscape Strategy submitted as part of Application 1. The Landscape Strategy sets the following principles and identifies how these can be achieved:

- Space to Breathe – through a framework that enables direct access to open space for all people to take a breather, enjoy the fresh air and exercise
- Space to Move - through the creation of direct and leisure routes that promoting walking, cycling (running, hopping and play!)
- Space for Connections – through the creation of meeting places, community area / facilities, socialising, and spending time together
- Space to Grow – by providing allotments, community farm space, and community orchards
- Space to Learn - about nature, food growing, natural processes
- Space to Play – through the provision of both formal and informal play areas and space creating natural playgrounds
- Space to Share – with nature and each other

The design promotes healthy lifestyles with attractive and safe walking and cycling routes, control of traffic speeds, the provision of social and community uses within close walking distance, accessibility of open space, play spaces encouraging interaction with the landscape and allotments.

11 Local Services

11.1 Standard

The PPS1 supplement identifies the following standards:

ET 13 Local services

ET 13.1 Building sustainable communities is about providing facilities which contribute to the well-being, enjoyment and health of people. Planning applications should include a good level of provision of services within the eco-town that is proportionate to the size of the development. This should include leisure, health and social care, education, retail, arts and culture, library services, sport and play facilities and community and voluntary sector facilities.

11.2 Commitment

The NW Bicester masterplan identifies where local services and functions will be located to ensure the development is well served; in combination with existing services and facilities within Bicester.

These have been determined in discussion with the local councils and service providers.

The application is consistent with the masterplan and provides the local facilities and services identified to ensure the overall strategy can be achieved which are relevant or pertains to the application site; including:

12 Green Infrastructure

12.1 Standard

The PPS1 supplement identifies the following standards:

ET 14 Green infrastructure

ET 14.1 Forty per cent of the eco-town's total area should be allocated to green space, of which at least half should be public and consist of a network of well managed, high quality green/open spaces which are linked to the wider countryside. Planning applications should demonstrate a range of types of green space, for example community forests, wetland areas and public parks. The space should be multifunctional, e.g. accessible for play and recreation, walking or cycling safely, and support wildlife, urban cooling and flood management.

ET 14.2 Particular attention should be given to land to allow the local production of food from community, allotment and/or commercial gardens.

12.2 Commitment

The Landscape Strategy of NW Bicester Application 1 exceeds requirements of ET14.1 with provision of 69.41 hectares of green infrastructure (circa 44% of the total site area) with over half of this attributed to public space..

The Landscape Strategy provides details of the high quality, interconnected, green spaces that are linked through a network of ecological corridors and amenity spaces to the wider countryside. This has been established within the green infrastructure strategy by the creation of green loops; structured by the sites existing landscape and ecological features, focused on the need for a cohesive, unifying landscape element and access to green space for all, they provide a unique identity to the development.

Key green spaces and green infrastructure provides a range of provision including a Country Park, Wetland Waste Water Treatment Facility, Village Green, Green Loops Linear Park (including riparian corridor), area for a Burial Ground, Sustainable Drainage features including swales and attenuation ponds, allotments, a community farm, street trees, informal recreational sports fields, play areas and retained woodland and hedgerows. The G.I. is connected via an extensive network of walking and cycling routes.

A range of climate change adaptation measures are supported including the use of SuDS and flood management through measures including the creation of a 60m buffer to the riparian corridor, street trees, shading with vegetation and the provision of space for food production. Wildlife is supported with the protection and enhancement of existing habitat and through the introduction of new semi-natural habitat. Buffer zones are applied to retained features (hedgerows, riparian corridor, woodland & ponds) to protect and enhance habitat and contribute to a net gain in biodiversity. New habitat is created within the GI including within the Burial Ground, Community Farm, Country Park and play areas.

The requirements of ET14.2 are met through the provision of allotments, orchards and a community Farm.

13 Landscape and Historic Environment

13.1 Standard

The PPS1 supplement identifies the following standards:

ET 15 Landscape and historic environment

ET 15.1 Planning applications for eco-towns should demonstrate that they have adequately considered the implications for the local landscape and historic environment. This evidence, in particular that gained from landscape character assessments and historic landscape characterisation should be used to ensure that development complements and enhances the existing landscape character. Furthermore, evidence contained in relevant Historic Environment Records, should be used to assess the extent, significance and condition of known heritage assets (and the potential for the discovery of unknown heritage assets) and the contribution that they may make to the eco-town and surrounding area. Eco-town proposals should set out measures to conserve and, where appropriate, enhance heritage both assets and their settings through the proposed development.

13.2 Commitment

The landscape assessment identifies the key feature in the field system and hedgerows which are used as the inspiration for the site layout and provides definition of the housing neighbourhoods.

The heritage assets adjacent to the site are identified as listed buildings are the Grade II listed Home and Himley Farms and the grade II * listed St Lawrence's church. The approved exemplar layout preserves the setting of Home Farm with open space retained for farming between the farm buildings and the development and is designed not to interrupt the sightlines from St Lawrence's church.

14 Biodiversity

14.1 Standard

The PPS1 supplement identifies the following standards:

ET 16 Biodiversity

ET 16.1 Eco-towns should demonstrate a net gain in local biodiversity and planning permission may not be granted for eco town proposals which have a significant adverse effect on internationally designated nature conservation sites¹⁹ or Sites of Special Scientific Interest.

ET 16.2 If after completing an appropriate assessment of a plan or project local planning authorities are unable to conclude that there will be no adverse effects on the integrity of any European sites, the plan or project will not be approved, irrespective of conformity with other policies. It is unlikely that proposals for ecotowns will meet the requirements of Article 6(4) of the Habitats Directive. In appropriate cases, local planning authorities may consider the scale and mass of the eco-town necessary to avoid adversely affecting the integrity of European sites. In the event that the authority concludes that it cannot allocate an eco-town of the minimum 5,000 dwellings or otherwise avoid or adequately mitigate any adverse effect, it should make provision up to the closest to the minimum size for which it can be concluded that it does not affect the integrity of any European sites.

ET 16.3 A strategy for conserving and enhancing local biodiversity should be produced to accompany planning applications for eco-towns. This should be based on up-to-date information about the biodiversity of the area including proposals for the management of local ecosystems and where appropriate, the restoration of degraded habitats or the creation of replacement habitats. It should set out priority actions in line with the England Biodiversity Strategy and Local Biodiversity Action Plans, including appropriate mitigation and/or compensation measures, required to minimise adverse effects on individual species and habitats of principal importance and to enhance local biodiversity overall. Developers should seek the advice of Natural England and other relevant statutory advisers when developing their strategies and decision making authorities should also consult those bodies as to the adequacy of such strategies. Delivery bodies should be identified in the strategy and its implementation should proceed in parallel with the development.

Notes:

19 These sites, which in Great Britain, are also referred to as European sites consist of Special Areas of Conservation (SACs) and European Offshore Marine Sites (EOMS) designated under the EC Habitats Directive and Special Protection Areas (SPAs) classified under the Birds Directive. The Government expects public authorities to treat all Ramsar sites as if they are fully designated European Sites, for the purpose of considering development proposals that may affect them.

14.2 Commitment

Biodiversity is considered across the whole NW Bicester Masterplan area; with this Application providing those elements identified within its red line boundary. The masterplan has sought to retain the most valuable habitats and features with

appropriate buffer zones, and create ecologically valuable areas of green space. The green spaces across the site will be linked to create a network of green infrastructure across the site. The habitats of value to nature conservation that would be retained with a buffer zone of semi-natural habitat comprise:

- Hedgerows.
- The watercourses (River Bure and its tributaries).
- Semi-natural broad-leaved woodland (also known as lowland mixed deciduous woodland).
- Ponds.

In addition, the plantation woodlands and the majority of the shelter belts will also be retained across the site within areas of green space. The bat commuting route will be retained as a dark corridor, i.e. a corridor that would not be illuminated by artificial light. In this Application the route follows the stream corridors, and continues to follow the stream corridor and retained hedgerows close to the western boundary to the south of the railway. The watercourses will be retained within a 60 metre wide corridor, the hedgerows within a minimum of a 20 metre wide corridor, the woodlands with 10 metre buffers, the ponds within a 10 metre wide buffer and the ponds that support great crested newts with a 50 metre wide buffer. The buffers and corridors will be planted, as appropriate, to support habitats that will be complementary to the retained habitats and enhance the value of these habitats for nature conservation.

It is proposed to create significant areas of habitat of value to biodiversity across the masterplan site, in particular:

- A Nature Reserve.
- A Country Park.
- Sustainable drainage features.
- A wetland waste water treatment facility (subject to technical considerations).

Other large areas of green space that would provide habitats for biodiversity on the masterplan site include:

- Parkland for green burial.
- Green (Sedum) roofs for water treatment.
- A woodland fitness trail.

Habitats of Principal Importance under the Natural Environment and Rural Communities Act (2006) that will be created in these areas include: mixed broadleaved woodland, lowland meadows, ponds, reed beds and wet woodland. Other habitats that would be created include species-rich scrub, wildflower-rich grassland, short grassland, damp/marshy grassland and ditches.

It is anticipated that habitats and features of value to biodiversity would also be created within other areas of open space. This would include the allotments, play areas,

community farm, the school grounds, the school playing fields and the green space associated with the Business Park.

Although the outline application does not provide the detailed design for the areas of development, it is anticipated that green areas of value to biodiversity would also be created within these areas. These would include:

- the use of artificial nest and roost boxes, and/or the incorporation of suitable equivalent features into the fabric of the buildings;
- the use of brown/blue roofs;
- street trees;
- fruit trees within gardens;
- green walls;
- planting that has a structure that provides shelter for fauna (comprising a mixture of native and ornamental species);
- linked gardens which would provide significant areas of green space; and
- the incorporation of native planting within areas of open space.

The development would lead to the loss of land of value to farmland birds; monies would be provided to a conservation grant giving organisation (such as the Trust for Oxfordshire's Environment) to provide grants to enhance the value of farmland off site for farmland birds to mitigate for this impact. There are tried and tested techniques, such as those provided for by the Government's Stewardship schemes, which would enhance the value of existing intensively managed farmland for birds. A Section 106 agreement or similar legal agreement would be provided to ensure that the monies are provided. The grant giving body would ensure that the enhancement works are carried out. This off site enhancement would ensure that the proposal has no residual impact on farmland birds.

The Defra metric developed for measuring Biodiversity Offsetting has been used to demonstrate that the Green Infrastructure provided in the Masterplan would deliver a net gain in biodiversity. The retained and newly created habitats would be managed by a funded Land Management Organisation in accordance with a Landscape and Habitats Management Plan.

15 Water

15.1 Standard

The PPS1 supplement identifies the following standards:

ET 17 Water

ET 17.1 Eco-towns should be ambitious in terms of water efficiency across the whole development, particularly in areas of serious water stress²⁰, and should contribute, where existing water quality leaves scope for further improvement, towards improving water quality in their localities.

ET 17.2 Planning applications for all eco-towns should be accompanied by a water cycle strategy that provides a plan for the necessary water services infrastructure improvements. The water cycle strategy should have been developed in partnership with interested parties, including the local planning authority, the Environment Agency²¹, and the relevant water and sewerage companies through a water cycle study. The strategy should:

(a) assess the impact that the proposed development will have on water demand within the framework of the water companies' water resource management plans and set out the proposed measures which will limit additional water demand from both new housing and new non-domestic buildings

(b) demonstrate that the development will not result in a deterioration in the status²² of any surface waters or ground-waters affected by the eco-town; and

(c) set out proposed measures for improving water quality and avoiding surface water flooding from surface water, groundwater and local watercourses.

ET 17.3 Eco-towns should:

(a) incorporate measures in the water cycle strategy for improving water quality and managing surface water, groundwater and local watercourses to prevent surface water flooding from those sources; and

(b) incorporate sustainable drainage systems (SUDS) and, except where this is not feasible, as identified within a relevant Surface Water Management Plan²³, avoid connection of surface water run-off into sewers.

ET 17.4 Planning applications for all eco-towns should include a strategy for the long term maintenance, management and adoption of the SUDS.

ET 17.5 Eco-towns in areas of serious water stress should aspire to water neutrality, ie achieving development without increasing overall water use across a wider area²⁴ and this is further explained in Annex B of this PPS. In particular, the water cycle strategy should set out how:

(a) the development would be designed and delivered to limit the impact of the new development on water use, and any plans for additional measures, e.g. within the existing building stock of the wider designated area, that would contribute towards water neutrality

(b) new homes will be equipped to meet the water consumption requirement of Level 5 of the Code for Sustainable Homes; and

(c) new non-domestic buildings will be equipped to meet similar high standards of water efficiency with respect to their domestic water use.

Notes:

20 As designated by the Water Industry (Prescribed Conditions) Amendment Regulations 2007 (S.I. 2007/2457) – map to illustrate extent of water stress can be obtained from the Environment Agency.

21 See also Environment Agency guidance (January 09) on water cycle studies <http://publications.environment-agency.gov.uk/pdf/GEHO0109BPFF-e-e.pdf>

22 Information on status can be obtained from the Environment Agency – in the case of water bodies, this information will be reported in the River Basin Management Plan.

23 All eco-towns must be covered by a Strategic Flood Risk Assessment (SFRA), as defined in PPS25, Development and Flood Risk, and the PPS25 Practice Guide. A Surface Water Management Plan for the eco-town should form part of the SFRA.

24 Wider area to be determined by water cycle study normally by reference to the water company water resource zone in which the development is to be located

15.2 Commitment

The Water Cycle Study (WCS) submitted as part of the master plan was formulated following a series of workstream meeting with the EA, Thames Water, CDC and OCC. The WCS confirms that non-residential buildings shall be designed with water efficient fixtures and fittings (and where appropriate reclamation of water) so as to reduce whole building potable water use by at least 55% from the baseline demand – in accordance with Excellent rating of BREEAM.

Additionally, the WCS confirms that the design standard for all new dwellings will be that water efficient fixtures and fittings are specified to reduce average per capita consumption to 105 litres/person/day (l/p/d). Furthermore, the WCS confirms that additional design standards will specify that on site water recycling technologies are used locally to supplement domestic supplies, and hence reduce demand of potable water further to less than 80 l/p/d to meet Level 5 of the CSH water standards.

The WCS estimates that the minimum design standards described above will reduce the potable water demand of the site from a baseline of 2.13 MI/d, to 1.3 MI/d - a move towards the aspiration of water neutrality of nearly 40%. This level of potable demand is well within the growth levels assumed by Thames Water in their water resource management plan.

The WCS highlights a number of possible strategies for further enhancing the water neutrality of the development, including water efficiency retrofit of the wider area, reclamation of wastewater effluent and utilisation of local groundwater supplies (potentially with infiltration drainage ensuring that the aquifer water balance is not depleted). However, the strategic approach has not yet been established and further work is ongoing, including discussion with possible inset suppliers to ascertain technical feasibility, detailed design and phasing considerations.

Two separate strategies are currently being considered for wastewater treatment from the development; either on-site treatment, or conveyance to Bicester wastewater treatment works. The latter is currently being explored with Thames Water. Effluent discharges from both strategies have been considered by the Environment Agency, and a range of consent standards calculated to ensure no deterioration, or even improvement of, receiving waterbodies. These indicative standards are being considered by inset suppliers.

With regards to the management of surface water to reduce flood risk and improve water quality, the Flood Risk Assessment and Surface Water Drainage Strategy submitted as part of the master plan submission include a drainage concept plan; which includes a network of above ground attenuation SuDS incorporated within the green infrastructure across the development. This SuDS network has been conservatively sized to ensure the proposed development is flood free during the 1% AEP plus climate change event, and limited to less than the equivalent greenfield run-off rates to ensure no increase in offsite flood risk.

A site specific covering report has been prepared for this application consistent with the overarching FRA and SW Drainage Strategy. This shows that there is space to incorporate the above ground attenuation features to ensure that run-off rates are less than the equivalent greenfield run-off rate for up to the 1% AEP (plus climate change) event.

The above ground features identified will be easily accessible for maintenance in accordance with CIRIA SUDS Manual, and form a series of source, site and regional control measures with more than the recommended two treatment stages – protecting and enhancing the water quality and ecology of the waterbodies.

The detailed design of residential and non-residential properties within this application shall conform to the design standards discussed in the WCS relative to water efficiency.

A preliminary qualitative assessment of WFD compliance to identify potential mitigation measures has been undertaken, as is reported within the Environmental Statement submitted in support of the Application. This concludes the Development is unlikely to inhibit the achievement of the objectives of the WFD water bodies within the immediate vicinity of the Development and within the wider catchment.

16 Flood Risk Management

16.1 Standard

The PPS1 supplement identifies the following standards:

ET 18 Flood risk management

ET 18.1 The location, layout and construction of eco-towns should reduce and avoid flood risk wherever practicable. Eco-towns should not increase the risk of flooding elsewhere and should use opportunities to address and reduce existing flooding problems.

ET 18.2 There is a strong expectation that all of the built-up areas of an eco-town (including housing, other public buildings and infrastructure) will be fully within Flood Zone 1 – the lowest risk²⁵. Flood Zone 2 (medium risk) should, as far as possible, be used for open spaces and informal recreational areas that can serve as multi-functional spaces, for example, those used for flood storage. There should be no built-up development in Flood Zone 3, with the exception of water-compatible development and, where absolutely necessary, essential infrastructure as defined in Table D.2 of PPS25: Development and Flood Risk.

Notes:

25 Flood Zones as described in PPS25, Development and Flood Risk

16.2 Commitment

The majority of the NW Bicester site is within Flood Zone 1: Low Probability. Areas of Flood Zone 2 and 3 are located adjacent to watercourses where no development is proposed other than green buffers and blue corridors. The main watercourses on the site drain into the River Bure which leaves the site via a culvert under the A4095, flowing towards Bicester town centre.

The Application 1 Site contains a number of drainage features; the River Bure and its tributaries, the Langford Brook, Hawkswell Farm and unnamed tributary, field drains, ponds and springs. The River Bure flows in a southerly direction from Caversfield House to a culvert beneath the A4095. Downstream of this culvert and outside the development site, the river flows in an open channel between Lucerine Avenue and Purslane Drive before flowing beneath the railway line and through Bicester town centre. The River Bure is classed as 'Main River' from Graham Road in the centre of Bicester, upstream of this point, the river is classed as 'Ordinary Watercourse'.

The Langford Brook, an ordinary watercourse, flows in an easterly direction from Crowmarsh Farm and converges with the River Bure at the A4095 culvert. A small unnamed tributary starts downstream of Hawkswell Farm and joins with Langford Brook. This tributary is referred to as the Hawkswell Tributary. One other unnamed tributary flows in an easterly direction from Bucknell to converge with the Bure downstream of Home Farm.

Ground conditions across the entire development site comprise:

- The majority of the existing fields are surrounded by drainage ditches 0.5m to 0.75m deep; all were dry during the July 2010 site visit
- There is a thin cover of Superficial Deposits across the site
- Some alluvium is present along stream corridors; this comprises sandy, calcareous clay overlying gravelly clay with limestone clasts and may locally include highly compressible, organic-rich (peaty) layers
- The Solid Geology is dominated by limestones with subordinate mudstone beds

A site specific Flood Risk Assessment and Surface Water Drainage Strategy has been undertaken to accompany the proposed Application 1 Site (North of the Railway), located on the northern edge of Bicester.

The site is almost entirely within Flood Zone 1; areas of Flood Zone 2 and 3 are constrained to the watercourse corridor. All development is to be located within Flood Zone 1 other than proposed green and blue corridors.

A detailed ISIS hydraulic model has been used as a baseline to define fluvial flood plains for a 1% AEP, 1% AEP plus climate change and 0.1% AEP events at Application 1 Site. Examination of the modelling results using the LiDAR and modelled cross sections clearly shows that most of flood extents are much less than 30m in width and fully within the 30m wide green corridor buffer zone already incorporated in the masterplan design.

The proposed surface water drainage strategy incorporates SuDS features including attenuation storage and conveyance swales; as well as giving due consideration to the fluvial flood plain and main existing surface water flow routes. Sustainable Drainage Systems (SuDS) are based on drainage techniques which mimic runoff from the site in its natural state. The aim of a SuDS based system is to manage rainwater on the surface, close to its source with the consequence that water is stored and released slowly thus reducing flood risk and improving water quality.

The proposed strategic SuDS system will provide significantly more than the required volumes to fully attenuate the runoff for a 1% Annual Exceedance Event plus climate change allowance. A further 20% of the required attenuation storage will be provided within the development parcels using source and site control measures at the individual development plots.

17 Waste

17.1 Standard

The PPS1 supplement identifies the following standards:

ET 19 Waste

ET 19.1 Eco-town planning applications should include a sustainable waste and resources plan, covering both domestic and non-domestic waste²⁶, which:

(a) sets targets for residual waste levels, recycling levels and landfill diversion, all of which should be substantially more ambitious than the 2007 national Waste Strategy targets for 2020²⁷; it should be demonstrated how these targets will be achieved, monitored and maintained

(b) establishes how all development will be designed so as to facilitate the achievement of these targets, including the provision of waste storage arrangements which allow for the separate collection of each of the seven priority waste materials as identified in the Waste Strategy for England 2007

(c) provides evidence that consideration has been given to the use of locally generated waste as a fuel source for combined heat and power (CHP) generation for the eco-town, and

(d) sets out how developers will ensure that no construction, demolition and excavation waste is sent to landfill, except for those types of waste where landfill is the least environmentally damaging option.

Notes:

26 This standard does not apply to health and social care services' medium and high risk waste, such as clinical and hazardous waste; these are covered by national regulations.

27 The Waste strategy 2007 proposes national targets for waste for 2020 as follows:

- Residual waste reduction per person (amount left after reuse, recycling and composting) – from 370 kg in 2005 to 225 kg in 2020*
- Household re-use, recycling and composting – from 27% in 2005 to 50% in 2020*
- Residual waste recovery (recycling, composting and energy recovery) from 38% in 2005 to 75% in 2020.*

17.2 Commitment

A Sustainable Waste and Resources Plan (SWRP) has been completed for the Application, which responds to the overarching NW Bicester Masterplan SWRP and covers domestic and non-domestic waste and set targets for residual waste levels, recycling levels and landfill diversion, all of which are more ambitious than the 2007 national Waste Strategy targets:

- for the percentage recycled / composted / reused: 70% from initial occupation and 80% by 2025
- for residual waste levels: 300 kg per household per year from initial occupation and 200kg per household per year by 2025

The SWRP also sets out how achievement of the targets will be facilitated through the design of the proposed development, including the provision of waste storage arrangements which allow for the separate collection of each of the seven priority waste materials, and in accordance with the standards for waste in the Code for Sustainable Homes.

A Site Waste Management Plan (SWMP) has been prepared for the Application which will facilitate the identification and implementation of waste minimisation at the design stage and forecasts the type and quantities of waste that will be produced and sets out how construction, demolition and excavation waste will be managed so that it is re-used, recycled, and diverted away from landfill (except for those types of waste where landfill is the least environmentally damaging option) and establishing monitoring targets. The SWMP also sets actions for monitoring of waste.

The detailed design of residential and non-residential properties within this application shall conform to the design standards discussed in the Masterplan SWRP. The Application SWRP Covering Report and specific SWMP provide the information to ensure that the development is well placed to integrate with the wider development's waste strategy.

The Application documentation includes a preliminary quantitative assessment of the domestic and non-domestic wastes (including construction) that will arise from the proposed development. This will demonstrate that the targets are realistic and achievable.

Waste to energy is considered within the Strategic Energy Options report; which considers the potential for waste heat from the Ardley EfW plant to be piped to the site. Research work, funded by DECC, and managed by CDC, is currently progressing to determine whether this feasible. The strategic energy option approach would enable connect to the on-site DHN possible should this waste heat become available at the site.

18 Master planning

18.1 Standard

The PPS1 supplement identifies the following standards:

ET 20 Master planning

ET 20.1 All eco-town planning applications should include an overall master plan and supporting documentation to demonstrate how the eco-town standards set out above will be achieved and it is vital to the long-term success of eco-towns that the standards are sustained. Local Authorities should consider the use of design codes²⁸ to facilitate efficient delivery of high quality development. In developing the master plan, there should be a high level of engagement and consultation with prospective and neighbouring communities.

ET 20.2 There should be a presumption in favour of the original; that is the first permitted master-plan. Any subsequent planning applications that would materially alter and negatively impact on the integrity of the original master-plan should be refused consent.

Notes:

28 Preparing Design Codes: A Practice Manual; DCLG/CABE (2006).

18.2 Commitment

The NW Bicester masterplan, and supporting documentation, sets out how the development will achieve the eco town sustainability standards and provides the framework for future planning applications to enable the long term success of the development.

The NW Bicester masterplan was developed over several years, involving significant engagement with the local community of Bicester, key stakeholders and the County Council and Local Authority. It was submitted to the Council in March 2014 with additional / amended information provided in May 2014. The Council has consulted on the Masterplan and has been invited to adopt it as non-statutory planning guidance.

Application 1 has been developed to accord with the submitted Masterplan.

19 Transition

19.1 Standard

The PPS1 supplement identifies the following standards:

ET 21 Transition

ET 21.1 To support the transition process, planning applications should set out:

(a) the detailed timetable of delivery of neighbourhoods, employment and community facilities and services – such as public transport, schools, health and social care services, community centres, public spaces, parks and green spaces including biodiversity etc

(b) plans for operational delivery of priority core services to underpin the low level of carbon emissions, such as public transport infrastructure and services, for when the first residents move in

(c) progress in and plans for working with Primary Care Trusts and Local Authorities to address the provision of health and social care

(d) how developers will support the initial formation and growth of communities, through investment in community development and third-sector support, which enhance well-being and provide social structures through which issues can be addressed

(e) how developers will provide information and resources to encourage environmentally responsible behaviour, especially as new residents move in

(f) the specific metrics which will be collected and summarised annually to monitor, support and evaluate progress in low carbon living, including those on zero carbon, transport and waste

(g) a governance transition plan from developer to community, and

(h) how carbon emissions resulting from the construction of the development will be limited, managed and monitored.

19.2 Commitment

The NW Bicester master plan is supported by population modelling undertaken in conjunction with CDC and OCC. This modelling exercise, which tested the likely population yield based upon two trajectories, using both a Chelmer based model and OCC's own Poplcal model, has informed the Council's requirements for social and community facilities.

The master plan demonstrates how the master plan can accommodate the requirements of the Councils. In formulating its requirements, CDC has liaised with key stakeholders including the town council and NHS.

A number of elements will be provided on a phased basis, whilst others are subject to spatial and quantitative triggers.

The local centres will act as the focal point for the provision of local services and facilities.

The master plan proposes to continue the governance arrangements established through the exemplar development, with the initial establishment of the Interim Management Body (IMB) leading through to the Local Management Organisation (LMO).

This Application is consistent with the master plan and will provide for a new local centre, primary school, community hall and the extension of the primary school and local centre established through the exemplar.

Various development triggers have been proposed to ensure timely delivery whilst other elements will be provided through pro-rata financial contributions.

The application is supported by information as to phasing and it is anticipated that phasing will be controlled by condition. It is anticipated that the s106/conditions will set out phasing requirements.

20 Community and Governance

20.1 Standard

The PPS1 supplement identifies the following standards:

ET 22 Community and governance

ET 22.1 A long term approach is necessary to ensure a new town retains its integrity as an eco-town, and is able to manage change in a planned way. Planning applications should be accompanied by long term governance structures for the development to ensure that:

(a) appropriate governance structures are in place to ensure that standards are met, maintained and evolved to meet future needs

(b) there is continued community involvement and engagement, to develop social capital

(c) sustainability metrics, including those on zero carbon, transport, water and waste are agreed and monitored

(d) future development continues to meet the eco-town standards, and

(e) community assets are maintained.

ET 22.2 The governance proposals should be appropriate to the scale and complexity of the development, and should complement existing democratic arrangements for parish and local governance. They should set out the proposed financial, management and legal structures (including arrangements for the transfer of land, buildings or endowment funds to resident-led community organisations for community use and development, including cultural, worship and income generating purposes). Where appropriate, proposals for establishing new parish arrangements should be considered as part of the longer term governance arrangements for the eco-town. Governance structures will need to be designed so that they can reflect the composition and unique needs of the local community, so that they have potential to bring different groups together to resolve any differences and avoid tensions, and to create a sense of belonging for residents.

20.2 Commitment

The exemplar phase provides for the creation of local management and governance structures, through a phased process leading to greater community engagement. The exemplar phase includes a three stage structure whereby the community's involvement and responsibilities increase. The first stage, the Interim Management Board (IMB) has been established. Progression through to the next stages and the roles and responsibilities that the community wish to adopt will be a function of the aspirations of the community.

The intention is for the governance structures established through the Exemplar proposals to be extended to encompass the wider master plan area; which include this Application. The roles and duties that the community wish to adopt will need to be determined through consultation with the new community

