Plot SGR1, Bicester

Sustainability Statement

On behalf of **SGR (Bicester 1) Limited**

Project Ref: 41436/3002 | Rev: 1 | Date: March 2018

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1 Introduction

1.1 Overview

1.1.1 Peter Brett Associates LLP (PBA) has been appointed by SGR (Bicester 1) Limited (the Applicant) to prepare a Sustainability Statemen in support of an outline planning application for a proposed residential development for up to 75 units (the Proposed Development). The application site, known as 'Plot SGR1, Bicester' (hereafter the Site), is adjacent to the Elmsbrook site on the North West Bicester Eco Town development.

1.1.2 The Site is within the administrative boundary of Cherwell District Council (CDC), and falls within the Eco Town boundary.

1.2 Site Location

1.2.1 The Site is located to the north of Bicester, Oxfordshire on land to the west of Home Farm. It is approximately 5.03 hectares in area and is bound by the B4100 Banbury Road to the north-east and by the Elmsbrook development site (ref: 10/01780/hybrid) to the west, which forms part of the wider North West Bicester Eco Town development.

1.2.2 There are two local watercourses located to the southeast (The Bure) and southwest (an unnamed tributary of The Bure) of the site.

1.2.3 The extent of the red line application boundary is shown on the plan included in **Appendix A**.

1.3 Proposed Development

1.3.1 The development proposals for the Site are for up to 75 residential units (the exact number and type of units is not yet known, but a range of mixes is sought as set out within Table 1.1[1]) with a single point of vehicular access provided along Charlotte Avenue. New pedestrian and cycle routes will also be provided across the site as part of the development, which will enable sustainable access to the adjacent Elmsbrook development site. A community orchard and allotment are also to be created in north/north-east of the Site with a further area of the Site to comprise open space and play-space.

Table 1.1: Proposed Residential Mix

No. Bedrooms	Mix Ranges
1	0-5%
2	15-25%
3	40-50%
4	23-30%
Total	**Up to 75**

1.3.2 The development proposals for the Site are shown on the indicative masterplan included in **Appendix B**.

[1] Design and Access Statement, dated March 2018

1.4 Method and Report Structure

1.4.1 The method adopted in this Sustainability Statement is to review national and local policies that relate to defining a 'sustainable development' in this location (undertaken in **Section 2**), and to use this to establish a Sustainability Framework for the Proposed Development that seeks to achieve both over-arching national sustainability aims and site-specific objectives.

1.4.2 The relevant planning documents are the Cherwell Local Plan (adopted July 2015) and the North West Bicester Supplementary Planning Document (adopted in February 2016).

1.4.3 The main policies of note are Policy ESD1 – 'Mitigating and Adapting to Climate Change' and Policy ESD 3 – 'Sustainable Construction' and these have been used as the framework for this Sustainability Statement. Further detail of which is provided within **Section 2.4**.

2 Policy and Regulation Context

2.1 Overview

2.1.1 This section summarises the relevant national and local policy which places context to the proposed development.

2.2 National Policy

National Planning Policy Framework 2012

2.2.1 The National Planning Policy Framework (NPPF) 2012 supports the role of the local plan process and introduces the 'presumption in favour of sustainable development'. It sets out the three mutually dependent roles that the planning system needs to consider to deliver sustainable development. These are:

- An economic role – Contributing to building a strong, responsive and competitive economy, by ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation; and by identifying and coordinating development requirements;

- A social role – Supporting strong, vibrant and healthy communities, by providing the supply of housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that reflect the community's needs and supports its health, social and cultural well-being; and

- An environmental role – Contributing to protecting and enhancing our natural, built and historic environment; and, as part of this, helping to improve biodiversity, use natural resources prudently, minimise waste and pollution, and mitigate and adapt to climate change including moving towards a low carbon economy. It encourages development and states that, in particular, development which will provide economic, social and environmental benefits should proceed without delay.

2.2.2 It is important that local planning policies are aligned to the sustainable development principles set out in the NPPF.

2.3 Housing Standards Review

Written Statement to Parliament – Planning Update (March 2015)

2.3.1 In March 2015, the Government released a written statement providing a Planning Update outlining their position on housing standards and confirming the adoption of optional new technical standards.

2.3.2 The Statement explains that from the 26th March 2015, the Code for Sustainable Homes (CfSH) has been withdrawn, aside from the management of legacy cases. New local plans and neighbourhood plans therefore may not refer to the Code.

2.3.3 In addition, this statement included the following updates regarding energy performance:

"Local planning authorities will continue to be able to set and apply policies in their Local Plans which require compliance with energy performance standards that exceed the energy requirements of Building Regulations until commencement of amendments to the Planning and Energy Act in the Deregulation Bill 2015. This is expected to happen alongside the introduction of zero carbon homes policy in late 2016. The government has stated that, from

then, the energy performance requirements in Building Regulations will be set at a level equivalent to the (outgoing) Code for Sustainable Homes Level 4."

The Deregulation Act

2.3.4 Section 43 The Deregulation Act (March 2015) makes the necessary amendment to the Planning and Energy Act 2008 inserting section 1A[2] in order to make it consistent with the consolidation of technical requirements into the building regulations as set out below.

Energy policies

A local planning authority in England may in their development plan documents, and a local planning authority in Wales may in their local development plan, include policies imposing reasonable requirements for—

(a) a proportion of energy used in development in their area to be energy from renewable sources in the locality of the development;

(c) development in their area to comply with energy efficiency standards that exceed the energy requirements of building regulations.

(1A) Subsection (1)(c) does not apply to development in England that consists of the construction or adaptation of buildings to provide dwellings or the carrying out of any work on dwellings."

2.4 Local Planning Policy – Cherwell District Council

Cherwell District Council (CDC) Local Plan Part 1

2.4.1 The CDC Local Plan Part 1 was adopted by the council in July 2015, and sets out how the district will grow and change in the period up to 2031. The relevant sustainability policies are noted below.

Policy Bicester 1 – North West Bicester Eco-Town

2.4.2 Policy Bicester 1 states that development within the Eco Town boundary should achieve a 'zero carbon' standard. This is defined in the CDC Local Plan as follows:

"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 below."

2.4.3 Consultation with CDC[3] has confirmed that this target is applicable to the Site, and relates to both regulated and unregulated energy use.

2.4.4 Policy Bicester 1 also requires "Code [for Sustainable Homes] Level 5 for dwellings at a minimum". However, following the technical housing standards review, the Government has withdrawn the Code for Sustainable Homes, aside from the management of legacy cases[4]. Therefore, this target can no longer be applied. CDC[5] has confirmed that, whilst the Code

[2] http://www.legislation.gov.uk/ukpga/2015/20/section/43/enacted

[3] Email from Caroline Ford (Principal Planning Officer – Major Projects Planning Team, CDC) to Michael Dray (PBA) on 09/02/2018.

[4] Planning update March 2015. Available online: https://www.gov.uk/government/speeches/planning-update-march-2015 (accessed 05/02/2018).

[5] Email from Caroline Ford (Principal Planning Officer – Major Projects Planning Team, CDC) to Michael Dray (PBA) on 09/02/2018.

would no longer be applied, targets around reducing water use with the aspiration towards water neutrality should be used.

2.4.5 Other applicable provisions in Policy Bicester 1 include the following:

- Housing to include "real time energy monitoring systems", with consideration given to digital access to support "smart energy management systems";
- All new buildings should be designed to incorporate "best practice on tackling overheating, taking account of the latest UKCIP [UK Climate Impacts Programme] climate predictions"; and

2.4.6 Policy Bicester 1 also states that development should demonstrate "climate change mitigation and adaption measures" in alignment with policies ESD 1 to 5.

ESD1 – Mitigating and Adapting to Climate Change

2.4.7 ***ESD1*** says that the following measures will be taken to mitigate the impact of development on climate change. At a strategic level this includes:

- *"Delivering development that seeks to reduce the need to travel and which encourages sustainable travel options including walking, cycling and public transport to reduce dependence on private cars;*
- *Designing developments to reduce carbon emissions and use resources more efficiently, including water (see Policy ESD 3 Sustainable Construction); and*
- *Promoting the use of decentralised and renewable or low carbon energy where appropriate (see Policies ESD 4 Decentralised Energy Systems and ESD 5 Renewable Energy)."*

2.4.8 Policy ESD 1 also requires new development to incorporate suitable adaption measures to increase resilience to climate change impacts, including:

- *"Taking into account the known physical and environmental constraints when identifying locations for development;*
- *Demonstration of design approaches that are resilient to climate change impacts including the use of passive solar design for heating and cooling;*
- *Minimising the risk of flooding and making use of sustainable drainage methods, and*
- *Reducing the effects of development on the microclimate (through the provision of green infrastructure including open space and water, planting, and green roofs).*

2.4.9 In addition to the above list, ESD 1 also states that "adaptation through design approaches will be considered in more locally specific detail in the Sustainable Buildings in Cherwell Supplementary Planning Document (SPD)."

ESD3 – Sustainable Construction

2.4.10 ***ESD3*** states that *"all new residential development will be expected to incorporate sustainable design and construction technology to achieve zero carbon development through a combination of fabric energy efficiency, carbon compliance and allowable solutions in line with Government policy"*. This will be covered within the Energy Statement that accompanies the planning application.

2.4.11 Furthermore, ESD3 comments that as Cherwell District is in an area of water stress the Council will seek a higher level of water efficiency than required in the Building Regulations, with developments achieving a limit of 110 litres/person/day.

2.4.12 Policy ESD3 also states that *"all development proposals will be encouraged to reflect high quality design and high environmental standards, demonstrating sustainable construction methods including but not limited to:*

- *Minimising both energy demands and energy loss*
- *Maximising passive solar lighting and natural ventilation*
- *Maximising resource efficiency*
- *Incorporating the use of recycled and energy efficient materials*
- *Incorporating the use of locally sourced building materials*
- *Reducing waste and pollution and making adequate provision for the recycling of waste*
- *Making use of sustainable drainage methods*
- *Reducing the impact on the external environment and maximising opportunities for cooling and shading (by the provision of open space and water, planting, and green roofs, for example); and*
- *Making use of the embodied energy within buildings wherever possible and re-using materials where proposals involve demolition or redevelopment."*

CDC Local Plan Part 2 – Development Management Policies and Sites

2.4.13 CDC is in the process of preparing part 2 to the Adopted Cherwell Local Plan 2011-2031 (Part 1) which will contain non-strategic site allocations and development management policies. The anticipated adoption date for this document is February 2020 and is therefore not referenced further within this Sustainability Statement.

Cherwell Design Guide SPD (Emerging)

2.4.14 CDC is currently preparing a new Cherwell Design Guide SPD, consultation was undertaken between 23 November and 21 December 2017, with a targeted adoption date of February 2018[6]. Though the SPD is not yet adopted, the sustainability-related aspects have been considered within this statement.

Sustainable Buildings in Cherwell SPD (Emerging)

2.4.15 The latest Local Development Schedule issued by CDC in November 2017 states that this document is "to be prepared" with a commencement date of August 2018 and a proposed adoption date of June 2019. Based on these timescales this SPD is not referenced further within this Sustainability Statement, even though it is contained with Policy ESD 1.

North West Bicester SPD (February 2016)

2.4.16 This SPD expands upon Policy Bicester 1 of the adopted Cherwell Local Plan 2011-2031 Part 1, and provides further detail on the policy and a means of implementing the strategic

[6] Cherwell District Council – Local Development Scheme (November 2017)

allocation at North West Bicester. The sustainability-related aspects of the SPD have been considered within this statement.

3 Energy and Carbon

3.1 Introduction

3.1.1 This section of the statement deals with how the development proposals align with Policies ESD 1 to ESD 5 including seeking to reduce energy demands and associated CO_2 emissions using sustainable design and construction measures.

3.2 Optimising Energy Demand

3.2.1 Peter Brett Associates LLP have produced an Outline Energy Statement which will accompany the planning application.

3.2.2 Sustainable design and construction is most easily achieved if consideration is given at master-planning and design stages, to make the most of factors such as scheme layout and orientation to optimise outcomes such as: energy demand measures, supply and usage and the implementation of low carbon energy sources.

3.2.3 One of the primary outcomes for the development is to optimise energy demand and promote energy efficiency, which can be facilitated through the following energy hierarchy and active and passive measures.

3.2.4 Design of the proposed development will be influenced by the consideration of the nationally-recognised energy hierarchy, represented in **Figure 3.1**. This places a priority on energy efficiency and reduction through passive and active measures.

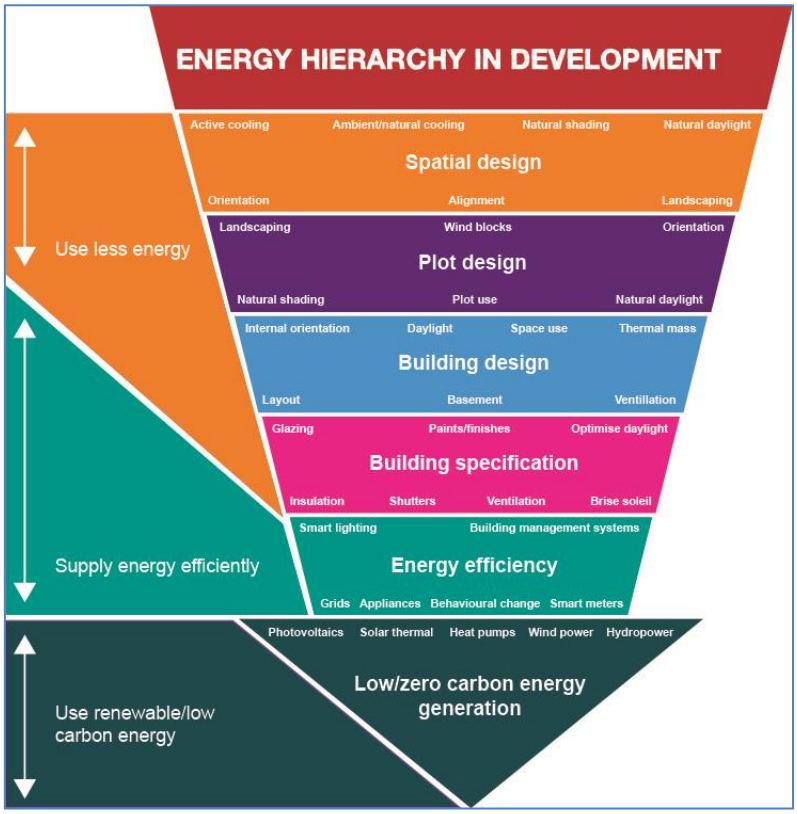


Figure 3.1: Energy Hierarchy

3.3 Masterplan Design Principles

3.3.1 The development will benefit from masterplan principles to optimise energy demand.

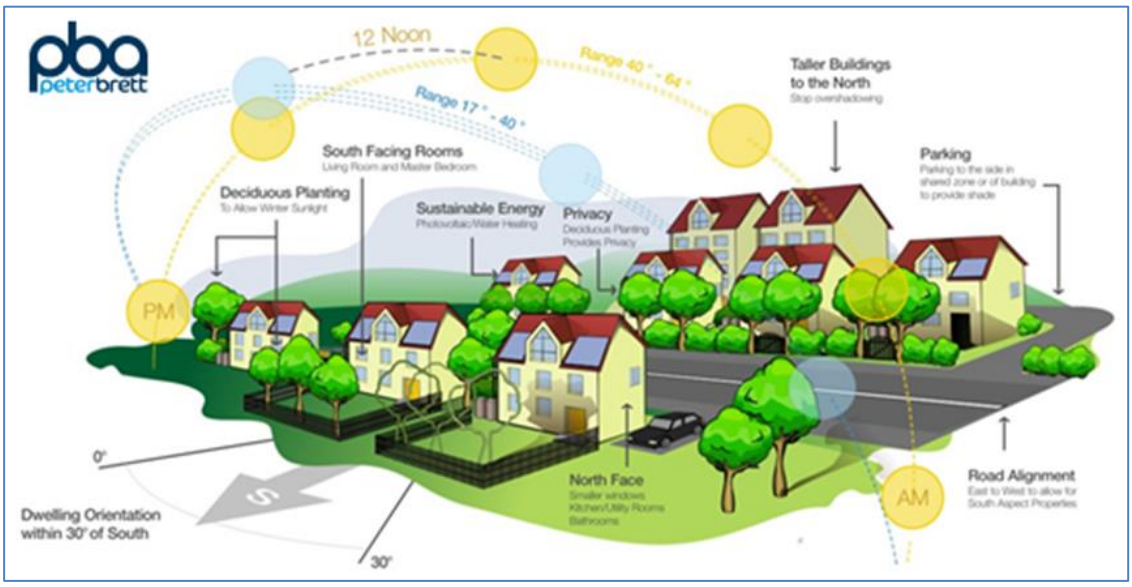


Figure 3.2: Masterplan Design Principles to Reduce Energy Demand

3.3.2 The main road is aligned west-to-east through the Site. This will allow some of the buildings bordering the road to have south-facing aspects, thereby increasing opportunities for natural daylighting, passive solar gains and roof-mounted renewable technologies. Other dwellings are expected are to have a range of orientations to fit wider design considerations.

3.3.3 These features are illustrated in **Figure 3.2** and can also be seen within the masterplan in Appendix B.

3.3.4 As the detail regarding the internal layouts of the majority of the development is not yet known, attention should be paid to the position of rooms with the residential aspects, such as locating living spaces such as the lounge, in rooms with large amounts of south facing windows (where possible) to benefit from the natural daylight and heating, and locating bathrooms in those areas with small north facing windows.

3.4 Climate Change Adaptation

3.4.1 The green spaces proposed throughout the development, combined with plot layout and building location at the detailed design stage, will help to facilitate air movement and enhance natural ventilation, thereby reducing the risk of overheating in dwellings. Care will be taken to avoid wind tunnel effects.

3.4.2 At the reserved matters stage, the landscaping scheme will be carefully designed to encourage passive solar shading. This could include street-scene planting to provide naturally shading areas and corridors (such as along the main carriageway) and, where appropriate, using deciduous planting to allow winter sunlight.

3.5 Energy Demand Reduction Measures

3.5.1 In accordance with the energy hierarchy, individual buildings should be designed to reduce energy demands, use energy more efficiently and, where possible, adapt to the predicted impacts of climate change. These measures can be split into ‘passive’ and ‘active’ measures.

3.5.2 'Passive' measures are design features, which can include building orientation, appropriate internal layouts and building fabric selection, that inherently reduce a building's energy requirements. 'Active' measures are building services design features that will increase the efficiency of the energy used, and therefore also reduce the energy demand requirements.

Passive Measures

3.5.3 The following passive design measures could be incorporated into design of the development, where appropriate:

- Designing the external fabric (walls, floors, and roofs) to have very low U-values[7] to reduce thermal heat loss (i.e. by providing excellent insulation);
- Reducing air permeability and the thermal bridging coefficient[8] of the building envelope to the lowest practical level;
- Incorporating building materials with high (and, where appropriate, exposed) thermal mass[9] to help keep internal temperatures stable;
- Providing larger windows on south-facing aspects, where appropriate in the context of wider design considerations (such as residents' amenity) to allow natural daylighting and passive solar gains;
- Providing smaller windows on north-facing aspects, where appropriate, to reduce excessive heat loss;
- Installing openable windows, preferably on two or more aspects facing opposite each other, to allow the through-flow of air and provide effective cross ventilation in a dwelling when required.

Active Measures

3.5.4 The following active building services design measures could be considered in building designs:

- Using highly efficient Mechanical Ventilation with Heat Recovery (MVHR) systems in appropriate dwellings;
- Adopting water efficiency measures to reduce the energy demands associated with water heating (including fitting flow restrictors on basin taps, low-flow showers, small capacity baths, and time/thermostat control of hot water);
- Using real time energy monitoring systems, smart energy management systems and heating controls, where appropriate;
- Fitting variable speed drives to appropriate pumps and fans to allow greater control of energy-consuming equipment;
- Installing 100% low energy lighting and using lighting-efficiency systems, such as daylight cut-off and passive-infrared (PIR) controls;

[7] U values – otherwise known as thermal transmittance values - measure the thermal performance of a building fabric in terms of heat loss. The better-insulated a structure is, the lower the U-value will be.

[8] The thermal bridging coefficient is a collective measure of heat loss that occurs at a break in insulation at abutting elements in a building e.g. walls and ceilings.

[9] Thermal mass is a material's resistance to changes in temperature. Materials with high thermal mass (i.e. those that absorb and retain heat) include concrete slabs and masonry walls.

- Selecting highly efficient white goods;
- Complying with Chartered Institution of Building Services Engineers' (CIBSE) commissioning requirements, with providing training to any facilities managements teams or building operatives; and
- Transferring knowledge to residents through training and/or home user guides to encourage efficient operation of their homes' energy systems.

3.5.5 The above lists of passive and active measures are not exhaustive, and will be considered in more detail as the design of the development progresses.

3.5.6 A combination of passive and active measures will give very well insulated, airtight buildings with appropriate and efficient building services. It is important to emphasise the benefits of optimising the long-lasting energy performance of buildings through fabric improvements, before employing low carbon and renewable energy technologies on Site.

3.6 Implementation of Low Carbon Energy Sources

3.6.1 The above sections dealt with energy demand minimisation measures, in order to provide clean energy for the remaining energy demand, a preliminary review of the suitability of various well-established renewable and low carbon energy sources for the proposed development has been carried out and is presented in **Table 3.1**.

Table 3.1: Preliminary Renewable/Low Carbon Energy Feasibility Study

Technology	Technological risk	Energy availability	Potential contribution (kW/MW)	Appropriate?	Comment
Photovoltaic solar panels (PV)	Low	Intermittent	kW	Most suitable	Could be installed on south-facing pitched roofs. Frame-mounted systems could be used on any flat roofs to optimise performance.
Solar water heating (solar thermal)	Low	Intermittent	kW	Most suitable	Could be installed on south-facing roof spaces to supply a portion of the buildings' heating demands.
Air source heat pumps	Low	Baseload	kW	Most suitable	Could be installed on suitable buildings to supply a

					portion of heating demands. External condensers need careful positioning to avoid visual/noise disturbance (e.g. on rear/side walls of buildings, and away from noise-sensitive uses). Widespread use throughout the Site is only suitable with spare electrical network capacity.
Ground source heat pumps	Medium	Baseload	kW	Potential to explored further	May be opportunities to install small-scale systems with horizontal collector loops in private gardens and localised areas of green open space. Subject to investigation of geological suitability in specific areas and the mechanical and electrical (M&E) design of buildings at detailed design.
Water source heat pumps	Medium	Baseload	kW	Potential to be explored further	Further investigation into potential subterranean water sources required. Subject to obtaining

					appropriate water extraction and discharge consents.
Wood burning stoves	Low	As required	kW	Limited potential	Certain houses could be adaptable should end-users wish to install wood burning stoves once purchased. The Site is outside all four of CDC's Air Quality Management Areas (AQMAs)[10]. However, feasibility would be subject to further air quality assessment at detailed design.
Hydropower	Low	Baseload	kW	No	Nearby water courses are unlikely to have an appropriate head or flow regime to support a hydropower scheme.
Building-mounted wind energy (micro)	Low	Intermittent	kW	No	Challenges securing long-term reliable performance. Potential structural vibration issues.

3.6.2 As can be seen above, there is a selection of building-integrated renewable and low carbon technologies that could be employed at the Site in order to achieve the policy requirements. Based upon the current masterplan, the most suitable technologies are considered to be solar

[10] CDC (no date) Air Quality Management, available online: https://www.cherwell.gov.uk/downloads/download/1069/air-quality-management (accessed 08/02/2018).

photovoltaic (PV) panels, solar water heating systems, and air source heat pumps. Subject to further investigation, there may be potential for small-scale ground / water source heating solutions. Furthermore, certain houses could be adaptable should end-users wish to install wood burning stoves.

3.6.3 These opportunities are based on current planning requirements and Building Regulations. As this is an outline planning application, with limited information available, the energy strategy needs to be flexible and able to respond to further detailed assessment, regulatory and market changes, and technological advances.

3.6.4 Further details of the energy strategy can be found within the Outline Energy Statement which accompanies the planning application.

4 Water

4.1 Introduction

4.1.1 CDC Local Plan policy ESD3 outlines the importance of water management in new developments within Cherwell and requires residential developments to achieve a water efficiency of no greater than 110 litres per person per day. Policy Bicester 1 also seeks to reduce water consumption.

4.1.2 This chapter also provides a commentary on the flood risk and surface water strategy for the site.

4.2 Internal Potable Water Consumption

4.2.1 The proposed development will aim to significantly reduce mains water usage through several demand reduction measures, including:

- Flow restrictors to reduce the flow rate of kitchen sink and bathroom basin taps;
- Dual flush toilets;
- Low capacity baths; and
- Water efficient kitchen appliances.

4.2.2 A typical water fitting specification that could achieve the 110 litres per person per day requirement, based on the 'Water Efficiency Calculator for New Dwellings' is contained within **Table 4.1**.

4.2.3 This methodology requires a consumption figure to be provided and then multiplies this by a normalisation factor in order to calculate the daily consumption in litres per person per day.

Table 4.1: Example specification to meet 110 litres per person per day requirement

Fitting	Water Usage		Units
WC (dual flush)	6 (full)	4 (part)	Effective flush volume
Basin Taps	6		Litres per minute
Bath	175		Litres (capacity excluding displacement)
Shower	8		Litres per minute
Kitchen Taps	6		Litres per minute
Dishwasher	1.25		Litres per place setting
Washing Machine	8.17		Litres per kilogram
Total	**109.7**		**Litres per person per day**

4.3 Flood Risk

4.3.1 A Flood Risk Assessment has been prepared by Peter Brett Associates LLP to support the planning application.

4.3.2 The site lies within Flood Zone 1, based on the information available within the Environment Agency online flood maps.

4.3.3 Flood Zone 1 represents the lowest probability of flooding, with a less than 1 in 1000 chance of river or sea flooding occurring. There are adjacent water courses on the southeast and southwest which are within Flood Zones 2 and 3, however no development is proposed in these locations.

4.4 Surface Water Strategy

4.4.1 The site is currently undeveloped and there are no formal drainage networks on site, therefore in accordance with current guidance and best practice, a minimum controlled discharge rate of 5 l/s has been applied to the design for all rainfall events up to and including the 1 in 100 year plus 30% climate change rainfall event in line with Defra guidance.

4.4.2 The proposed surface water strategy utilises Sustainable Drainage Systems (SuDS) in the form of permeable paving and a detention basin to store runoff generated by the development.

4.4.3 The permeable paving will principally be used in parking areas and will include a petrol interceptor to remove pollutants associated with the runoff from these areas.

4.4.4 A detention basin is a landscaped depression which are normally dry except during following rainfall and storm events. This was is then stored within the basin due to the restricted outlet the basin provides surface water attenuation.

4.4.5 The detention basin can also be vegetated which can provide water quality benefits including the removal of sediment and buoyant materials. A significant reduction in levels of heavy metals, toxic materials and oxygen-demanding materials may also be achieved.

4.4.6 These SuDS also mitigate for the increase in discharge volume resulting from the development by restricting the 1 in 100 year peak discharge rate from the proposed development to a best practice minimum controlled discharge rate of 5 litres per second into The Bure.

4.4.7 Further details of the strategy can be found in the Flood Risk Assessment which accompanies the outline planning application.

5 Transport

5.1 Introduction

5.1.1 CDC Local Plan policy ESD1 outlines the importance of locating development to reduce the need to travel and to encourage the use of sustainable transport methods including walking, cycling and public transport.

5.2 Existing Infrastructure

Walking / Cycling

5.2.1 A shared footway / cycleway is provided alongside the northbound carriageway of B4100 Banbury Road which provides direct access into the Elmsbrook development scheme and to the footway alongside Charlotte Avenue.

5.2.2 A signalised crossing is provided on B4100 Banbury Road to the south of the Elmsbrook site to enable pedestrians and cyclists to cross the carriageway and head eastwards onto another shared footway / cycleway alongside the A4095 which is separated from the carriageway by a grass verge.

5.2.3 The shared footway / cycleway continues south into Bicester town centre where further pedestrian and cyclist connections are provided towards the existing residential areas to the south.

5.2.4 National Cycle Network Route 51 passes through Bicester town centre and runs towards Bletchley, Milton Keynes and Bedford to the north-east and Weston-on-the-Green, Kidlington and Oxford to the south-west. Several local routes within Bicester connect to Route 51 including those on B4100 Banbury Road and the A4095.

Bus Services

5.2.5 As part of the Elmsbrook development, bus stops are provided along Charlotte Avenue. These bus stops are provided with seating and a shelter to protect waiting passengers from inclement weather as well as Real Time Information which indicates the status of the bus service. There is also cycle parking provision.

5.2.6 The E1 bus service calls at these bus stops which provides a service from Elmsbrook to Bicester Village Station via Caversfield and Bicester town centre.

Rail Services

5.2.7 Bicester is served by two mainline railway stations: Bicester North and Bicester Village, both of which are managed by Chiltern Railways.

Bicester North

5.2.8 Bicester North is the most local of the stations to the application site. It is located on the Chiltern mainline and routes between London Marylebone and Birmingham Snow Hill an hour in each direction. The facilities at this station include storage provided for up to 65 cycles as well as parking bays which include electrical vehicle (EV) charging points.

Bicester Village

5.2.9 Bicester Village is located to the south of Bicester adjacent to the Bicester Village outdoor shopping mall. It is also located on the Chiltern mainline with travel times of 20 minutes to Oxford and 50 minutes to London Marylebone.

5.3 Proposed Sustainable Infrastructure

Vehicular Parking

5.3.1 The approach to the provision of vehicular parking across the site as part of the development proposals will be a balance between meeting the requirements of residents and not unjustifiably encouraging car use as part of the wider Eco Town development. It will consider the need to encourage sustainable travel and the proximity to sustainable travel opportunities.

5.3.2 It is proposed that space is to be provided in the north-eastern corner of the application site, adjacent to the allotment area, for an informal parking area.

Cycle Parking

5.3.3 It is proposed that cycle parking will be provided for each residential unit as part of the development in accordance with the standards as set out in the adopted Cherwell Local Plan 2011-2031 document which states 1 space for each 1-bedroom unit and 2 spaces for each unit with 2 or more bedrooms.

Walk / Cycle Access

5.3.4 It is proposed pedestrian and cycle access into the site will be taken from the adjacent Elmsbrook development. A footway alongside the internal access road will enable access on foot from Charlotte Avenue while pedestrian links to the Elmsbrook scheme will also be provided along the northern and western frontages of the site. In addition to these connections, a footpath / cycleway proposed through the site adjacent to the residential units will enable access on foot and by cycle from residential areas to the north and south.

5.3.5 It is also proposed as part of the development to facilitate and safeguard for the future provision of an uncontrolled pedestrian crossing along B4100 Banbury Road adjacent to St Laurence Church. This will enable travel on foot from the development and therefore from the wider Eco Town scheme to this place of worship.

5.3.6 This strategy will provide strong pedestrian and cycle links from the development to the wider Eco Town and surrounding areas and supports the wider walking and cycling access strategy of the North West Bicester Masterplan.

Public Transport Access

5.3.7 The location of the residential units proposed as part of the development will be within a 400m walking distance of the E1 bus route which runs along Charlotte Avenue through the adjacent Elmsbrook development scheme and into Bicester town centre.

5.3.8 This strategy will provide strong public transport links from the development to the wider Eco Town and surrounding areas and therefore supports the wider public transport access strategy of the North West Bicester Masterplan.

Vehicle Access

5.3.9 It is proposed vehicular access to the development site will be provided along Charlotte Avenue using an existing T-junction arrangement built out as part of the Elmsbrook development scheme.

5.3.10 PBA are aware that, at the time of writing this Transport Assessment, Charlotte Avenue is not adopted public highway; however, it is understood that Oxfordshire County believe an application has been made to their Roads Agreement Team to adopt Charlotte Avenue.

5.3.11 It is proposed the design of the new internal access road into the development site will be consistent with the design standards of Charlotte Avenue approved by the County as part of the Elmsbrook scheme.

6 Biodiversity

6.1 Introduction

6.1.1 CDC Local Plan policy ESD3 requires development proposals to demonstrate that they are reducing their effect on the external environment and include opportunities for open space and planting.

6.1.2 This chapter outlines the current ecological setting and the measures proposed within the development to provide an ecological betterment between pre and post development

6.2 Existing Ecological Setting

6.2.1 An Ecological Assessment Report has been prepared by Peter Brett Associates LLP. The Ecological Assessment Report was informed by a desk study (including a review of ecological survey work undertaken as part of the adjacent Eco-Town development) and an extended Phase 1 Habitat survey, the results of which have been used to identify potential impacts of the development proposals and their associated effects on ecological features.

6.2.2 The Site comprises of grassland bordered by hedgerows to the north-east and north-west, scattered trees, scrub and patches of tall vegetation. A small watercourse was located to the east of the Site encroaching into the boundary of the Site in the south-eastern corner.

6.2.3 These habitats have the potential to be used by foraging and commuting bats, badgers, nesting birds, reptiles, mammals and invertebrates.

6.3 Proposed Strategy

6.3.1 Despite the potential for a limited range of protected/notable species to be present, the scale of the development and the limited extent of suitable habitat available results in no further ecological surveys being required to support the planning submission.

6.3.2 However, recommendations have been made to embed measures within the scheme design to benefit biodiversity, these include:

- Native tree planting and hedgerow planting including the planting or fruit trees which will help to offset the loss of grassland habitat post-development;
- Retention of half of the Site as public open space to be enhanced floristically using a species-rich grassland mix in places to improve the ecological value of retained areas of grassland and offset the loss of existing poorer quality grassland elsewhere on Site;
- A buffer of at least 5m will be maintained between the footprint of the proposed works and the margin of the watercourse in the south-eastern corner of the Site to prevent impacts to this adjacent aquatic habitat;
- A SUDs system (waterbody) would provide valuable habitats for a range of species; and
- Lighting will be directional, minimising light spill onto the hedgerows in the north-west and north-east. Lighting will be absent along the south-eastern/eastern Site boundary to prevent impacts to foraging and commuting bats.

6.3.3 In addition to the above measures, further enhancement measures have also been proposed including:

- Bird boxes;

- Bat boxes;
- Invertebrate boxes; and
- Log piles

7 Pollution

7.1 Introduction

7.1.1 CDC Local Plan policy ESD3 requires development proposals to reduce pollution and the impact on the external environment.

7.1.2 This chapter summarises the potential air, noise and light pollution issues that may arise as a result of the proposed development during both the construction and operational phases and suggests potential mitigation measures to reduce the impact.

7.2 Air Quality

7.2.1 An Air Quality Assessment has been prepared by Peter Brett Associates LLP which will accompany the planning application.

7.2.2 This report describes existing air quality within the study area, considers the suitability of the site for residential development, and assesses the impact of the construction and operation of the development on air quality in the surrounding area.

7.2.3 The proposed site is not located within an Air Quality Management Area (AQMA); the closest one to the site is located at Queens Avenue, approximately 2 km south of the site.

Construction

7.2.4 During construction, the main potential effects are from dust annoyance and locally elevated concentrations of particulate matter. The suspension of particles in the air is dependent on surface characteristics, weather conditions and on-site activities. Impacts have the potential to occur when dust generating activities coincide with dry, windy conditions, and where sensitive receptors are located downwind of the dust source.

7.2.5 To mitigate these effects, a range of measures are recommended to be implemented during the construction stage:

- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as possible;
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period;
- Ensure all vehicles switch off engines when stationary;
- Only use cutting, grinding and sawing equipment with dust suppression equipment;
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use water sprays on such equipment where appropriate;
- Use water assisted dust sweepers on the site access and local roads;
- Ensure vehicles entering and leaving the site are covered to prevent escape of materials; and
- Install a wheel wash with a hard-surfaced road to the site exit where site layout permits.

Operational

7.2.6 In terms of operational air quality impacts these are likely to arise from road traffic, emissions from heating systems and paints/varnishes and glues used within the final fit out of the dwellings.

7.2.7 To mitigate the impact of these, some potential measures which can be explored at the detail design stage include:

- Using mechanical ventilation rather than openable windows to provide ventilation;
- Selecting boilers or other heating systems which have low NOx emissions; and
- Selecting finishes and fittings which have low levels of Volatile Organic Compounds (VOC).

7.3 Noise

7.3.1 A Noise Impact Assessment has been prepared by Peter Brett Associates LLP to accompany the planning application.

7.3.2 The purpose of this report is to describe the existing noise and vibration climate at the proposed development site to determine its suitability for residential development.

Construction

7.3.3 It is inevitable that noise will arise as a result of construction works, in order to mitigate the impact of construction noise the following measures could be implemented:

- Appropriate working hours, likely to exclude work during the night-time and during Sundays and public holidays
- Considerate working hours for excessively noisy activities;
- Screening plant to reduce noise which cannot be reduced by increasing the distance between the source and the receiver (i.e. by installing noisy plant and equipment behind large site buildings;
- Orienting plant that is known to emit noise strongly in one direction so that the noise is directed away from dwellings, where possible; and
- Work to keep local residents informed of the proposed working schedule, where appropriate, including the times and duration of any abnormally noisy activity that may cause concern.

Operational

7.3.4 The dominant noise associated with the site is from traffic noise and vehicular movements on the surrounding roads, with the highest measured sound level being 71dB during day time hours which was recorded when conducting baseline surveys.

7.3.5 An acoustic model has been constructed using the survey data and proposed plans in order to determine the likely internal noise levels within notional dwellings on the site.

7.3.6 The modelled noise levels are within the tolerance permitted by the lowest-observed-adverse-effect level (LOAEL) therefore indicating that the site is suitable for residential development without the need for specific acoustic mitigation measures.

7.4 Lighting

Construction

7.4.1 Generally, construction lighting tends to lead to more obtrusive lighting than operational lighting because of its temporary nature, and the type of lighting equipment used.

7.4.2 For ease of deployment and use, construction lighting tends to be mobile, and focus on providing the widest coverage of light from the fewest possible units, to minimise time spent maintaining and installing the equipment. Construction vehicles can also lead to poorly orientated light.

7.4.3 This, along with the fact that it is often poorly directed or installed, can result in temporary effects of glare, light intrusion and sky glow if good practice measures are not employed. This, and the following information is in accordance with Institute of Lighting Professionals (ILP) guidance[11].

7.4.4 To mitigate the effects of construction lighting at the proposed development, the following mitigation measures can be utilised:

- Construction lighting should be directed so it does not create light intrusion outside of the immediate working area;
- Sufficient lighting units used to avoid the need for tall, wide beam lighting units to illuminate large areas;
- Vehicle lights should be properly directed and lenses must be intact to prevent un-necessary glare and breakout of obtrusive light (this is also an MOT requirement);
- Lighting should be reduced when not required for safety purposes. Security lighting should be kept at the minimum level needed for visual and security protection;
- If appropriate, to reduce the need for fixed visible lighting outside working hours, the use of infrared flood lighting and CCTV systems should be considered for security; and
- All lighting related to the works will be designed and fitted to minimise light intrusion onto any sensitive habitat such as hedgerows, mature trees and woodland.

Operational

7.4.5 Although the exact operational lighting required for the proposed development is not known, some considerations can be made to maximise the sustainability of the artificial lighting. One way of implementing this is to use Passive Infrared (PIR) motion sensors so that lights turn on when someone is present.

7.4.6 Associated with the operational phase of the development will be street lighting to ensure a safe and secure development and to accord with minimum standards, along with potential task and security lighting for the employment/ retail aspects of the development. The light pollution from these aspects can be reduced by creating downward facing luminaires to reduce light intrusion and glare, and to employ LED lighting across the Site to increase energy efficiency. Furthermore, some land uses as part of the proposed development do not need to be lit e.g. open spaces, this will reduce the impact of obtrusive light such as light intrusion, glare and sky glow.

[11] Institute of Lighting Professionals - Guidance Notes for The Reduction of Obtrusive Light (2011)

8 Sustainable Materials & Construction

8.1 Introduction

8.1.1 CDC Local Plan policy ESD3 requires development proposals to incorporate locally sourced, recycled or re-used building materials where feasible.

8.1.2 This chapter summaries the potential options to promote the use of sustainable materials and construction methods, including promoting use of secondary materials, new building materials, sustainable transport of materials and waste.

8.2 Managing Material Extraction

8.2.1 Responsible Sourcing of Construction products, published and updated by the Building Research Establishment (BRE) provides a holistic approach to the management of materials for sustainability. Materials for the construction of the new homes should be sourced to consider indirect carbon emissions, such as: materials involved in the extraction, manufacture and transfer processes, and subsequent in-life emissions resulting from the use of those materials in the development.

8.3 Promoting Use of Secondary Materials

8.3.1 The Site consists of grassland, hedgerows and trees, therefore there is minimal potential for the use of secondary materials on site.

8.4 New Building Materials

8.4.1 The Building Research Establishment (BRE) publishes and updates a Green Guide to Specification which aims at providing a simple guide to the environmental impact of building materials.

8.4.2 To do this BRE created an Environmental Profiles Methodology which is used to assess the relative environmental impacts of construction materials commonly used in buildings based on several factors including climate change, mineral extraction, toxicity, fossil fuel depletion and waste disposal.

8.4.3 Using this method, materials are given an overall rating of between A+ to E (**Figure 8.1**), with those rated A+ representing the best environmental performance/least environmental impact, whereas those which are rated E have the worst environmental performance/most environmental impact.

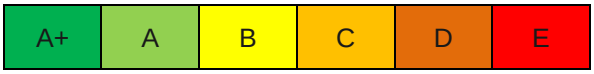


Figure 8.1: Green Guide to Specification Materials Ratings

8.5 Sustainable Materials

8.5.1 The exact specifications and materials of the proposed development is not yet known, but careful consideration should be given to ensure the building materials minimise environmental impacts. Appropriate choice of materials is important in every aspect of the building process to ensure minimal environmental impact of the development.

8.5.2 It is advised that materials are sourced in line with both the specifications in **Figure 8.1**, and BRE's BES 6001 – The Framework Standard for Responsible Sourcing. Utilising recycled materials where possible is the most sustainable approach, whilst consideration should also

be given to using materials that go through less energy intensive processes such as timber, clay bricks and slate tiles.

8.6 Sustainable Transport of Minerals

8.6.1 Where possible, the transport of materials to the site during the construction period will be managed to minimise the impacts on the local road network. However, due to the relatively rural location, Heavy Goods Vehicle (HGV) is expected to be the most likely transport mode to transport materials.

8.6.2 Construction site traffic can be managed, via a construction traffic management plan (CTMP). Preparing a CTMP and consolidating materials and waste into as few HGV trips as possible (e.g. by using reverse logistics) will limit the impact on the local highway network. Other methods such as local sourcing of materials and transporting waste to local transfer stations will lower vehicle mileage and therefore minimise the construction impact of the development.

8.7 Construction Waste Management

8.7.1 During the construction process and the occupation of the development, the waste strategy should follow the principles of the waste hierarchy – "eliminate, reduce, reuse and recycle" – to minimise waste sent to landfill and to ensure that the environmental, social and economic risks from waste are minimised and, where possible, turned into opportunities.

8.7.2 The principal contractor will be charged with responsibility for the management and coordination of all waste streams during each stage of the construction of the houses.

8.7.3 To facilitate this a Site Waste Management Plan (SWMP) could be prepared.

8.7.4 The legal requirement to prepare a SWMP was removed in 2013, however, preparation of a SWMP is still considered important to ensure that building materials are managed efficiently; waste is disposed of legally, fly tipping is reduced; and materials reuse, recovery and recycling is maximised.

8.7.5 A SWMP typically has three stages:

- Pre-Construction - development of the SWMP;
- Construction Phase - managing and updating the SWMP process; and
- Post-Construction - verifying and reporting the SWMP actions.

8.7.6 The SWMP contains an assessment of the likely composition and quantity of waste arisings and a target for sustainable waste disposal (i.e. diversion from landfill).

8.7.7 Materials recovered from any site works may be suitable for reuse on site, reducing costs of transportation and procurement of virgin materials. This, combined with considerate design practices, such as seeking a materials cut-and-fill balance, will help to minimise construction waste in line with the waste hierarchy.

8.8 Operational Waste

8.8.1 The detailed operational waste strategy will be managed at reserved matters stage. The strategy should demonstrate alignment to CDC's requirements for all new developments to incorporate practical measures to facilitate the efficient use of resources and to maximise waste minimisation, sorting, re-use, recycling and recovery.

8.8.2 The development will ensure waste is managed in line with CDC's Waste and Recycling Storage and Collection Guidance, by providing adequate space for the following refuse bin types which are all collected on a fortnightly basis:

- Green bin for domestic waste;
- Blue bin for recycling (including paper, tins, plastic bottles, foil, cartons and aerosols);
- Internal kitchen caddy and external brown bin for garden and food waste.

8.8.3 Space will be provided for the storage of the refuse bin types outlined above within each residential dwelling so that responsible waste disposal is encouraged from the outset.

8.8.4 Furthermore, accessibility to bins should also be in accordance with local highways guidance, so that waste collection vehicles can safely access all the dwellings that comprise the development.

8.8.5 Once the whole development reaches the detailed design stage, sufficient access should be provided within the internal roads to allow for the manoeuvring and turning heads of refuse and delivery vehicles to safely access and exit the development without blocking any of the housing.

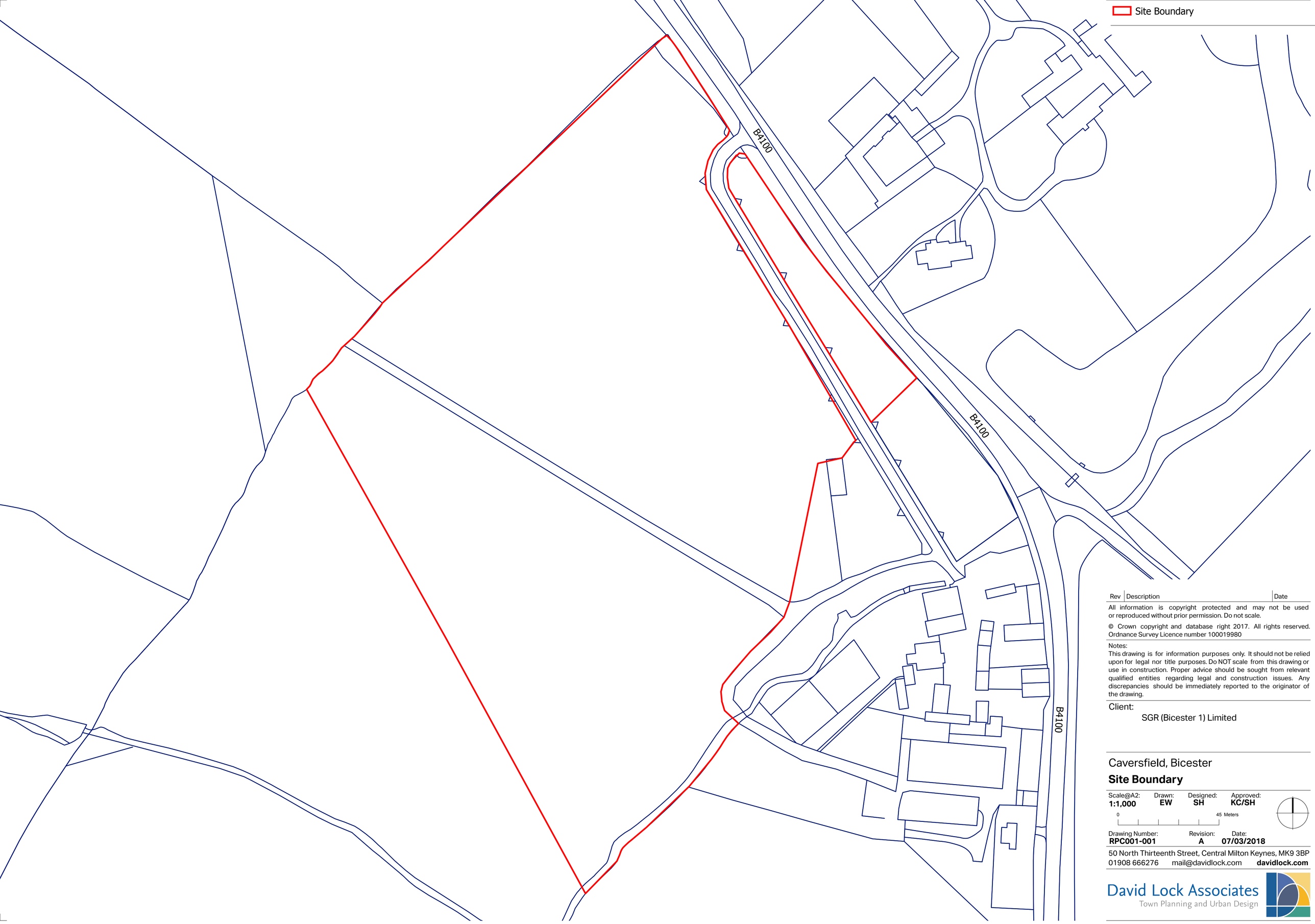
9 Summary & Conclusions

9.1.1 SGR (Bicester 1) Limited is submitting an Outline Planning Application for the development of up to 75 units at 'Plot SGR1, Bicester'.

9.1.2 This Sustainability Statement demonstrates how the proposed development aligns with the range of local sustainability objectives, as defined by CDC's Core Strategy Policy ESD1, ESD3, and Policy Bicester 1 including:

- Optimising energy demand where possible, through using the nationally recognised energy hierarchy principles, and through masterplan design principles such as orientation of buildings and incorporation of open spaces;
- Providing a proportion of the development's energy supply by potentially using low carbon and renewable energy sources that are feasible at the Site, such as Solar PV panels, solar water heating, or Air Source Heat Pumps;
- Appropriate surface water management to protect the receiving waters from pollution and reduce the risk of flooding, including the use of permeable paving SuDS;
- Protecting local air quality and limiting noise and lighting pollution, by providing mitigation measures to minimise potential polluting effects across the construction and operational phases of the development;
- Appropriate management of construction and operational waste by managing material extraction, sustainable transport of materials, managing construction waste through a potential SWMP, and managing operational waste in line with CDC's waste collection requirements;
- Retaining, enhancing and creating new habitats to preserve the ecological setting of the Site, through several measures including retention of half of the site as public open land, planting native trees and the provision of bird/bat boxes;
- Reducing the consumption of natural resources and greenhouse gas emissions through sustainable energy, water and materials procurement strategies, as well as considerate construction practices; and
- Promoting sustainable travel modes (including walking, cycling and public transport) as an alternative to private car use and enhancing existing services, such as new bus services and shared footways/ cycle ways to promote active travel.

Appendix A Redline Boundary Plan



Rev	Description	Date

Notes:
This drawing is for information purposes only. It should not be relied upon for legal nor title purposes. Do NOT scale from this drawing or use in construction. Proper advice should be sought from relevant qualified entities regarding legal and construction issues. Any discrepancies should be immediately reported to the originator of the drawing.

Client:
SGR (Bicester 1) Limited

Caversfield, Bicester

Site Boundary

Scale@A2:	Drawn:	Designed:	Approved:
1:1,000	**EW**	**SH**	**KC/SH**

0 45 Meters

Drawing Number:	Revision:	Date:
RPC001-001	**A**	**07/03/2018**

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David Lock Associates
Town Planning and Urban Design

Appendix B Indicative Masterplan

SITE BOUNDARY

B4100

BANBURY LANE

HOME FARM

Rev. A	Added Play Area	05.03.2018

Client:

SGR (Bicester 1) Limited

Caversfield, Bicester

Illustrative Master Plan

Scale@A3:	Drawn:	Designed:	Approved:
1:1,250	**MG**	**RM**	**SH**

0m — 50m

Drawing Number:	Revision:	Date:
RPC001-016	**A**	**27.02.18**

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