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**PT18/6450/O Land West of
Park Farm, Thornbury**
Sustainability Statement

On behalf of **Barwood Development Securities Ltd & North West Thornbury
Landowner Consortium**

Project Ref: 39209/3013 | V5.0 | Date: January 2020

Registered Office: Buckingham Court Kingsmead Business Park, London Road, High Wycombe, Buckinghamshire, HP11 1JU
Office Address: Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN
T: +44 (0)118 950 0761 E: reading@peterbrett.com

Document Control Sheet

Project Name: PT18/6450/O Land West of Park Farm, Thornbury

Project Ref: 39209 - 3013

Report Title: Sustainability Statement

Doc Ref: Revision 5

Date: January 2020

	Name	Position	Signature	Date
Prepared by:	Roxanne Cottey	Graduate Environmental Planner	RC	Jan 2020
Reviewed by:	Jenny Hughes	Senior Environmental Consultant	JH	Jan 2020
Approved by:	Jonathan Riggall / Neil Thorne	Director Energy and Natural Resources / Director of Transport	JR NT	Jan 2020
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
01	30.05.18	Draft for Comment	JH	RK	JR
02	31.08.18	Draft	JH	MP	JR
03	20.09.18	Draft	JH	MP	JR
04	19.12.19	Revision following 2019 update	RC	JH	JR
05	22.01.2020	Revision following comments	RC	JH	NT

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1 Introduction

1.1 Report Alterations

1.1.1 This report has been updated with respect to the following:

1. Updates to the quantum of development at Land West of Park Farm, Thornbury.
2. Updated reference to the National Planning Policy Framework (NPPF).
3. Updated status of the West of England Joint Spatial Plan.
4. Further detail to the design principles.
5. Further detail to the open access and nature proposals.
6. Further detail to the transport proposals.
7. Revision of existing ecological context in relation to updated great crested newt survey results.
8. Update of biodiversity measures in regard to the translocation of the species rich hedgerow.
9. Update of guidance for surface water drainage design and construction.

1.1.2 All amendments are highlighted in bold and underlined.

1.2 Introduction

- 1.2.1 Peter Brett Associates LLP (PBA), now part of Stantec, has been appointed by Barwood Development Securities Ltd & North West Thornbury Landowner Consortium (the 'Developer') to prepare a Sustainability Statement in support of an outline planning application in relation to the application proposals for Land West of Park Farm, Thornbury, South Gloucestershire (the 'Site').
- 1.2.2 The application proposals are comprised of up to **595** dwellings, **land for a primary school, a Neighbourhood Hub (up to 700sqm of retail and community uses)** and public open space on approximately 36 ha of land to the north west of Thornbury (the 'Proposed Development'). The Site is within the South Gloucestershire Council (SGC) boundary.

1.3 Site Location and Description

- 1.3.1 The Site is located to the north west of Thornbury in South Gloucestershire. Thornbury is a small market town with access to the A38, a north-south strategic corridor connecting to Bristol to the south, Gloucester to the north and beyond.
- 1.3.2 The Site abuts a housing scheme to the east at Park Farm which will comprise approximately 500 residential dwellings, parts of which are under construction. The Site sits within the low-lying landscape of the Severn Vale, with Oldbury Lane running along its northern edge linking Thornbury and Oldbury-on-Severn. Adjacent to Oldbury Lane is agricultural land and the local business Oak Leaf Nurseries and Plant Centre. Agricultural land lies to the south and west of the Site.

1.3.3 The land is relatively level, lying at approximately 10 m Above Ordnance Datum (AOD) in the west and sloping gently eastwards to around 15 m AOD by the eastern boundary. It is predominantly green field agricultural land is divided by existing trees, hedgerows and woodland copses, which results in the Site having a good degree of visual containment. The Site is crossed by several Public Rights of Way.

1.3.4 A Location Plan for the Site is included in **Appendix A**.

1.4 Development Proposals

1.4.1 The application for the Proposed Development is for outline planning permission with all matters except vehicular access reserved, for:

- Development of up to **595** dwellings (Use Classes C3);
- Up to 700 m² for a Community Hub (Use Classes A1, A2, D1);
- **1.3 ha of land for primary education provision and nursery (Use Class D1);**
- A network of open spaces including parkland, footpaths, allotments, landscaping and areas for informal recreation;
- New roads, a sustainable transport corridor (including a bus link), parking areas, accesses and paths; and
- The installation of services and drainage infrastructure.

1.4.2 The Site masterplan is included in **Appendix A**.

1.5 Method and Report Structure

1.5.1 The method adopted in this Sustainability Statement is to review national and local policies in relation to sustainable development (undertaken in **Section 2**) and use this to establish a 'sustainability framework' for the Proposed Development at the Site that achieves both overarching national sustainability goals and site-specific objectives.

1.5.2 The report has been structured to respond to the SGC Core Strategy (2013) objectives which set out how new developments must contribute towards the delivery of high quality and sustainable places.

1.5.3 The report is structured as follows to respond to the SGC Core Strategy objectives:

- **Section 2: Policy Context** – presents the relevant national and local policies, and summarises key requirements for the Proposed Development;
- **Section 3: High Quality Design and Community** – presents the design context for the Proposed Development and discusses how an attractive, cohesive and safe community will be created which fits within the local context;
- **Section 4: Transport and Access** – discusses how the Proposed Development will integrate with Thornbury and how people will have sustainable access options within the Proposed Development and into the wider community;
- **Section 5: Landscape and the Natural Environment** – reviews the landscape and ecological context of the Site and how the Proposed Development will provide opportunities for wildlife;

- **Section 6: Climate Change and Flood Risk** – discusses the flood risk of the Site and how the proposed development will adapt to climate change;
- **Section 7: Energy** – discusses how the Proposed Development will be energy efficient and how renewable and low carbon sources of energy can potentially be incorporated; and
- **Section 8: Summary and Conclusions** – summarises the design features of the Proposed Development and highlights the key objectives.

2 Policy Context

2.1 Introduction

2.1.1 The policies that relate to defining a 'sustainable development' in this location are multi-layered and complex. The following sections present a summary of the relevant national and local policies and highlight the key sustainability objectives for the Proposed Development.

2.2 National Planning Policy and Framework

2.2.1 The National Planning Policy Framework (NPPF) **was updated on the 19 February 2019** and supersedes the existing policies within the previous NPPF (March 2012, revised July 2018).

2.2.2 The NPPF 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 delivering sustainable development. These are:

- **An economic objective** – to help build a strong, responsive and competitive economy, by ensuring that sufficient land of the right types is available in the right places and at the right time to support growth, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure;
- **A social objective** – to support strong, vibrant and healthy communities, by ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering a well-designed and safe built environment, with accessible services and open spaces that reflect current and future needs and support communities' health, social and cultural well-being; and
- **An environmental objective** – to contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy.

2.2.3 The NPPF sets out the principles of sustainable development and identifies that where development is sustainable it should go ahead, without delay. Local policies should be aligned to the principles of sustainable development set out in the NPPF. The NPPF states that planning policies and decisions should play an active role in guiding development towards sustainable solutions, but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.

2.3 Local Planning Policy

2.3.1 This section sets out the local planning policy context for the Site in relation to SGC policies, and the emerging West of England Joint Spatial Plan.

Core Strategy 2006-2027 (adopted December 2013)

2.3.2 The Local Plan 'lead' document is the Core Strategy. This sets out the overall development strategy for South Gloucestershire and contains the strategic planning policies to deliver that strategy.

2.3.3 **Section 5: high quality design and responding to climate change:** this chapter of the Core Strategy sets out key policies for managing directly links to the priorities of the Sustainable Community Strategy and the Council Strategy. The Core Strategy sets out 9 strategic objectives which are outlined fully in **Table 2.1** below. Key policies in relation to sustainability and the Proposed Development are highlighted below.

- **Policy CS1 – High Quality Design:** states that development will only be permitted where the highest possible standards of design and planning are achieved. A range of specific objectives are highlighted;
- **Policy CS2 – Green infrastructure:** existing and new Green infrastructure should be planned, delivered and managed as an integral part of creating sustainable communities and to enhance quality of life, considering a number of GI objectives;
- **Policy CS3 – Renewable and low carbon energy generation:** proposals for the generation of energy from renewable or low carbon sources, provided that the installation would not cause significant demonstrable harm to residential amenity, individually or cumulatively, will be supported;
- **Policy CS4 – Renewable or low carbon district heat networks:** major development proposals should, as a minimum, provide that evidence that renewable and low carbon sources of heating or CHP have been fully explored; and
- **Policy CS4A – Presumption in favour of sustainable development:** there is a presumption in favour of sustainable development. Planning applications that accord with the policies in this Plan will be approved without delay unless material considerations indicate otherwise.

Policies, Sites and Places Plan (adopted November 2017)

2.3.4 The Policies Sites and Places (PSP) Plan was adopted on 8 November 2017 and forms part of the South Gloucestershire Development Plan. The PSP Plan contains detailed planning policies to manage new development, allocate and safeguard sites for various types of development. Key policies in relation to sustainability are included in Section 3 of the DPD.

2.3.5 Key policies in relation to sustainability and the Proposed Development are highlighted below.

2.3.6 **PSP1 Local distinctiveness:** Development proposal(s) will be acceptable where the proposals demonstrate an understanding of, and respond constructively to the buildings and characteristics that make a particularly positive contribution to the distinctiveness of the area / locality.

2.3.7 **PSP6 Onsite renewable and low carbon energy:** All development proposals will:

- 1. be encouraged to minimise end-user energy requirements over and above those required by the current building regulations through energy reduction and efficiency measures, and in respect of residential for sale and speculative commercial development offer micro renewables as an optional extra, and*
- 2. be expected to ensure the design and **orientation** of roofs will assist the potential siting and efficient operation of solar technology.*

2.3.8 In addition, all major greenfield residential development will be required to reduce CO₂ emissions further by at least 20% via the use of renewable and/or low carbon energy generation sources on or near the Site providing this is practical and viable.

Emerging South Gloucestershire Local Plan (2018-2036)

- 2.3.9 The new South Gloucestershire Local Plan (SGLP) will be a development plan document (DPD) covering the whole administrative area of South Gloucestershire and the plan period will be 2018-2036. It will review and eventually replace existing local planning documents, including the:
- South Gloucestershire Local Plan: Core Strategy – 2006-2027 (2013); and
 - South Gloucestershire Local Plan: Policies, Sites and Places Plan.
- 2.3.10 Part of the new Local Plan’s purpose will be to allocate sites for strategic development at locations identified in the Joint Spatial Plan (JSP – as discussed below), as well as to allocate new sites for non-strategic development. The Local Plan will also set out the suite of planning policies that will be used to deliver sustainable development in South Gloucestershire.
- 2.3.11 The SGLP **has undergone public consultation, and is due to be adopted in March 2021**. Therefore, the current Core Strategy and PSP Plan are still the key planning documents in relation to the Proposed Development.

Emerging West of England Emerging Joint Spatial Plan (November 2017)

- 2.3.12 The four West of England Councils – Bath and North East Somerset, Bristol City, North Somerset, and South Gloucestershire have prepared a West of England Joint Spatial Plan (JSP). The Plan sets out the policies and principles for determining the most appropriate and sustainable locations for future development to meet its housing, employment and transport needs for the next 20 years, to 2036. This plan will sit above and guide each council’s own Local Plan.
- 2.3.13 **The JSP was submitted to the Secretary of State on 13 April 2018 and underwent an examination for its compliance with statutory requirements and on its soundness. On 11 September 2019 the inspectors found “very substantial soundness problems” and “anticipate that the changes necessary would amount to a virtual re-writing of the plan”. At the time of writing this Sustainability Statement, the councils have not yet issued their considered response.**

2.4 Sustainability Framework

- 2.4.1 This report has been structured to align with the Core Strategy objectives. This provides a holistic and overarching framework against which to assess the sustainability of the Proposed Development. The requirements and guidance set out under these objectives represent the local context for defining ‘sustainable development’, as they are based on environmental, economic and social issues and opportunities facing South Gloucestershire.
- 2.4.2 **Table 2.1** outlines the objectives and how they are addressed in this Sustainability Statement.

Table 2.1: Sustainability Objectives

Core Strategy Objectives	How Addressed
Promoting high quality design that responds to its context, the distinctive assets of the district and creates ‘sense of place’ and civic pride.	Section 3 – High Quality Design and Community , with information from the Design and Access Statement (Barton Willmore, 2019).

Create attractive, cohesive, safe and inclusive communities.	Section 3 – High Quality Design and Community , with information from the Socioeconomics chapter (ES Chapter 6) and the Design and Access Statement (Barton Willmore, 2019).
Integrate housing, jobs, services, public transport and facilities so that people lead healthier lives and have the opportunity to reduce their CO ₂ footprint.	Section 4 – Transport and Access , with information from the Transport Assessment (PBA, 2019) and Travel Plan (PBA 2019).
Protecting the landscape for its own sake	Section 5 – Landscape and the Natural Environment , with information from the Ecology Chapter (ES Chapter 13), and the Landscape and Visual Impact Chapter (ES Chapter 14).
Create a network of attractive and accessible spaces for people and wildlife, and to provide climate change adaptation and mitigation functions	Section 6 –Climate Change and Flood Risk , with information from the Flood Risk Assessment and Water Environment Chapter (Chapter 9). Information in relation to attractive and accessible spaces for people and wildlife is provided in Sections 4 and 6 respectively.
Providing opportunities for flora and fauna to adapt to climate change	Section 5 –Landscape and the Natural Environment (as above).
Ensuring that environments for recreation, play and well-being are delivered as an integral part of communities	Section 3 – High Quality Design and Community (as above).
Promoting energy efficient development and new sources of decentralised, renewable and low carbon sources of energy	Section 7 – Energy , with information from the Energy Statement.
Understanding and reducing susceptibility to flood risk	Section 6 –Climate Change and Flood Risk (as above).
Managing the impacts of urban intensification	Section 3 – High Quality Design and Community (as above).

2.4.3 Other key objectives in relation to sustainability and the SGC local policies are addressed within other documents submitted with this planning application and are summarised below:

- **Waste – Waste Management Strategy:** 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 SGC’s waste collection requirements and wider Mineral and Waste Core Strategy; and
- **Energy Statement:** Applies the energy hierarchy and sets out design principles that target passively reducing energy demands, identifies ‘active’ and ‘passive’ measures to reduce energy demands and use energy more efficiently, and identifies a suite of building-integrated renewable and low carbon technologies that could be employed at the Proposed Development; and
- **Pollution – Environmental Statement:** protecting local air, water and soil quality and limiting noise pollution, by providing mitigation measures to minimise potential polluting effects across the construction and operational phases of the Proposed Development.

3 High Quality Design and Community

3.1 Introduction

- 3.1.1 This section explores how high-quality design has been promoted to respond to the local context and to create a community that delivers safe, accessible and attractive environments. This draws on principles and design features as explained in further detail in the Design and Access Statement (Barton Willmore, 2019) and considers how impacts of urban intensification have been managed and reduced.

3.2 Overall Design Principles

- 3.2.1 Development at Land West of Park Farm will create a sustainable and healthy neighbourhood that helps meet the growing demand for new homes within the thriving market town of Thornbury. The Proposed Development will be well integrated within its surroundings through excellent local connections and the provision of new green space for the enjoyment of the whole community. The design will sensitively respect the characteristics of the town to ensure creation of an attractive, high quality and locally distinctive place to live.

- 3.2.2 Design principles associated with creating a quality neighbourhood include:

- Introduction of a new neighbourhood with two distinct character areas;
- A mix of high quality family homes, including 35% affordable housing; and
- Appearance of streets, buildings and open spaces influenced by surrounding local character.

3.3 Community

- 3.3.1 The design will aim to create an engaging and vibrant environment with a primary school and other facilities and amenities that bring cohesion to the community.

- **1 Form Entry Primary School**; and
- Up to 700 m² for a Community Hub (Use Classes A1, A2, D1).

- 3.3.2 The community hub would be located at the heart of the Proposed Development and could include local facilities and amenities; including the potential for healthcare provision.

3.4 Responding to the Local Context

- 3.4.1 Design principles associated with respecting and responding to the local context include:

- A respectful design response to the presence of Thornbury Castle and St. Mary Church, including integrating retained glimpsed views of this local landmark;
- Development that is well integrated within its surroundings, **including an attractive and transitional arrival experience into Thornbury from the west through Oldbury Lane**;
- An excellent public transport access corridor, offering pedestrian, cycle and bus access, is to be provided via the neighbouring Park Farm development, directly linking the new community into Thornbury's town centre and its wider facilities and services (and vice versa).

- Attractive mix of homes with a defining character influenced by the qualities of the exiting town and the Site's relationship with the landscape setting.

3.4.2 The existing character of the Site and how the Proposed Development responds to the context is discussed in the Landscape and Visual Impact ES Chapter (The Richards Partnership, 2019). This is discussed further in **Section 6**.

3.5 Managing Urbanisation

3.5.1 The potential impacts associated with urban intensification could include impacts on the setting, landscape and visual context, biodiversity and ecological receptors, and potential impacts on the existing town of Thornbury.

3.5.2 Potential impacts on ecological features, and the landscape are discussed in **Section 6** in further detail. The design evolution and masterplan has considered and included measures such as buffers to ecologically sensitive features.

3.5.3 A balanced development is proposed, including green spaces and features to enhance biodiversity, and infrastructure will be incorporated to link the development to Thornbury town centre.

3.6 Access to Open spaces & Nature

3.6.1 The Proposed Development incorporates a network of multifunctional open spaces to provide areas for formal and informal play, recreation and relaxation. Open spaces will include parkland, footpaths, allotments, landscaping and areas for informal recreation.

3.6.2 This includes a large natural open space to the south of the site which provides a wildlife and recreation resource to be enjoyed within the tranquil setting of the Pickedmoor Brook and its wooded surroundings. This space forms an extension of the large open space area proposed at Park Farm. The development areas are structured around a permeable green corridor running through the development, whilst the provision of enclosed green spaces create opportunities for play and social interaction.

3.6.3 Key green infrastructure feature of the area are blocks of woodland along and around the Site's southern and western boundaries, including Parkmill Covert which is a SNCI and an ancient woodland. The landscape and green infrastructure strategy for the site builds on these assets with new belts of indigenous planting, meadow grassland and wet grassland.

3.6.4 Additionally, the most valued watercourses, ponds, mature woodlands and hedgerows around the Site will be retained within complementary interlinked areas of meadow grassland and wet grassland. Green corridors of informal open space will be retained and formed within the development, providing multifunctional spaces for recreation and pedestrian movement.

3.6.5 The existing pasture fields alongside Pickedmoor Brook would be retained and managed as meadow grassland and would provide space for informal recreation and for residents and visitors to move through the landscape and onto the existing footpath network within and around the Site.

3.6.6 The incorporation of green infrastructure is hoped to contribute to the health and wellbeing of residents. Access to these facilities will help encourage residents to lead healthy and active lifestyles.

3.7 Safe Communities

- 3.7.1 The site-wide development and individual buildings will be designed to reduce opportunities for, and the fear of, crime. Dwellings will be designed to comply with Part Q of the Building Regulations¹. Non-residential buildings will include suitable security measures to deter crime. Measures could include CCTV, avoiding unlit passages between buildings, creating active frontages, and encouraging natural surveillance from adjacent buildings and surrounding areas. Central open spaces and routes, throughout the Site, will be addressed by built form to create a well-surveyed public realm.
- 3.7.2 Due to the Proposed Development being at the outline stage, this level of detail has not been addressed. As the detailed design progresses, the design team will consult with a Design Out Crime Officer (DOCO) from the local police force and incorporate security advice, where appropriate, with a view to continuing to promote a development where people feel safe and secure. Furthermore, the Proposed Development will be adequately lit to reduce the fear of crime on public footpaths and open spaces.

3.8 Summary

- 3.8.1 The Proposed Development provides for attractive, multi-use public spaces and buildings, including a school and the provision of the Community Hub which provides scope for community uses.

¹ HM Government (2012) *Approved Document Q – Security – Dwellings*. March 2015

4 Transport and Access

4.1 Introduction

- 4.1.1 The Proposed Development will integrate with Thornbury and provide residents with the opportunity for active travel both to and within the development. This will encourage people to lead healthier lives and give them opportunities to reduce their CO₂ footprint.
- 4.1.2 A Transport Assessment has been prepared and submitted with this planning application to outline the traffic impact from the development, sustainable travel opportunities and highway impact on the local highway network. A Travel Plan has also been prepared to promote sustainable and active travel from the outset of occupation of the proposed development.
- 4.1.3 This section discusses the services and job opportunities in the local area, and the transport infrastructure associated with the proposed development.

4.2 Site Context

- 4.2.1 Thornbury is an accessible and well-connected place which has good pedestrian, cycle and public transport services providing sustainable travel opportunities within the town and beyond to nearby destinations such as Bristol. There are a wide range of facilities and services sustainably accessible within the local area. The town has good access to both the M4 and M5 motorways and the A38.

Existing Facilities and Services

- 4.2.2 The following paragraphs summarise the existing facilities and amenities in the local area which are accessible to potential future residents:
- **Amenities:** convenience shops are located in the centre of Thornbury which is 1.4- 2.0 km walking distance away from the Site. The nearest public house is 1.0-1.6 km to the east on Gloucester Road;
 - **Employment:** Thornbury High Street is thriving and host to many independent and chain shops, cafes and services which would provide opportunity for local employment. Further south is a large industrial estate called Ashville Park which hosts various businesses. Greater Bristol to the south and Gloucester to the north both have a wide range of employment opportunities;
 - **Education:** the nearest primary school to the Site is Manorbrook Primary School, which is located approximately 1.5 km walking distance. The nearest secondary school is The Castle School, which is a 1.4 km walking distance south of the Site; and
 - **Leisure:** opposite the Site, on Oldbury Lane, is a plant nursery which has a wide variety garden shrub for sale. Thornbury also has local Rugby Football club located 1.0 – 1.8 km to the north on Gloucester Road. To the south of Thornbury within a 2.3 – 2.9 km walk distance of the Site is Thornbury Leisure Centre.
- 4.2.3 As summarised in the Transport Assessment, trips to the great majority of local facilities and amenities set out above, could reasonably be expected to be undertaken on foot or by bicycle, except where car use is an obvious prerequisite or indeed the reason for the trip.

Proposed Facilities and Services

- 4.2.4 The design will aim to create an engaging and vibrant environment with a primary school and other facilities and amenities that bring cohesion to the community. By incorporating these uses on Site, off-site travel will be reduced.

4.3 Transport Proposals

- 4.3.1 The Proposed Development will be accompanied by a set of transport measures and mitigation schemes aimed at promoting sustainable travel patterns from the Proposed Development and addressing any impacts associated with it.
- 4.3.2 The sustainable transport strategy for the Site is set out within the TA and includes:
- A Framework Travel Plan (FTP) - an FTP for the Site has been developed to discourage single occupancy car use and facilitate the use of alternative modes of transport. The FTP should be read in parallel to this Transport Assessment;
 - A Sustainable Travel Corridor will be provided to facilitate walk, cycle and bus travel to and from the proposed development. The Corridor comprises a bus only carriageway which is 6.5 m in width;
 - Two walking and cycling, and public transport strategies have been developed, to demonstrate that the proposed development can be delivered with sustainable travel connections, with and without reliance on the Alexandra Way bus link connection;
 - Cycle Parking will be provided in accordance with SGC's cycle parking standards as set out in PSP16 of SGC Local Plan: Policies, Site and Places Plan (November 2017);
 - A bus contribution will be provided to extend the existing T1, or whichever bus service will serve the Park Farm development in accordance with its Section 106 agreement;
 - In line with SGC's Local Plan Policy PSP11 new bus stops will be provided, within 400m of each part of the development, to meet the Council's adopted Bus Shelter Design and Procurement Process document;
 - A contribution could also be provided for better waiting facilities for bus passengers in the centre of Town;
 - It is proposed that the development introduce a section of restricted road with a 40mph speed limit approximately 200 m west of the proposed western site access on Oldbury Lane;
 - In addition, to the Sustainable Travel Corridor, two vehicle accesses will be provided on Oldbury Lane, in the form of priority T-junctions;
 - It is proposed that the Butt Lane / Morton Way / Gloucester Road staggered junction be signalised to improve operation in future years and provide safety benefits for pedestrians via the provision of formal signalised crossings across Gloucester Road and Butt Lane;
 - Vehicular parking will be provided in accordance with the local authority's car parking standards as set out in PSP16 of SGC's Local Plan: Policies, Sites and Places Plan (November 2017); and
 - **A reasonable financial contribution towards the delivery of improved cycle parking facilities in the town centre.**

4.3.3 The sustainable transport strategy for the Site demonstrates the developer's commitment to the principles of sustainable development. The proposed localised improvements to transport infrastructure and the provision of a Framework Travel Plan serves to promote sustainable travel behaviour.

4.4 Summary

4.4.1 The Proposed Development aims to encourage the use of more sustainable modes of transport by integrating with, and enhancing, existing routes to improve the accessibility of the surrounding area for existing local residents and future Site users.

4.4.2 The sustainable transport strategy for the Site demonstrates the developer's commitment to the principles of sustainable development. The proposed localised improvements to transport infrastructure and the provision of a Framework Travel Plan serves to promote sustainable travel behaviour.

5 Landscape and the Natural Environment

5.1 Introduction

- 5.1.1 This section reviews the landscape and ecological context of the Site and discusses how the Proposed Development protects and reduces potential impacts on the existing landscape and provides opportunities for wildlife.
- 5.1.2 An ecological assessment was undertaken for the Proposed Development and this section draws on the outputs including the Ecology ES Chapter (Chapter 13). In addition, a Landscape and Visual Impact Assessment (LVIA) has been undertaken and is referenced below (ES Chapter 14).

5.2 Landscape

- 5.2.1 A LVIA has been undertaken to assess the Proposed Development in relation to the effects it would have upon landscape elements, character, views and visual amenity.

Existing Landscape Context

- 5.2.2 The settlement of Thornbury sits within a 'bowl' landform, defined by the Severn Ridge. The Site is located within the low-lying land of the bowl, and is relatively level, lying at approximately 10 m AOD in the west, and sloping gently eastwards to around 15 m AOD by the eastern boundary. Key existing landscape features are highlighted in **Figure 5.1** below.

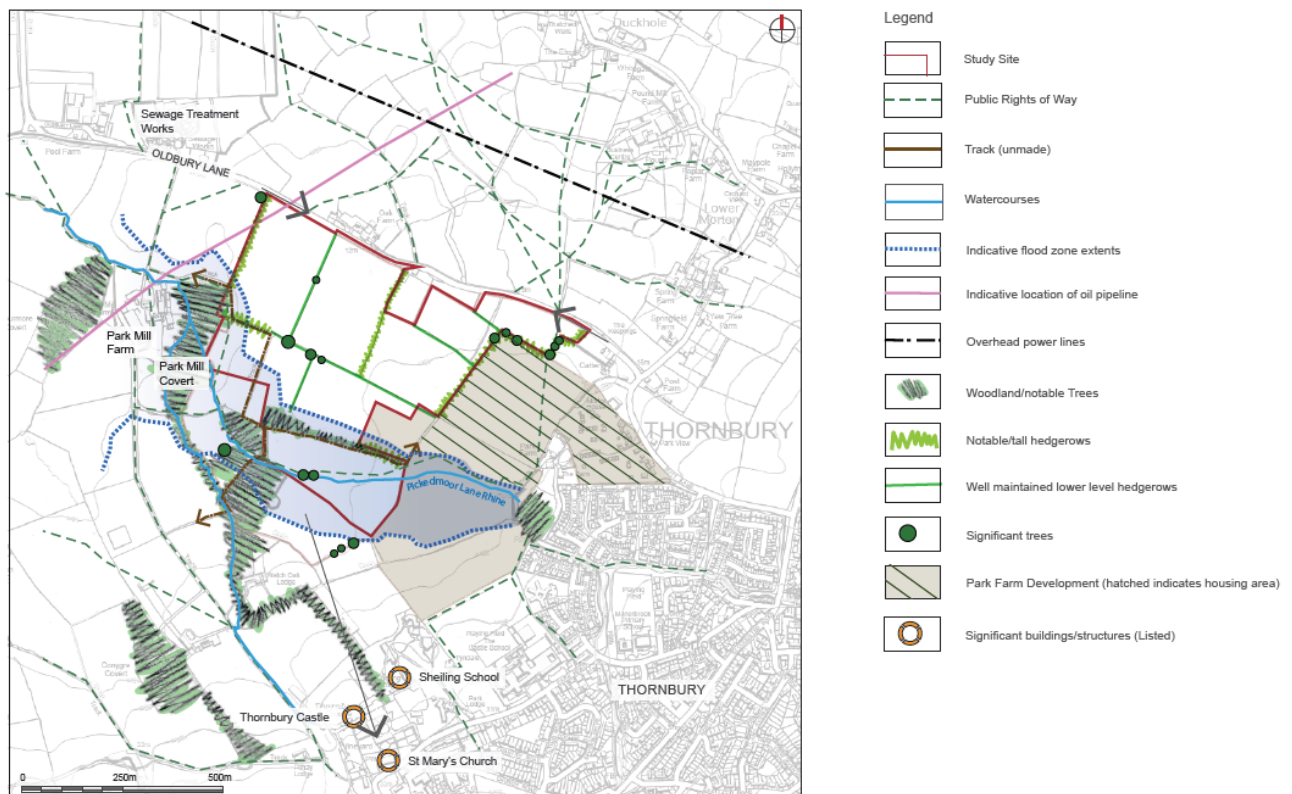


Figure 5.1: Existing Site Conditions – Landscape Plan Extract

- 5.2.3 The eastern parts of the Site have a distinct urban fringe character as a result of the prominence of the recently constructed Park Farm housing. This urban context diminishes as one travels west and the field boundaries reduce intervisibility with the urban edge. In the western part of the Site, character is defined by small to medium sized irregular fields with some mature hedgerow trees and small woodland copses. There are views of rooftops and the adjacent Park Farm housing development, which act as a clear reminder of the Site's proximity to the town. Throughout and around the Site, the presence of numerous small watercourses and ditches provide a distinctive character. The central watercourse (Pickedmoor Lane Rhine) is markedly open in character with little vegetation along its course through the Site, apart from a few small willows on its banks.
- 5.2.4 Beyond the Site, to the north and west, there is a change of character as the landscape becomes more open with views out towards higher land. To the east lies the suburban character of Thornbury's north-western edge and to the south, the grounds of the schools and castle retain remnants of a parkland character alongside some more modern features of the settlement edge.

Proposed Development Landscape Design Principles

- 5.2.5 The targeted retention and enhancement of existing landscape features and the provision of significant open spaces has underpinned much of the emerging masterplan. Design principles associated with celebrating landscape include:
- Permeable green links will form structuring elements which help create an attractive and legible environment;
 - Introduction of new green spaces bring amenity for the enjoyment of the new and existing communities;
 - Natural open space with managed habitat will provide a green setting for development with enhanced biodiversity value; and
 - Opportunities to retain distant glimpses of St. Mary's Church.

Operational Lighting

- 5.2.6 Operational lighting will be provided at the Proposed Development to promote a safe and secure site. Detailed information on the operational lighting will be provided at reserved matters, but lighting will be required for the residential, district centre, local centre and employment zones. Providing this lighting, as recommended in Institute of Lighting Professionals (ILP) guidance, will act as a measure to reduce crime within the development, and promote a safe and secure site.

5.3 Ecology

Existing Ecological Context

- 5.3.1 An assessment of the likely significant effects of the Proposed Development in respect of biodiversity has been undertaken and is presented in Chapter 12 of the ES.
- 5.3.2 Biodiversity information was requested for a study area of 2 km radius around the Site boundary and a review of ecological information was undertaken as part of baseline data collection. An Extended Phase 1 Habitat Survey of the Survey Area was undertaken on 12 April 2016 and updated on 6 March 2018. The Data searches and Extended Phase 1 Surveys identified the potential for protected and notable species within the survey area. Further (Phase 2) surveys were therefore undertaken to determine if such species were present, **including further Amphibian, Bat and Badger surveys in the summer of 2019.**

5.3.3 Further details of the surveys are included in the Ecology ES Chapter. The existing site environment is summarised below:

- **Designated sites:** There are no designated sites within the Site boundary. The closest designated site is the Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar site, which lies 2.8 km to the west of the Site boundary and is designated for its estuarine habitats, wintering bird and migratory fish populations. Eleven non-statutory sites of nature conservation value lie within 2 km of the Site including Park Mill Covert Site of Nature Conservation Interest (SNCI), which lies immediately adjacent to the western boundary of the Site;
- **Habitats:** Agricultural habitats including improved grassland surrounded by species-poor hedgerows form the majority of the Site. Other habitats include semi-natural and plantation woodland, broadleaved trees, running water, dry and wet ditches and standing water; and
- **Species:** a small population of great crested newt (GCN) were recorded in **two ponds over the course of the surveys. In 2018, GCN were confirmed** approximately 110 m east of the Site. **In 2019, a single male GNC was recorded in a pond 150 m west of the Site on a single occasion.** Common frog and palmate newt were recorded within the Site. A 'low' population of slow-worm, which is legally protected and Priority Species, occurred within the Site. A total of 35 species of birds was also recorded; breeding 'Species of Conservation Concern' and Priority Species included dunnock, song thrush and stock dove. No bat roosts were identified within the Site. At least 10 species of bat were recorded foraging and navigating within the Site. A number of badger setts were recorded across the Site, including 2 'Main' setts. Evidence of otter activity was recorded along Pickedmoor Brook. No dormice, water vole or white clawed crayfish were recorded.

Proposed Development Biodiversity Measures

5.3.4 Measures to mitigate adverse site impacts and provide biodiversity enhancement would be implemented through the Landscape Strategy and include the following:

- Retention and buffering of non-statutory designated sites and other Priority and South Gloucestershire BAP Habitats, including watercourses and semi-natural broadleaved woodland to prevent construction and operational damage and disturbance;
- Buffering of retained hedgerows from residential plots by public realm to ensure that no hedgerows would form boundaries to residential plots;
- Protection and creation of resilient wildlife corridors across the Site to maintain connectivity of habitats around and through the Site;
- Translocation of the **approximately 0.78 km** of species rich hedgerow to minimise habitat loss and establish alternative connectivity of habitats around the Site;
- Design of a Sustainable Urban Drainage System (SUDS) to include permanent waterbodies and associated wetland habitats of biodiversity value;
- Extensive habitat creation with the public open space including broadleaved woodland, meadow grassland, ponds and hedgerows to compensate for habitat loss and provide habitat for a range of species;
- Provision of a range of boxes for bat, birds and invertebrates;
- Highway and public open space lighting specifications to maintain continuous dark corridors within the green infrastructure; and

- Provision of accessible and attractive multifunctional public open space to provide recreational opportunities for local residents and dog walking opportunities within the Site.

5.4 Summary

- 5.4.1 The Proposed Development respects the surrounding landscape through a landscape strategy which incorporates retained and new landscape enhancements such as new open green spaces and retained views.
- 5.4.2 The Landscape Strategy includes measures to mitigate adverse site impacts and provide biodiversity enhancement through measures such as retention and buffering of ecological features of value, and extensive habitat creation including broadleaved woodland, meadow grassland, ponds and hedgerows.

6 Flood Risk and Climate Change

6.1 Introduction

- 6.1.1 A Flood Risk Assessment (FRA) and Drainage Strategy (PBA, 2019), has been prepared to support the outline planning application. The site-specific FRA considers flood risk from all sources, including an allowance for climate change. This section discusses how the Proposed Development is designed to reduce susceptibility to flood risk and provide climate change adaptation and mitigation functions.

Flood Risk

- 6.1.2 The Flood Map for Planning shows that the majority of the Site lies within Flood Zone 1 'Low Probability' within small areas falling within Flood Zone 3 'High Probability' and Flood Zone 2 'Medium Probability' (as defined in the NPPF Planning Practice Guidance (PPG) 'Flood Risk and Coastal Change' Table 1). The areas shown to be at risk of flooding are associated with the Pickedmoor Brook which flows east to west in the southern part of the Site.
- 6.1.3 The proposals are for all built development to be located within Flood Zone 1. This approach is in accordance with the sequential approach advocated by the NPPF. The PPG states that all forms of development are permitted in Flood Zone 1 and therefore there is no need to apply the Sequential or Exception Tests.
- 6.1.4 To robustly mitigate against the potential impact of climate change on both tidal and fluvial flood risk, it is recommended that finished floor levels be set to 11.0 m AOD or 600 mm above the ground level at the edge of Flood Zone 2 adjacent to the development parcel, whichever is highest.
- 6.1.5 No other forms of flooding are considered to present a significant risk of flooding to the Site. No records of flooding of the Site have been provided by the EA or the Lead Local Flood Authority (LLFA). No reservoirs or canals have been identified that could breach and affect the Site.
- 6.1.6 Access and egress to and from the Site during the design (1 in 100 year plus climate change) flood event will not be precluded or impinged.

Surface Water Drainage

- 6.1.7 The Drainage Strategy has been developed using best practice Sustainable Drainage System (SuDS) techniques. Guidance on suitable techniques and methods has been obtained from the Non-Statutory Technical Standards for SuDS, the South Gloucestershire Council's Strategic Flood Risk Assessment and Developers and Designers Guide, 'The SuDS Manual' (CIRIA C753), **Design and Construction Guidance (Water UK, 2019)**, amongst other sources.
- 6.1.8 The Proposed Development will limit surface water discharge rates to match the existing present-day greenfield runoff rate for the QBAR event in accordance with the request of South Gloucestershire County (SGC). This will provide a significant reduction in the rate of runoff during extreme rainfall events.
- 6.1.9 Open attenuation basins will attenuate surface water runoff for all events up to the 1 in 100 year storm event plus an additional 40% allowance for climate change. At detailed design stage it will be necessary to take account of the requirement to manage exceedance events when designing plot levels and road alignments.

- 6.1.10 The design of attenuation basins will be refined at the detailed design stage. It is recommended that the attenuation basins have varying side slopes to allow the features to be multi-functional and integrate with the proposed landscape and ecology requirements for the Site.

6.2 Climate Change Adaptation

- 6.2.1 The Proposed Development should incorporate design features that plan for and adapt to anticipated levels of climate change. This will include consideration of the climate within the landscaping strategy, and building design.

Biodiversity and Landscaping

- 6.2.2 The Proposed Development will incorporate a number of green open spaces which can provide evaporative cooling at night to help reduce the 'heat island effect', the effect whereby built up urban areas become hotter than the surrounding rural area.
- 6.2.3 The landscaping strategy will focus on using plant species that are suitable for the Site and that rely on seasonal precipitation rather than irrigation and supplemental watering (xeriscaping). This will include, where necessary, drought resilient plants and grasses. This will reduce the need for water consumption associated with landscaping.
- 6.2.4 Garden landscape planting will focus on species requiring reduced irrigation.

Buildings Prepared for the Impacts of Climate Change

- 6.2.5 At the detailed design stage, aspects will be considered in order to design resilient buildings prepared for the impacts of climate change. The following design principals will be considered²:
- **Building design and energy strategy:** passive and active design measures to avoid overheating in buildings including high levels of internal thermal mass, controlled secure ventilation and high levels of insulation to minimise heat gains through building fabric;
 - **Structural stability above and below ground:** frame and foundation design should take a long term view and consider risks such as increased shrinkage of clay soils due to changing rainfall patterns and the risk of wind damage;
 - **Weatherproofing, detailing and materials:** buildings may be subject to increased exposure due to driving rain and therefore detailing of weatherproofing and fixing may need to adapt. Material selection should also consider higher temperatures and increased UV radiation; and
 - **Water conservation:** water stress may increase in summer months with the requirement for increased water conservation and the incorporation of water demand reduction measures.

² http://www.arcc-network.org.uk/wp-content/D4FC/01_Design-for-Future-Climate-Bill-Gething-report.pdf

6.3 Summary

- 6.3.1 The flood risk strategy will mitigate the risk of flooding ensure that the Proposed Development is safe; it does not increase flood risk and does not detrimentally affect third parties. The landscaping strategy will consider potential impacts of climate change and will incorporate species that rely on seasonal precipitation. At the detailed design stage, further measures will be implemented to ensure that proposed buildings are prepared for the impacts of climate change.

7 Energy

7.1 Introduction

7.1.1 An Energy Statement has been prepared to support the planning application, and outlines how the Proposed Development will be designed to comply with national and local policies related to energy use and efficiency, and CO₂ emissions.

7.1.2 Based on the existing local and national policies in place, the key energy target for West of Park Farm, Thornbury is to:

- Reduce CO₂ emissions further by at least 20% via the use of renewable and/or low carbon energy generation sources on or near the Site providing this is practical and viable (**Policy PSP6**).

7.1.3 This section summarises how energy efficient buildings will be delivered, demand will be reduced, and renewable energy technologies can be incorporated.

7.2 Energy Hierarchy

7.2.1 The Proposed Development will adopt the nationally and locally recognised energy hierarchy, presented in **Figure 7.1**. This places emphasis on reducing energy demands in the first instance, using energy efficiently and, only then, providing renewable and low carbon energy generation technologies where it is appropriate to do so.

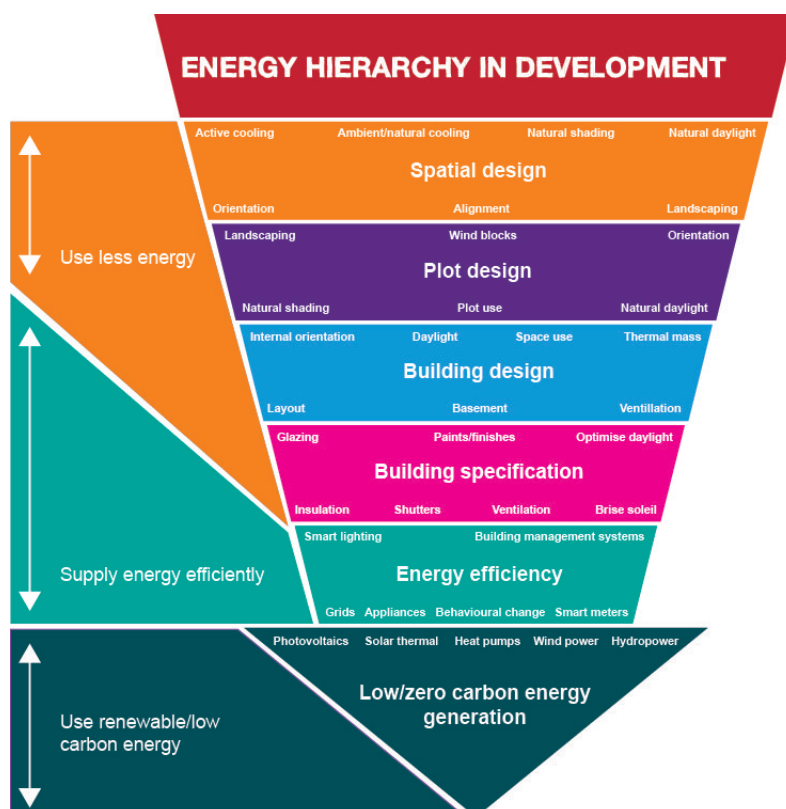


Figure 7.1 Energy Hierarchy

7.3 Energy Efficient Development

- 7.3.1 This section masterplan design principles and 'passive' and 'active' design measures which can be included within the scheme to reduce the energy demand of the Proposed Development to help achieve the highest practical standards of sustainable design.
- 7.3.2 '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.

Masterplan Design Principles

- 7.3.3 The Proposed Development will benefit from masterplan principles to optimise energy demand. Passive solar gain can be optimised in many ways through design considerations, as illustrated in **Figure 7.2**.

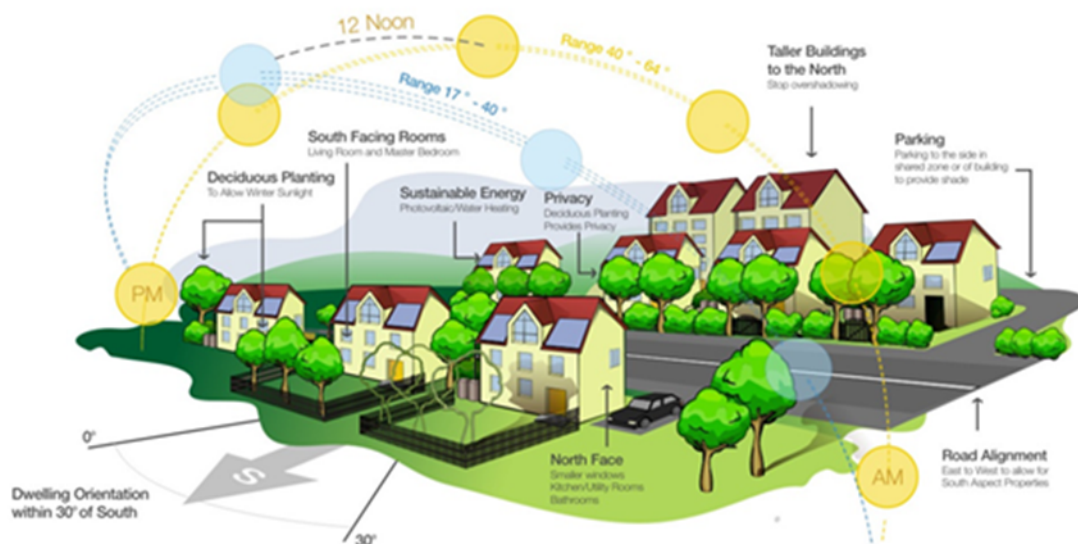


Figure 7.2 Masterplan Design Principles to Reduce Energy Demands

- 7.3.4 As mentioned in **Section 6**, the Proposed Development will incorporate a range of green open spaces which can provide evaporative cooling at night to help reduce the 'heat island effect'. The high permeability of green spaces throughout the development, as well as the selection of plot layout and building location, can also help to facilitate air movement and enhance natural ventilation.
- 7.3.5 As the detail regarding the internal layouts of the majority of the Proposed 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 or communal spaces in those areas with small north facing windows.

Passive Measures

7.3.6 The following passive design measures could be incorporated into design of the Proposed Development, where appropriate:

- Incorporating building materials with high (and, where appropriate, exposed) thermal mass to help keep internal temperatures stable;
- Optimising glazed areas to take advantage of natural daylight and passive solar gains, whilst managing overheating;
- Installing windows on two or more aspects (preferably opposite each other) to allow the through-flow of air and provide effective cross ventilation within a dwelling; and
- Providing passive shading to avoid overheating (e.g. strategic planting of trees).

Active Measures

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

- Selection of energy efficient equipment and white goods;
- Low energy lighting and use of efficiency systems (e.g. daylight cut-off and Passive Infra-Red, PIR, lights);
- Use of energy display devices to encourage behavioural change;
- Time and thermostat control of hot water; and
- Controls to optimise and compensate for heat variations.

7.3.8 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. Further details of passive and active measures are provided in the associated Outline Energy Statement.

7.4 On-Site Renewable Energy Generation

7.4.1 The Outline Energy Statement has undertaken a review of renewable and low carbon technologies to identify those which are most suitable for the Proposed Development.

7.4.2 Based upon the current masterplan, the most suitable technologies are considered to be photovoltaic solar panels (PV), solar water heating systems and air source heat pumps.

7.4.3 The suitability of renewable and low carbon technologies will continue to be reviewed as the design process progresses.

7.5 Summary

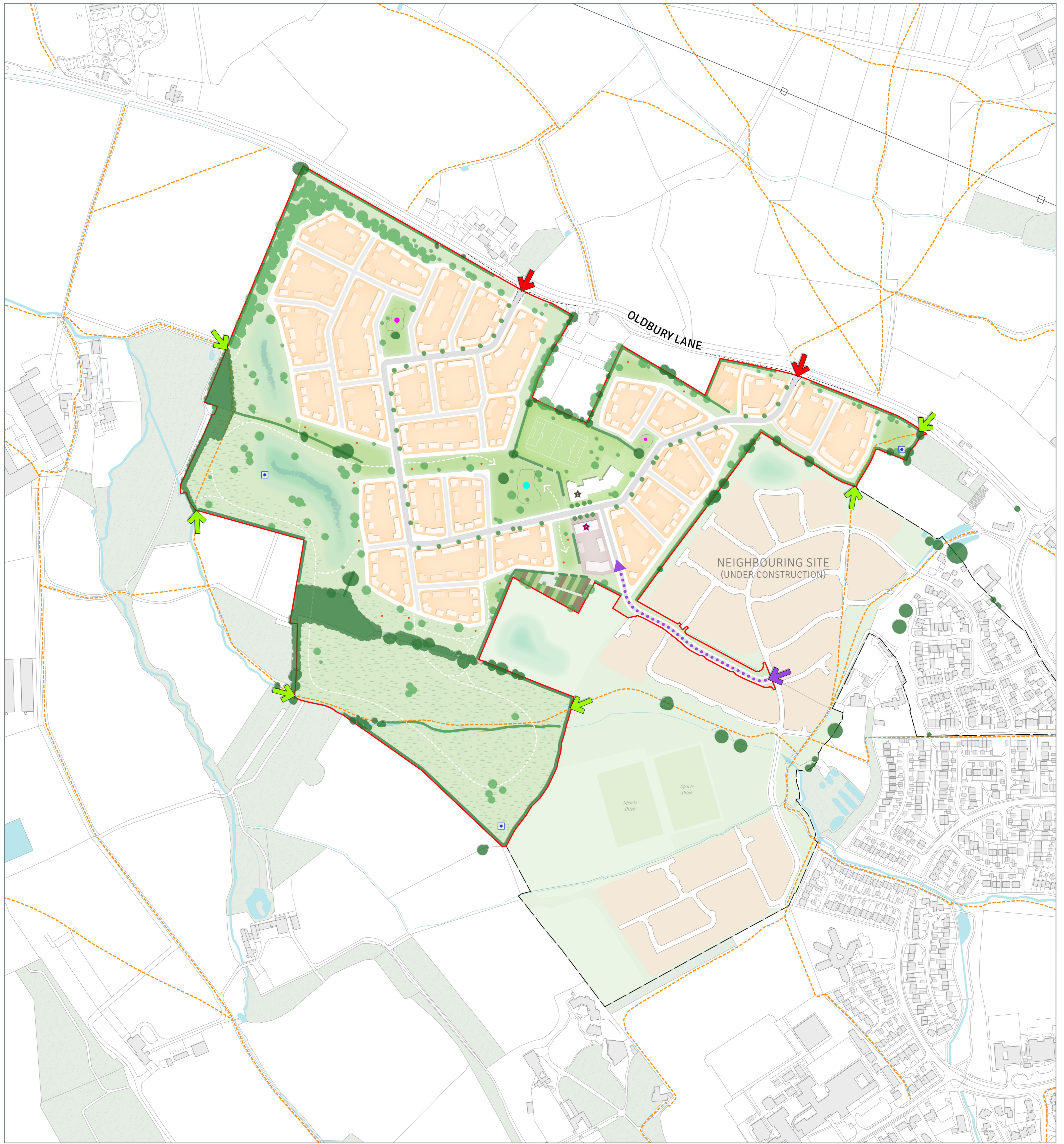
7.5.1 The Proposed Development will aim to meet national and local requirements to reduce CO₂ emissions, enhancing energy efficiency and provision of renewable energy including those presented in Part L of the Building Regulations, and SGC local planning policy.

7.5.2 Several renewable and low carbon technologies have been identified as being suitable for the Site, and will continue to be reviewed as the design process progresses. Further details of the energy strategy will be provided with the subsequent reserved matters applications.

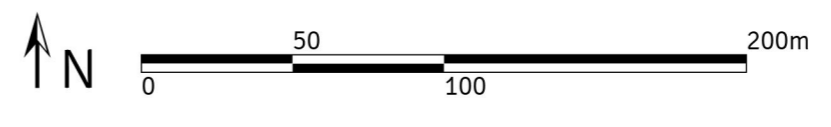
8 Summary & Conclusions

- 8.1.1 Barwood Development Securities Ltd & North West Thornbury Landowner Consortium (the Developer) are submitting an outline planning application for a residential development on Land West of Park Farm, Thornbury, South Gloucestershire. The development will comprise up to **595** dwellings, **land for a primary school** and community hub on approximately 36 ha of land to the north west of Thornbury.
- 8.1.2 This Sustainability Statement demonstrates that the Proposed Development meets a range of local sustainability objectives, as defined by SGC's Core Strategy. The Proposed Development will be characterised by the following design features and objectives:
- Deliver a high-quality community through providing amenities, open space and designing a safe and secure development that reduces the risk of crime;
 - Promote sustainable travel modes (including walking, cycling and public transport) as an alternative to private car use and encourages by providing routes which are safe and accessible, and secure cycle storage facilities in line with local guidance;
 - Maintain the landscape and cultural setting of the area by mitigating and enhancing the existing character of the Proposed Development;
 - Retain, enhance and create new habitats to preserve the ecological setting of the Site, through a number of measures including water attenuation, native tree planting and wild flower areas;
 - Manage flood risk by incorporating SuDS to help manage surface water and identifying design features which may be included to increase the resilience of the Proposed Development to impacts from flooding;
 - Optimise energy demand where possible, through using the nationally recognised energy hierarchy principles, and through masterplan design principles for both the outline and detailed elements of the Proposed Development such as orientation of buildings and incorporation of open spaces; and
 - Provide a proportion of the Proposed 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.

Appendix A Site Location Plan and Masterplan



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Scale for planning purposes only
 Rev A (23.08.18) - Update to site boundary (GR)
 Rev B (06.09.18) - Plan amended to reflect updated tree survey (GR)
 Rev C (16.09.18) - Sustainable Transport Connection added (GR)
 Rev D (30.10.18) - Layout adjusted (GR)
 Rev E (01.11.18) - Proposed hedgerow adjusted (GR)
 Rev F (07.11.18) - Proposed hedgerow adjusted (GR)
 Rev G (08.11.18) - Illustrative tree planting updated (GR)
 Rev H (21.10.19) - School added, layout revised (GR)
 Rev I (22.11.19) - Indicative built form updated (GR)
 Rev J (25.11.19) - Hedge added along site boundary (GR)
 Rev K (05.12.19) - Additional wildlife pond (AT)
 Rev L (19.12.19) - Minor change to hedgerows (GR)

- | | |
|---|---|
| Site Boundary | Existing Trees |
| Residential | Proposed Trees |
| Mixed-Use | Hedgerows |
| Public Open Space | Destination Park |
| 1FE School | Neighbourhood Greens |
| Drainage | Opportunities for Natural Play |
| Natural / Semi-Natural Open Space | PROW |
| Primary Vehicle Access Point | Allotments |
| Retained Pedestrian Access (PROW) | Potential Wildlife Pond Location |
| Pedestrian, Cycle and Bus Access Point (Sustainable Transport Link) | School Building |
| Sustainable Transport Connection | Indicative Location of Retail / Community Hub |

PROJECT
NW Thornbury

DRAWING TITLE
Illustrative Masterplan

DATE
15.08.18

SCALE
**1:2500@A1
 1:5000@A3**

DRAWN BY
GR

CHECK BY
AJT

PROJECT NO
27982

DRAWING NO
9410

REVISION
L

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 Landscape Planning & Design • Environmental Planning • Graphic
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