Sustainability Statement

Land to the North of Gavray Drive, Bicester

June 2021

Turley Sustainability

Contents

Client

L&Q Estates, Charles Brown & Simon Digby, London & Metropolitan International Developments

Turley Reference

DAVZ3003

Document Status

Final

Date

June 2021

1. Introduction

This Sustainability Statement has been prepared to demonstrate the sustainability credentials of the development proposals for the Land North of Gavray Drive, Bicester.

This Sustainability Statement has been prepared by Turley Sustainability, on behalf of L&Q Estates, Charles Brown & Simon Digby, London & Metropolitan International Developments (the applicants), to support the outline planning application for the Land North of Gavray Drive, Bicester.

It provides a summary of the sustainable design measures incorporated in to the proposals to ensure suitable levels of sustainability performance in accordance with local and national planning policy.

Site Context

The development is proposed on an allocated site within the Cherwell District Council Local Plan Part 1 covering an area of approximately 22.71ha. The site is accessed off Gavray Drive.

The site is located in the eastern edge of Bicester, bounded by Gavray Drive to the south and the residential area of Langford Village, the Birmingham to Marylebone railway to the north, the Oxford to Bletchley railway to the west and Bicester's eastern bypass to the east. North of the site is Bicester Distribution Park and Bicester town centre is approximately 1.3km to the west. Bicester is located 24km (15 miles) to the northwest of Oxford and 30km (19 miles) southwest of Milton Keynes.

A range of facilities associated with Langford south of the site includes schools, restaurants, shops and a doctors. Furthermore, Bicester town centre has a range of facilities including Bicester Village shopping centre, SWB Motorsport experience, Bicester Heritage and Bicester Hotel and Spa. Bicester is served by two railway stations, Bicester North and Bicester Village, and there is a vast Public Rights of Way (PRoW) network connecting Bicester with the wider district including Launton village and Graven Hill.

The current site is comprised of two arable field parcels to the west and several parcels of semi improved neutral grassland with areas of dense scrub and broadleaved semi natural woodland and several ponds to the east. The site is bisected by Langford Brook. The Gavray Meadows Local Wildlife Site (LWS) is present within the development site.

Proposed Development

The development description is as follows:

"Residential development for up to 250 dwellings including affordable housing and ancillary uses including retained Local Wildlife Site, public open space, play areas, localised land remodelling, compensatory flood storage, structural planting and access."

The indicative development masterplan is shown in **Figure 1.**

The following chapters set out the local and national sustainability objectives, followed by a review of the measures incorporated into the detailed design of the development and of new homes, to demonstrate the social, economic and environmental benefits of the development.

Please note, the terms "carbon", carbon dioxide (CO_2)" and "greenhouse gas (GHG)" are used

interchangeably in this statement depending on the terminology of referenced documents.

Figure 1 – Proposed Development Masterplan

2. Policy Context

This chapter provides an overview of the relevant sustainability planning policy and guidance from a national and local perspective.

National Policy

This section sets out a summary of current national guidance and policy in relation to sustainable development.

National Planning Policy Framework

Most recently updated in February 2019 the National Planning Policy Framework (NPPF) provides a framework for the development of locally-prepared plans and the government's planning policies for England and how these are expected to be applied.

Paragraph 7 of the NPPF states that: 'the purpose of the planning system is to contribute to the achievement of sustainable development'.

It states clearly that in order to deliver sustainable development, the planning system must perform three distinct objectives, aligned to the three pillars of sustainability, which must not be taken in isolation and should be pursued jointly:

An **economic** objective to 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, innovation and improved productivity; and by identifying and coordinating the provision of infrastructure.

A **social** objective 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 support its health, social and cultural well-being; and

An **environmental** objective 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 to a low carbon economy.

These objectives are key to the development of plans and the NPPF sets out a number of key themes for consideration which guide the preparation of local plans and policies, ensuring the delivery of sustainable development.

Planning Practice Guidance

Planning Practice Guidance (PPG) provides further advice on various planning issues associated with development, including those linked to sustainability and renewable energy and underpins the policies within the NPPF.

PPG is a material consideration in planning decisions and should generally be followed unless there are clear reasons not to. It sets out how local authorities should include polices that protect the local environment and strategies to mitigate and adapt to climate change and supports developments that are functional and adaptable for the future.

The March 2019 PPG update confirms that Local Authorities have the option to set technical requirements exceeding the minimum requirements of the Building Regulations in respect of access, water and space where sufficient evidence is produced to justify the target.

National Design Guide

The National Design Guide published in October 2019 and is based on the national planning policy practice guidance and objective for good design as set out in the NPPF. The Guide introduces ten characteristics of well-designed places which work together to create developments Character and Community, while positively addressing environmental issues affecting climate.

Building Regulations

Whilst not planning policy, in April 2014 the Part L regulations changed and it is currently a requirement of the current 2013 Regulations for new homes to deliver a 6% reduction in carbon emissions compared to 2010 Part L. This change aimed to strike a balance between the commitments to reducing carbon emissions and improving energy efficiency and ensuring that the overall effect of regulation upon consumers and businesses does not stifle growth.

The October 2019 Future Homes Standard (FHS) consultation concluded a 2021 interim uplift of 31% CO_2 improvement compared to 2013 Building Regulations standards ahead of the 2025 implementation of the FHS which will require all new homes to reduce CO_2 emissions by 75% lower than current standards. All homes should be 'zero carbon ready'; adaptable and fit for the future.

Local Authority retain powers to set local energy efficiency standards for new homes.

Local Policy

Climate Emergency and Climate Action Framework

Cherwell District Council declared a climate emergency in 2019, with the aim of direct Council operations becoming carbon neutral by 2030. The associated 2020 Climate Action Framework sets out how the Council will achieve this and also acknowledges its influence through the local planning role to enable a zero carbon Cherwell. The Council will promote net zero carbon new developments with highest energy standards and high fabric efficiency, maximised on-site renewables and low embodied carbon.

Cherwell District Council Local Plan Part 1 2011 – 2031

Adopted in 2015, Part 1 of the Cherwell Local Plan contains strategic policies to help ensure sustainable development and to build sustainable communities. The key sustainability policies of the plan include:

Policy BSC3 Affordable Housing – New development of 11 dwellings or more in Bicester will be expected to provide at least 30% of new housing as affordable homes.

Policy BSC12 Recreation and Community Facilities – Development proposals contribute towards the provision of new or improved facilities where the development would generate the need for sport, recreation and community facilities which cannot be met by existing provision.

Policy ESD1 Mitigating and adapting to climate change – Development should seek to reduce the need to travel and encourage sustainable travel options, reduce carbon emissions and use resources more efficiently, promote the use of decentralised and renewable or low carbon energy where appropriate. The development should also incorporate adaptation measures to ensure it is resilient to climate change, this can include:

- Passive solar design for heating and cooling.

- Minimising the risk of flooding and making use of sustainable drainage.
- Reducing the effects on the microclimate through e.g. green infrastructure.

Policy ESD2 Energy hierarchy and allowable solutions – Development should promote the energy hierarchy to reduce energy use through sustainable design and construction measures, supplying energy efficiently, giving priority to decentralised energy and making use of renewable energy.

Policy ESD3 Sustainable Construction – All new residential development will be expected to incorporate sustainable design and construction technology to achieve net zero carbon development through a combination of fabric energy efficiency, carbon compliance and allowable solutions. Residential development should also achieve 110 l/p/d water efficiency. Development should demonstrate high quality design and sustainable construction methods including:

- Minimising energy demand and energy loss;
- Maximise passive solar lighting and natural ventilation;
- Maximise resource efficiency;
- Incorporating the use of recycled and energy efficient materials;
- Use of locally sourced building materials;
- Reducing waste and pollution;
- Making adequate provision for the recycling of water;
- Sustainable drainage methods;
- Reduce the impact on the external environment;
- Maximise opportunities for cooling and shading;
- Making use of the embodied energy within buildings; and,
- Reuse materials where proposals involve demolition.

Non-residential development should achieve a BREEAM 'Very Good' rating.

Policy ESD4 Decentralised energy systems – Decentralised energy systems are encouraged for new development. A feasibility assessment is required for residential development for 100 dwellings or more.

Policy ESD7 Sustainable urban drainage systems (SuDS) – All development will be required to use SuDS for management of surface water run-off where applicable.

Policy ESD10 Protection and enhancement of biodiversity and the natural environment – A net gain in biodiversity will be sought by protecting, management, enhancing and extending of existing resources and by creating new resources. This includes a monitoring and management plan to ensure their long term management.

Policy ESD11 Conservation target areas – Where development is proposed within or adjacent to a Conservation Target Area, biodiversity surveys and a report will be required to identify constraints and opportunities for enhancement.

Policy ESD17 Green Infrastructure (GI) – Developments should ensure GI network considerations are integral to the planning of new developments. Proposals should maximise the opportunity to maintain and extend GI links. All strategic development sites will be required to incorporate GI.

Policy Bicester 13 Gavray Drive – Allocation of 23 hectares for housing site to the east of Bicester town centre for approximately 300 dwellings. The development should include greenspace, play space, Green Infrastructure links, footpaths and cycleways, allotments and sports provision and contribution towards educational and community facilities. Development much avoid adversely impacting the Conservation Target Area and protect the Local Wildlife Site. The development should also facilitate additional bus stops.

Cherwell Residential Design Guide Supplementary Planning Document (SPD)

New development in Cherwell should consider sustainability objectives at the masterplan, plot and building scale; incorporate innovation in a manner which reinforces the principles of good urban design; create robust places which can adapt to future changes in the way we live and use technology; create healthy buildings which provide a safe and comfortable environment for their inhabitants. Key considerations for sustainability in development include:

- Land-use mix – different size dwellings and tenures and non-residential uses to encourage social interaction and community cohesions, reduce need to travel for daily essentials, and consider modern methods of construction and sustainable energy strategies.
- Movement – connected and permeable street layout which encourages public transport, connection to wider movement network, cycle parking and electric vehicle infrastructure.
- Green Infrastructure – retain and incorporate existing GI, sustainable drainage.
- Microclimate – wind and sun. Design to include natural shading with cognisance of development orientation.

Planning Policy Summary

Both local and national policy aims to ensure the delivery of sustainable and well-designed homes and other buildings which mitigate and adapt to the impacts of climate change.

Latest national planning policy and guidance confirms the Government's approach to sustainable development is being driven through the updates to the Building Regulations to ensure that new buildings are well designed and reduce emissions in line with the UK's national carbon targets.

The Cherwell District Council Local Plan Part 1 confirms the Council's commitment to the creation of sustainable new developments. It requires development to consider a range of sustainable design measures, including green infrastructure, resource efficiency, SuDS, energy reduction and biodiversity net gain.

The following sections of this Sustainability Statement set out the sustain measures incorporated into the design of the development to ensure the delivery of a sustainable development and address the requirements of local policy.

3. Sustainability at the Land North of Gavray Drive

This section summarises the sustainability strategy for the proposed development at Land North of Gavray Drive, Bicester.

This section of the report outlines the sustainability strategy for the proposed development at Land North of Gavray Drive demonstrating how the development responds to both national and local planning policy, including the NPPF.

In this context the sustainable design measures incorporated into the development masterplan at the full application stage and measures to be considered during the detailed design are set out under the following headings which reflect the themes of the NPPF.

3.1 Building a Strong and Competitive Economy

3.2 Promoting Sustainable Transport

3.3 Delivering a Wide Choice of High Quality Homes

3.4 Requiring Good Design

3.5 Promoting Healthy Communities

3.6 Meeting the Challenge of Climate Change

3.7 Conserving and Enhancing the Natural Environment

3.8 Sustainable Waste Management

L&G Corporate Strategy 2021 - 2026

L&G Properties five year strategy for Governance and Assurance commits to a focus on Sustainability[1]. This includes the following aims:

- Mitigate climate change by reducing carbon emissions intensity, procuring purchased electricity from renewable sources, increasing operational efficiency rate of communal heating systems, developing a long-term decarbonisation plan for the existing portfolio and establishing a roadmap for improving new build efficiency to near net zero.
- Capturing all construction data for energy, water and waste to better manage construction impacts.
- Support sustainable placemaking by establishing environmental design guidelines to be applied for all new development.
- Establish an environmental, social and governance (ESG) framework to enable L&Q to meaningfully measure, monitor and improve their sustainability performance.

3.1 Building a Strong and Competitive Economy

The proposed development will contribute to positive economic growth for the Borough through construction and occupation, providing sustainable new homes and supporting the aims of the NPPF.

Construction - The economic benefits of construction are well known with considerable direct and indirect positive impacts resulting from new residential construction.

A study by the Confederation of British Industries (CBI) in February 2020[2] demonstrates that construction projects have a significant benefit on

[1] https://www.lqgroup.org.uk/-/media/files/corporate-pdfs/lq-future-shape--corporate-strategy-202126.pdf

[2] https://www.cbi.org.uk/media/4121/fine-margins-february-2020-cbi.pdf

the local and wider economy. The report concludes that for every £1 of construction expenditure £2.92 is injected into the economy.

The construction of up to 250 new homes will therefore provide opportunities for local employment as well as increased revenue locally for materials, services and goods.

Occupation – Further positive economic impacts of the proposed development resulting from the occupation of new homes and related increase in local population are noted as follows:

- The construction of up to 250 new homes will increase the population resulting in local benefits through the demand for goods and services.
- The increase in local population will also help support local facilities, groups and stores.
- In addition the development of new homes will provide an increase in Council Tax revenue helping support local Council services.

The site is located adjacent to further Strategic Housing and Employment Allocations (Policy Bicester 12 and 2) to the east and south of the site which provides future employment opportunities for the occupants of the development.

3.2 Promoting Sustainable Transport

A Transport Assessment has been prepared by Markides Associates, summarising existing conditions in the vicinity of the site, the accessibility of the site relative to local facilities and services and outlines the development proposal for the site.

This section of the report provides a summary of the sustainable access and transport measures available and incorporated into the development.

Walking/Cycling Services – The proposed development is located close to a network of existing Public Rights of Way (PRoW), including long distance routes. A footpath is proposed through the enhanced Local Wildlife Site present on the development site, and through the residential areas of the development, linking with existing PRoWs numbers 129/3/30 and 129/4/20.

Gavray Drive has a 3m wide shared use footway/cycleway on the southern side and 2m wide footway on the north. It forms part of the National Cycle Network (NCN) 51 between Oxford and Milton Keynes. There are several shared use pedestrian/cycle links from Gavray Drive connecting to Langford and open space beyond. A number of other villages are accessible within a 30 minute cycle ride.

To facilitate sustainable travel, the site will be designed to facilitate pedestrians and cyclists, including through provision of the following:

- The proposed layout of the site will be designed to provide a road network in which pedestrian and cyclist movements will be prioritised;
- Provision of cycle storage;
- Bicycle Users Group (BUG) could be implemented for less experienced cyclists to gain confidence in both commuting and recreational cycling; and,
- Possible cycle training or discounts with local retailers.

Bus Services – The development will be served by five regular bus services as detailed in **Table 1**. The nearest bus stop is approximately 1km from the site, equating to a 12 minute walk.

Table 1: Bus Routes and Services

Service	Destinations	Nearest Stop	Frequency
28	Bicester – Launton	1km (12 mins' walk) Granville Way	Mon – Sat Hourly
27	Bicester – Langford	1km (12 mins' walk) Bicester Village Station	8 services per day
29	Bicester – Bullingdon Prison	1km (12 mins' walk) Bicester Village Station	Mon – Sat Hourly

H5	Bicester - Headington	1km (12 mins' walk) Bicester Village Station	Mon – Sat Hourly
505	Bicester - Brackley	1km (12 mins' walk) Bicester Village Station	8 services per day

Recently there have been a reduction in the number of bus routes serving Bicester. There is an opportunity to provide an additional bus stop on Launton Road as part of the development which would provide access to bus services within 300m of the site. The proposal also allows for the introduction of the existing Taxibus to enter the site and serve residents.

Rail Services – Bicester has two railways stations, Bicester North and Bicester Village, located approximately 2km and 1.1km from the site, respectively. The stations provides frequent journeys into Birmingham, Stratford-upon-Avon, Banbury and London, which will provide opportunities for onward travel to destinations across the UK. Typically there are 2 trains per hour to London in peak hours from both stations with an average journey time of 1 hour. The station has cycle storage facilities for up to 60 bicycles.

Electric Vehicles – EV charging infrastructure will be provided and the scope of which will be determined during detailed design.

Local Services and Amenities – Facilities and services associated with Langford, 650m south of the site, including a primary school, shop, restaurant and doctors. This equates to an 8 minute walk or 2 minute cycle. Furthermore, the majority of facilities serving the site are located within Bicester's centre which include the retail centre, supermarket, secondary school, community college, hospital and cinema. These facilities can be accessed between a 15 to 30 minute walk, or 4 to 8 minute cycle from the site. The close proximity of the site to this range of facilities encourages sustainable travel modes which reduced the reliance on the private car.

The Travel Plan identifies a strategy for the site which includes marketing and promotion of sustainable travel information to new households with surveys to be undertaken to monitor against the modal shift targets.

More detailed information on transportation issues if contained in the Transport Assessment that accompanies the planning application.

3.3 Delivering a Wide Choice of High Quality Homes

Up to 250 residential dwellings will be provided as part of the development, with a mixture of types and sizes, including 30% affordable housing in line with Policy BSC3 of the Local Plan. The housing mix will be in line with Policy BSC4 and will be clarified during detailed design but it is intended to deliver a mix of 1-4 bedroom properties of largely 2 and 3 storey in height.

3.4 Requiring Good Design

The overarching vision for the development will be to deliver a high quality landscape-led scheme with generous public open spaces and areas of ecological enhancement.

The design of the development at Gavray Drive aims to respond to the site specific constraints and includes sustainable elements, to create a well-designed development. It will include:

- Soft and native landscaping with tree planting along primary routes;
- Front gardens and verdant green edge overlooking public spaces;
- Enhancement of Gavray Wildlife Meadows on site and the new wildflower meadows and SuDS features will create new habitats and create a sense of community covering 18ha of the site; and,
- Energy efficiency, water efficiency and renewable energy measures and targets as detailed in Section 3.6.

Further details on how the design of the development has evolved to incorporate a range of

good design measures are set out in the DAS which accompanies the application.

3.5 Promoting Healthy Communities

The design vision for the development includes promoting the health and wellbeing of the residents. Measures included in the design to achieve this include:

- Improved access to green spaces and the Gavray Wildlife Meadows will improve health and wellbeing for the residents;
- Promoting access to nature will encourage walking, cycling and other recreational activities;
- Retention and enhancement of the PRoW and further connectivity to the wider area footpath network;
- Access to numerous playgrounds dispersed across Langford, and Bicester Fields provides a large area of open green public space; and,
- The site will incorporate recreational facilities including accessible play areas within the development to benefit new and existing residents of Bicester.

In addition the design of new homes will consider measures to improve internal living environments to promote health and wellbeing including:

- Prioritisation of natural ventilation, contributing to good internal air quality;
- Noise mitigation strategy to ensure homes do not exceed noise criteria, including a standoff from railways lines and mitigation incorporated into the design of the homes;
- Homes which are adaptable for the future; and
- Utilisation of materials and services that have low emission rates and pollutants.

More information on how the development has incorporated healthy living opportunities is contained within the DAS which accompanies the outline planning application.

3.6 Meeting the Challenge of Climate Change

One of the main challenges facing the UK and new development is the need to mitigate and adapt to a changing climate. The Government is committed to tackling climate change and in 2019 set out an ambition to extend the UK Carbon reduction target to reduce carbon emissions by 100% by 2050.

Climate change will cause the UK to become warmer, winters will become wetter, and summers will become drier. Adapting to this changing climate will impact on the design, construction, location, cost and operation of all new buildings in the next few decades. One of the NPPF's core planning principles is to encourage development to consider climate change adaptation and mitigation during the planning process.

The Council's adopted Local Plan support the Government's objectives for sustainable development reducing energy use and carbon dioxide emissions, adapting to and mitigating the effects of climate change.

In this context the following sections outlines the key climate change mitigation and adaptation measures considered appropriate for this development based on the latest national guidance.

3.6.1 Mitigating Climate Change

Developing energy efficient, low carbon buildings is a key objective of national policy and anticipated changes to the Building Regulations support the reduction of energy demand though efficient building design to reduce carbon emissions.

In 2019 the Government published the Future Homes Standard consultation, the results were published in January 2021 and confirm that building standards from 2025 will require a 75% reduction in carbon emissions above the current Part L, with an interim 2021 target which requires homes to achieve a 31% carbon reduction beyond the current regulations.

The homes at the Land North of Gavray Drive will be designed in accordance with the Building Regulations, taking into account future changes as appropriate which include a requirement for homes from 2022 to achieve as a minimum a 31% reduction in carbon emissions beyond Part L of the 2013 Building Regulations.

The proposed dwellings will be developed in accordance with the energy hierarchy, as shown in **Figure 2,** which aims to reduce energy demand through passive design measures and a fabric first approach before utilising low carbon energy and the production of on-site renewable energy.

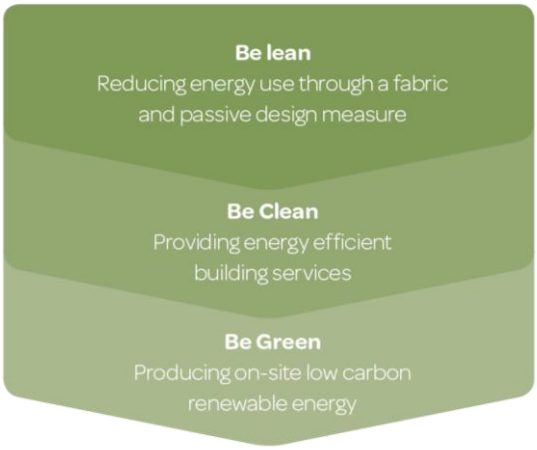

Figure 2: The Energy Hierarchy

The following sections set out the measures included to deliver an energy efficient, low carbon development.

Be Lean – Reducing Energy Use

Central to the delivery of low carbon and energy efficient buildings is the 'Fabric First' principle which recognises the most effective way of minimising carbon emissions is to reduce the demand for heat and power through a well-insulated, energy efficient building fabric and services.

Reducing the primary energy demand of a building through the use of an efficient fabric and services is widely regarded as best practice and is therefore the first and most important step to reducing carbon emissions.

This 'fabric first' approach has a number of distinct benefits including:

- Carbon savings delivered are 'locked-in' for the lifetime of the building (60 years or more) rather than the much shorter lifespan (around 25 years) of a renewable energy technology;
- Virtually no maintenance and/or replacement costs to maintain carbon reductions through improved fabric;
- No reliance on an occupier's behaviour to deliver carbon reductions. Achieving carbon savings from renewable energy technologies require education, awareness and often, behavioural changes from occupants.

Energy Efficiency Measures – The design of new buildings will aim to reduce thermal energy demand by targeting improved insulation levels and air leakage and fabric u-values where possible exceeding the current Building Regulations requirements. The proposed interim carbon reduction target to be introduced later this year includes a circa 25% improvement in baseline fabric u-values.

The following measures to reduce energy use and carbon emissions will be considered during the detailed design of individual buildings:

- Design to promote passive solar gains, maximise natural daylight, sunlight and ventilation through orientation of streets and buildings;
- Design which aims to optimise natural daylight;
- Buildings which target element u-values and air tightness in accordance with current Building Regulations requirements;
- Incorporating high efficiency lighting targeting 100% of all light fittings as low energy lighting;
- Use of high efficiency heating systems appropriate to the building use to reduce energy consumption; and
- Where appropriate, specification of high energy efficient equipment will be provided that use less energy and water.

Through these measures it is anticipated the development will reduce energy demand and carbon emissions beyond the requirements of the current Building Regulations and as necessary in line with the FHS.

The final design and specification of new buildings will be determined during the detailed design of the development.

Be Clean – Efficient Energy

The next stage of the Energy Hierarchy is the provision of energy efficiently, i.e. from a decentralised energy system such as a Heat Network.

District Heating Networks (DHN) comprise a centralised heat generator, typically a gas fired Combined Heat and Power (CHP) engine. CHP systems generate electricity and waste heat which can be fed into a network of insulated pipes which deliver low carbon heat to buildings to provide heating and hot water via individual heat transfer units.

DHNs are suited to development with high thermal demand, typically provided by sufficient density or a large anchor load, i.e. high density flats, leisure centres and industrial process.

The continued decarbonisation of the national electricity grid as supported by the draft SAP10.1 document published in October 2019 and to be incorporated into the update of the Building Regulations in 2021 is also reducing the carbon benefit of gas CHP systems.

While other technologies are available to generate heat as part of a heat network, including heat pumps and fuel cells these have higher running costs and do not benefit from the sale of energy generated through CHP systems which is sold back the grid. The use of alternative technologies could lead to significant costs for residents and therefore at this time it is not considered economically viable to make use of an electricity lead district heating system.

In this context given the type of development proposed it is considered that the installation of a heat network is unsuitable for this development because:

- There are no known nearby heat networks or potential anchor loads to support a network;
- The enhanced fabric performance of the development reduces the heat demand and limits the potential efficiency of a CHP system;
- The decarbonisation of the heat network reducing the potential carbon benefit of gas fired systems; and
- Increased residential costs for residents using alternative heat led networks.

Be Green – Low Carbon Renewable Energy

The final stage of the energy hierarchy is the generation of on-site low carbon renewable energy. The use of a fabric first approach to design and construction and provision of energy efficiency measures recognises that the most effective route to delivering long term energy and carbon reductions is through efficient building design.

This approach is reflected by government guidance that aims to improve developments energy use and carbon emissions through changes to the Building Regulations. The FHS changes are likely to require the use of low carbon renewable energy technology.

A review of potential low carbon renewable energy technologies which may be suitable for inclusion in building designs, taking into account changes to the Building Regulations have been completed below.

Solar Photovoltaics (PV)

Solar photovoltaic (PV) systems generate zero carbon electricity from sunlight and are well suited to dwellings with unobstructed south-east to south-west facing roof space. Excess power is exported to the grid or can be harnessed using battery storage. Maintenance requirements are typically minimal. The detailed design of the development will aim to ensure homes are

orientated towards the south to enable installation of Solar PV if specified.

Solar Thermal

Solar thermal systems generate zero carbon hot water from sunlight in a similar manner to Solar PV. They require insulated tanks to store the hot water and have greater maintenance demands than solar PV given the need to ensure anti-freeze in the pipework is topped up every few years. They can be a highly cost effective technology particularly where mains gas supplies are not available, however in energy efficient new homes their benefit can be limited.

Heat Pumps

Heat pumps provide low carbon heat sourced either from the ground (Ground Source Heat Pumps) or air (Air Source Heat Pumps). This type of system is suited to thermally efficient buildings. They require main electricity to operate but typically generate at around three units of heat for every unit of electricity that is consumed. Because the heat generated is at a lower temperature than that produced by a gas boiler, heat pumps typically require underfloor heating or over-sized radiators to ensure the heat is distributed efficiently. Heat pumps do however require ongoing and fairly frequent maintenance. The government anticipates that the decarbonisation of the electricity network will shift design to using electric heating systems, including heat pumps.

Biomass

Biomass provides useable heat from a range of solid fuels including wood and straw. The installation of a biomass boiler, flue and associated fuel store require significant space and is not considered appropriate for the development.

At this stage potentially suitable technologies for consideration during the detailed design of individual homes in conjunction with future changes to the Building Regulations include Solar PV and Heat Pumps. These are noted within the FHS as the most likely technologies to be used to meet the forthcoming interim carbon reduction target.

Summary

In summary, the proposed dwellings will be designed in accordance with the principles of the energy hierarchy to include measures to reduce the primary energy use and carbon emissions which will achieve compliance with the Building Regulations, including relevant updates as a result of the FHS.

Energy performance at this level will ensure the development minimises carbon emissions through the utilisation of the fabric first methodology in accordance with the latest national guidance and reflects the objectives of the spatial strategies in Part 1 of the Local Plan.

Table 3 indicates the estimated energy use of the Proposed Development in line with Building Regulations Part L 2013.

Table 3 – Summary of energy and carbon emissions

House Type	Energy Use (kWh/yr)	CO_2 Emissions ($kgCO_2$/yr)
Baseline Energy and CO_2 Emissions	1,454,288	374,359

The feasibility and viability of low carbon and renewable energy technologies will be assessed during the detailed design of individual homes, to ensure the buildings are designed in line with the appropriate Building Regulations.

3.6.2 Climate Change Adaptation

The ensure the proposed development is resilient to the effects of climate change it will incorporate a number of key design measures in response to the climate predictions set out in the UKCP18 projections.

The UKCP18 projections demonstrate that over time the UK will experience increased summer and winter temperatures with significantly increased

maximum temperatures, reduced summer rainfall, increased winter rainfall and an increase in extreme weather events.

The UK Climate Change Risk Assessment updated in 2017 identifies key risks associated with the effects of climate change and in relation to the built environment and the proposed development these include reduce summer water availability, increased winter rainfall and increased summer temperatures.

This section identifies key measures which will be incorporated into the design of new buildings and the proposed development to adapt to climate change.

Water Efficiency

Potable water is an increasingly important natural resource and with the majority of the UK classed as being in an area of moderate or severe water stress the conservation of water is becoming a more significant sustainability metric.

The new development will aim to reduce water consumption through a range of water efficiency measures such as:

- Dual flush WCs;
- Water meters;
- Low flow fittings; and
- Where appropriate, water efficient equipment.

Through the use of these measures new homes will target a water consumption rate of 110l/p/d, beyond the baseline requirement of 125l/p/d and significantly below the UK average of 150l/p/d.

Flood Risk and Drainage

A Flood Risk Assessment (FRA) and Drainage Strategy has been prepared by Hydrock. The majority of the site is within Flood Zone 1 which is land assessed as having less than a 1 in 1,000 annual probability of river or sea flooding, and therefore considered at low risk. However, the central section of the site associated with Langford Brook has an increased risk of flooding. Some areas of the site are therefore placed in Flood Zone 2 and Flood Zone 3, which is land assessed as having between a 1 in 100 and 1 in 1000 annual probability of fluvial flooding and greater than 1 in 100 annual probability, respectively.

The majority of the site is considered at 'very low' risk of surface water flooding, although there are areas of 'low' and 'medium' risk predominantly along the route of Longford Brook and depressions in landform across the site.

The flood risk and drainage strategy can be summarised into the following measures:

- Development to remain outwith the flood zone 2 and 3 where possible;
- Where this is unavoidable, finished floor levels will be set above the 1 in 100 year flood event including a 35% allowance for climate change and 600mm freeboard;
- Where there are changes in ground levels, there will be no loss of the functional floodplain;
- No alteration to Langford Brook within 8m of either bank;
- Compensatory flood storage will be provided up to the 1 in 100 year plus a 35% allowance for climate change, equating to additional storage of up to 2,000m^3;
- Attenuation storage will be sized to accommodate volumes up to and including the 1 in 100 year event plus a 40% allowance for climate change;
- Post-development will remain consistent to greenfield run off rates and maintaining existing catchment regimes;
- 18ha of the site will be dedicated to water drainage; and,
- Existing watercourses will be utilised to intercept overland flows.

Further information on the sites flood risk and the proposed surface water management system can be viewed in the accompanying FRA and Drainage Strategy, and Chapter 7 of the Environmental Statement.

Overheating

With increasing summer temperatures there is an increasing risk of overheating in buildings which could adversely affect building occupants and users.

In recognition of this, Part L 'Conservation of Fuel & Power' of the Building Regulations are scheduled to be updated in 2020 to take better account of potential summertime overheating risks as a result of future climate change.

Buildings considered to be at risk of overheating will be assessed, taking into account the future climate scenarios to reduce the risk of overheating.

Through the provision of mitigation measures, buildings will be able to adapt to and be resilient to future climatic changes.

3.7 Conserving and Enhancing the Natural Environment

The Proposed Development will incorporate measures to support and enhance the environment through consideration of the existing site ecology, including measures to mitigate the impact of the site and enhance site biodiversity, as well as incorporate measures to reduce pollution from the site.

3.7.1 Ecology

An Ecological Baseline Report has been prepared by the Environmental Dimension Partnership (EDP), to establish the ecological status of the site and the ecological implications of the proposed development.

The current site is bisected by Langford Brook. To the west of the brook comprises two arable fields parcels of very limited ecological value. To the east of the brook is predominantly species-rich grassland with areas of dense scrub and tall herb communities which have been left unmanaged. Former hedgerows have developed into broad bands of scrub and young woodland. There are several ponds to the east mostly in poor condition from silt or overshaded.

No part of the site is covered by any statutory designations. There are no international designated within 15km of the site and no nationally designated sites within 5km. The Wendlebury Meads and Mansmoor Closes Site of Special Scientific Interest (SSSI) lie within 5.4km and 7.3km respectively. There is a hydrological connection through Langford Brook.

Non-statutory designated sites Gavray Drive Meadows Local Wildlife Site (LWS) and Ray Conservation Target Area (CTA) partially cover the site. The LWS and CTA is located on the land to the east of Langford Brook which is covered by species-rich grassland ranging from Local to County importance, however it has largely been left unmanaged for at least 15 years resulting in an overall reduction in quantity and quality of species.

To protect the site habitats and species a range of mitigation and enhancement measures have been proposed and recommended as part of the Ecological Appraisal. They can be summarised as follows:

Mitigation Measures

To mitigate the impact of the development a range of measures are propose, including:

- Potential adverse impacts downstream on the SSSIs present will be addressed through surface water drainage strategy which will be designed to maintain / improve water quality and existing run-off rates;
- Development is excluded from the Ray CTA and Gavray Drive Meadows LWS, which is termed the Ecological Restoration Zone (ERZ);
- Street lighting will be designed to avoid impacts on nocturnal wildlife where in close proximity to retained habitats;
- Suite of pre-construction surveys as necessary i.e. badger, otter and water vole;
- Implementation of a Construction Environmental Management Plan (CEMP) and Ecological Management Plan (EMP) will be prepared and implemented during the entirety of the construction stage to ensure

appropriate management and operational systems are in place;

- Protective fencing surrounding sensitive and retained habitats to avoid damage during construction;
- Removal of potential nesting habitat will be undertaken outside the bird nesting season (March – August inclusive) or following a nesting bird survey prior to removal during the season;
- NE EPS license may be required for GCN inclusive of a mitigation strategy.

Enhancement Measures

To enhance the site habitats and species a range of mitigation and enhancement measures have been proposed and recommended as part of the Ecological Appraisal. They can be summarised as follows:

- New habitats of ecological value should be created as part of the open space strategy for the residential development parcels;
- Long-term management of the ERZ will be delivered as part of the scheme;
- A minimum of 10% Biodiversity Net Gain is targeted and has been preliminarily demonstrated to be achievable through the restoration of the existing habitats and creation of new habitats;
- Bird nesting features, barn owl box and bat roosting features will be incorporated into new buildings;
- Construction of hibernacula in the ERZ; and,
- 18ha dedicated to water drainage, biodiversity and recreational activities within the site.

More information is available in the Ecological Appraisal accompanying the planning application and in Chapter 5 of the ES.

3.7.2 Pollution

The proposed development will aim to minimise any negative impacts on the natural environment considering the impacts of water use, materials, and air quality.

Water – Throughout construction water quality will be maintained by the following measures:

- Reduce erosion and run-off by minimising land disturbance and leaving vegetation cover where possible;
- Cover skips and trucks loaded with construction materials and continually damp down with low levels of water;
- Use non-toxic paints, solvents and other hazardous materials wherever possible; and
- Segregate, tightly cover and monitor toxic substances to prevent spills and possible site contamination.

The construction works will be carried out in such a manner as to avoid adverse effects on the brook and downstream habitats in accordance with Environment Agency Pollution Prevention Guidance (PPG) and as detailed in the CEMP.

To improve water quality during the occupation of homes the surface water drainage strategy includes consideration to measures to minimise pollution run-off.

Air Quality – An air quality assessment has been undertaken by Hydrock which has concluded that the risk of impact from dust and associated effect from the nearby industrial estate is considered to be negligible. Furthermore, the proposed development is not anticipated to have an adverse impact to local air quality; all impacts at sensitive receptor locations have been found to be negligible. The aforementioned measures to encourage sustainable travel through the travel plan, e.g. EV charging, encouraging cycling, would help to limit any increase in air pollution resulting from the occupation of the development.

Sustainable Materials – Insulation materials containing substances known to contribute to stratospheric ozone depletion or with the potential to contribute to global warming will not be used. Natural insulation materials such as mineral wool, rock wool or cork board will be considered as they are amongst the lowest Global Warming Potential (GWP) rating.

To further enhance the development a number of additional measures will be considered during the detailed design of new homes to minimise pollution, including:

- The use of key internal finishes and fittings which comply with best practice emissions levels of Volatile Organic Compounds (VOCs) and other substances;
- Where appropriate, the use of low NOx emission boilers, further reducing the impact of the development; and
- Specification of low Global Warming Potential (GWP) and zero Ozone Depleting Potential (ODP) insulation materials.

Additionally, the development will aim to make use of local and sustainability sourced materials, including use of FSC or equivalent timber.

3.8 Waste Management

Construction Waste Management

Prior to the construction phase a Construction Environmental Management Plan (CEMP) will be developed to ensure the use of measures to minimise waste during the construction phases of the development, including the use of a scheme for recycling/disposing of waste arising from demolition and construction works.

The reduction, reuse and recycling of construction waste is to be prioritised through measures such as avoidance of over-ordering, supervision of deliveries, use of secure materials storage facilities and reuse of materials onsite where feasible.

In addition the development will be registered with the Considerate Constructors Scheme and achieve certification against the Code of Considerate Practice.

Operational Waste Management

In accordance with the principles of the waste hierarchy the development will make provision for the storage of non-recyclable waste and recyclable waste including dedicated storage for waste in new homes to encourage residents to recycle waste materials.

Full consideration will be given to the Council's waste management infrastructure and services to ensure that the occupiers have the necessary infrastructure to participate in any kerbside recycling services. Further details of the operational waste management can be found in the DAS.

4. Conclusion

This Sustainability Statement has been prepared to demonstrate how the proposed development responds positively to national and local sustainable policy requirements.

The proposed development at the Land North of Gavray Drive has been designed to respond positively to national and local plan policy incorporating measures to deliver social and economic benefits, while also protecting and enhancing the environment where possible. This includes the consideration of measures to mitigate and adapt to the effects of climate change.

The Sustainability Statement which accompanies the application sets out key sustainable design measures incorporated at this stage and to be considered during the detailed design of homes.

Social and Economic Benefits – The development aims to provide a range of social and economic benefits to both new and existing residents, through:

- Provision of up to up to 250 new homes as part of the allocation providing opportunities for local people during both construction and operation of the development.
- A development in a sustainable location with a wide range of services and amenities, including health services and recreational opportunities within walking distance of the site.
- A development designed with the health and wellbeing of future occupants integral to the design, including access to extensive green open space and recreational opportunities within the site.
- Homes designed to create healthy living environments which are flexible for the future.
- Close access to cycling and walking routes.

Environmental Protection and Enhancement – Through a range of design measures the development aims to protect and enhance the local environment, including:

- Buildings which will be designed to make use of sustainable materials to reduce environmental impacts of construction.
- Development designed to prioritise sustainable and active modes of travel including walking and cycling.
- Provision of measures to protect on-site ecology and enhancement measures to achieve a net gain in biodiversity which also helps reduce the impact of climate change on site habitats, improving the condition of the existing LWS.
- Provision of measures through construction and operation of the site to reduce pollution, minimise waste and encourage recycling.

Mitigating and Adapting to Climate Change – The development will incorporate a range of measures to reduce carbon emissions, mitigating the effects of climate change, and adaptation measures to ensure the long term resilience of the development to the effects of climate change. Measures include:

- Buildings designed to reduce carbon emissions in accordance with the current and applicable Building Regulations through the use of energy hierarchy, using a fabric first approach

to design to reduce energy demand, helping mitigate the effects of climate change.

- Specification of water efficient fittings to reduce water consumption to 110 litres per person per day in line with the government's higher water efficiency standard.
- Development of new homes in Flood Zone 1 and provision of a surface water drainage system and infiltration basins designed to manage a 1 in 100 annual probability plus 40% climate change rainfall event.
- Homes designed to take into account increasing annual temperatures set out in the UKCP18 climate projections to minimise the risk of overheating.

L&Q, Charles Brown & Simon Digby, and London & Metropolitan International Developments are committed to the delivery of sustainable homes which include measures which provide economic and social benefits, protect and enhance the environment, as well as mitigating and adapting to the long term effects of climate change.

Turley Birmingham

9 Colmore Row,
Birmingham
B3 2BJ

T 0121 233 0902

Turley
Sustainability