

Water Eaton

PR6a : Land East of Oxford Road

Sustainability and Energy Statement

Bellway


STRATEGIC
LAND



WE / SES / P01

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1. Introduction

1.1 Aim and Objectives

This Sustainability and Energy Statement has been prepared on behalf of Bellway Homes Limited and Christ Church, Oxford, hereafter referred to as ‘applicants’.

This statement sets out how the proposed Water Eaton, also known as site PR6a, hereafter referred to as the ‘site’, responds positively to the local and national sustainability planning policy requirements and demonstrates where the development is anticipated to exceed this where commercially and technically viable.

The sustainability and ESG objectives for the proposed development can be summarised as:

- Meet and where possible exceed local and national sustainability policy
- Demonstrate the sustainability strategy in line with the ambitions of applicants and meeting the policy requirements.

- Formulate the potential energy strategy to tackle climate change

1.2 Background

In September 2022, Bellway acquired the land comprising the application site from Christ Church to bring it forward for development. In the interests of delivering a scheme of the highest quality, Bellway is committed to building on the approach to engagement and masterplan development adopted by Christ Church. Christ Church has consulted extensively on proposals for the site including a public consultation in Autumn 2021 and an Enquiry by Design process in July 2021 which enabled community representatives and stakeholders to contribute to the development of the vision and masterplan for Water Eaton.

This was followed by a design development consultation in June/July 2022 which invited views on certain fundamental aspects of the emerging masterplan, access arrangements and designs for the Oxford Road corridor.

The design team has continued to shape and refine the proposals for Water Eaton, taking into consideration the feedback received together with findings from surveys and technical assessments. Throughout the design process the seven principles, taken from Christ Church’s ROPP (Responsible Ownership of Property Policy), of Connectivity, Identity, Community, Ecology, Energy, Carbon, Health and Wellbeing have been considered¹. Bellway’s development of the land will continue to be guided by these principles, as well as being informed by feedback from this and previous consultations.

1.3 Site Context

The site is located to the east of the A4165, Oxford Road to the north of Oxford. The northern boundary adjoins Oxford Parkway Park and Ride site. To the east, the site boundary crosses an open field, then follows field boundaries around St Frideswide’s Farm to the south, where the southern boundary adjoins Cutteslowe Park, Banbury Road North Sports Ground, and an

¹ Refers to the Christ Church Responsible Ownership of Property Policy.

adjacent field. The land to the south of the site boundary is within the administrative area of Oxford City Council (OCC).

The site covers 45.8 hectares (113.17 acres). The site is irregular in shape and mainly consists of agricultural land, used as arable fields. Pipal Barns are also located within the site and are accessed from, and with a frontage onto, the A4165 in the north-west of the site. Pipal Cottage is located just outside the site boundary adjacent to Pipal Barns and the A4165, and St Frideswide's Farm and farm buildings are located just outside the eastern site boundary.

The site generally falls away from two main high points. The first is in the centre of the site along the western boundary with the A4165, with land falling to the north, and to the east towards St Frideswide's Farm. The second high point is located along the southern boundary, with land falling from this point to the east towards the River Cherwell, and to the north towards St Frideswide's Farm.

The nearest designated heritage assets to the site are the Grade II* listed St Frideswide's Farm House and associated Grade II listed garden wall. The Oxfordshire Historic Environment Records (HER) show four non-designated heritage assets within the site boundary, including the remains of two bronze age barrows, possible Roman

'ridgeway', and a milestone. The two bronze age barrows present on site are to be retained in situ.

The field boundaries within the Site are delineated by mature, native hedgerows of variable species composition and structure, with some sections of post and wire fencing. The majority of the hedgerows are relatively species rich and regularly managed (c.1.5 m high). A small number of species-poor hedgerows are present, alongside the track leading to the Water Eaton estate, and along the southern and eastern boundaries of the south-western field.

Two small areas of broad-leaved woodland are present within the western edge of the site alongside Oxford Road, and there are sparsely scattered hedgerow trees.

The site location is shown in the policies map as **Figure 1**.

1.4 Proposed Development

Outline application (with all matters except access reserved for future consideration) for the demolition of existing buildings and the erection of up to 800 dwellings (Class C3); a two form entry primary school; a local centre comprising: convenience retailing (not less than 350sqm and up to 500sqm (Class E(a)), business uses (Class E(g)(i)) and/or financial and professional uses (Class E(c)) up to 500sqm, café or restaurant use (Class E(b)) up to 200sqm; community building

(Class E and F2); car and cycle parking); associated play areas, allotments, public open green space and landscaping; new vehicular, pedestrian and cycle access points; internal roads, paths and communal parking infrastructure; associated works, infrastructure (including Sustainable Urban Drainage, services and utilities) and ancillary development. Works to the Oxford Road in the vicinity of the site to include, pedestrian and cycle infrastructure, drainage, bus stops, landscaping and ancillary development.

A latest masterplan for Water Eaton is shown in **Figure 2**.

Figure 1: Site Location

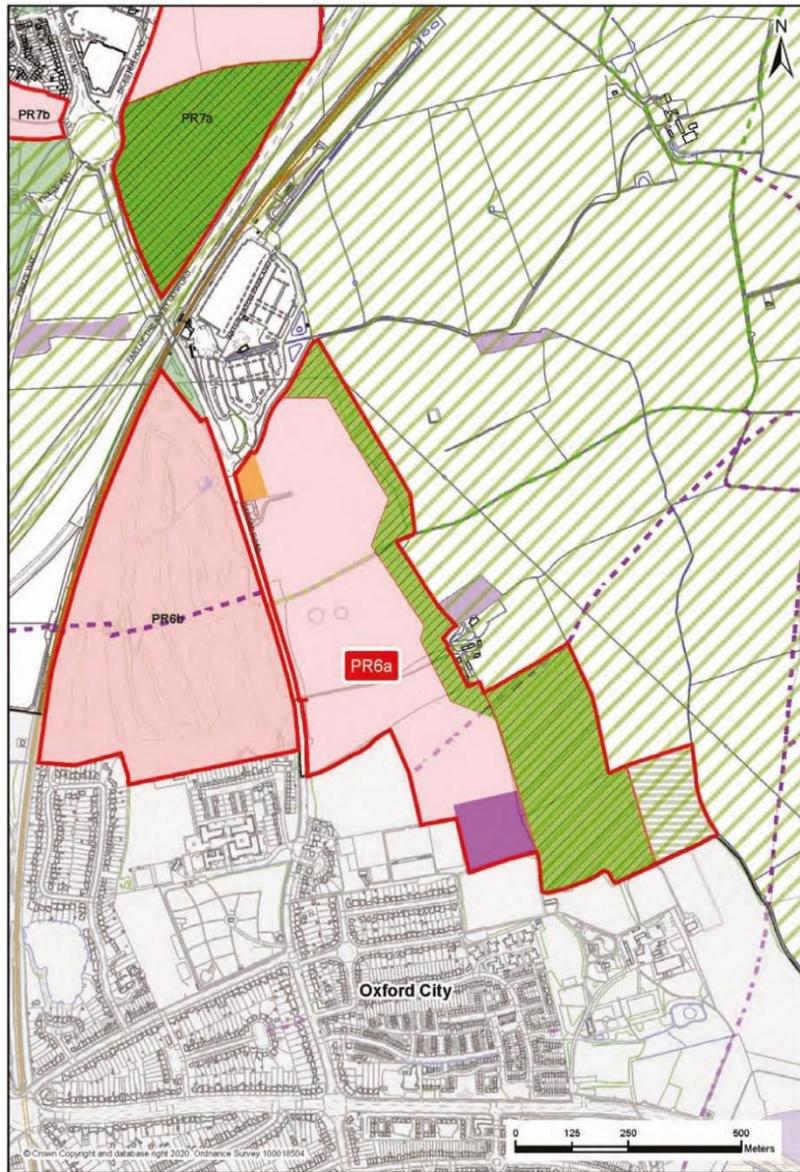


Figure 2: Masterplan²



² 477898 – 42M – Illustrative Masterplan by Savills

2. Policy Context

This chapter contains the review of the key national and local sustainability policy

2.1 National Policy

This section sets out a summary of current national guidance and policy in relation to sustainable development, which includes:

- National Planning Policy Framework
- Planning Practice Guidance
- National Design Guide
- Building Regulations

2.1.1 National Planning Policy Framework

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 that 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 help build 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 ensuring that a sufficient number and range of homes can be provided to meet the needs of present and future generations; and by fostering well-designed beautiful and safe places, 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 contributing to protecting and enhancing our natural, built and historic environment; including, making effective use of

land, improving biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low economy.

2.1.2 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.

The March 2019 PPG update confirmed 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.

2.1.3 National Design Guide

The National Design Guide, published in October 2019, 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.

2.1.4 Building Regulations

The Building Regulations Part L set out the requirements for energy and carbon performance in new buildings.

The latest updates to the building regulations came into force in June 2022. Compared with the previous Part L 2013, key changes are:

- CO₂ emission reductions of around 30% for domestic and non-domestic buildings respectively.
- Adoption of updated CO₂ emission factors mean that electricity-based heat generation, such as heat pumps, will be able to demonstrate significant CO₂ emission improvements.
- Gas boilers, and gas-fired heat networks are now much higher carbon than heat pumps and even resistance heating.
- The heating assumptions in the notional building used to generate the Target Emission Rates (TER) have been updated.
- A Target Primary Energy Rate (TPER) is now a criterion for complying with Part L 2021 which needs to be met as well as the CO₂ requirement.

In addition, the UK government has announced new Building Regulations Part S and Part O.

The new Part S sets out guidance for electric vehicle (EV) charging infrastructure, specifying that non-residential car parks with more than 10 spaces must provide at least one active EV charge point, and the remaining 20% of spaces installed with cable routes for electric vehicle charge points.

The new Part O sets out new requirements for mitigating overheating, specifying that residential developments must limit unwanted solar gains in the summer and provide means to remove heat. Compliance with part O can be demonstrated using two methods to demonstrate the risk of overheating from rising summer temperatures has been mitigated:

- a simplified prescribed glazing and free area ratio; or,
- Use of a Dynamic Simulation Modelling

The full Future Home Standard (FHS) was first issued for consultation in 2019, with the Government providing feedback on consultee responses in January 2021. It is due to come into force in 2025, with the aim of delivering net zero carbon ready buildings that help to meet the national zero carbon target by 2050.

From 2025, new homes built to the Future Homes Standard will have carbon dioxide emissions at least 75% lower than those built to 2013 Building Regulations standards. They will also be able to make the transition to net zero as the grid decarbonises.

The Future Building Standard (FBS) delivers improved energy and carbon performance of non-domestic buildings.

With implementation starting from 2025, the Future Buildings Standard will produce highly efficient new non-domestic buildings which use low-carbon heat and have the best fabric standards possible.

2.2 Local Policy

This section demonstrates local sustainable-aimed guidance and policy. The key targets have been summarised in **Table 1**, please find the detailed information for these policies in the appendices.

Table 1: Summary of Relevant Local Policies for Sustainability

Local Policy Document	Relevant Policy/Category	Policy Target
The Cherwell Local Plan 2011 – 2031 (Part 1)	ESD1 Mitigating & Adapting to Climate Change	Measure the impact of development within the district on climate change.
	ESD2 Energy Hierarchy & Allowable Solutions	Follow the 'energy hierarchy'.
	ESD3 Sustainable Construction	All new residential development will be expected to achieve zero carbon development, including allowable solutions ³ in line with government policy. Development will achieve a limit of 110 litres/person/day. All new non-residential development will be expected to meet at least BREEAM 'Very Good'.
	ESD6 Sustainable Flood Risk Management	A site-specific flood risk assessment will be required to accompany development proposals.
	ESD7 Sustainable Drainage Systems (SuDS)	All development will be required to use sustainable drainage systems (SuDS) for the management of surface water run-off.
	BSC3 Affordable Housing	All proposed developments that include 11 or more dwellings (gross), or which would be provided on sites suitable for 11 or more dwellings (gross), will be expected to provide at least 35% of new housing as affordable homes on site.
	PR6a (10(f) /11)	Outline measures for securing net biodiversity gains informed by a Biodiversity Impact Assessment, based on the DEFRA biodiversity metric (unless the Council has adopted a local, alternative methodology).

³ Allowable Solutions as a policy was not implemented by UK government. A different route to net zero in line with current government policy is proposed here.

Table 1: Summary of Relevant Local Policies for Sustainability

Local Policy Document	Relevant Policy/Category	Policy Target
Cherwell Local Plan 2011-2031 (Part 1) Partial Review	PR6a (14)	The application(s) shall be supported by a Transport Assessment and Travel Plan including measures for maximising sustainable transport connectivity, minimising the impact of motor vehicles on new residents and existing communities, and actions for updating the Travel Plan during construction of the development.
	PR6a (15)	The application shall be supported by a Heritage Impact Assessment which will include measures to avoid or minimise conflict with the identified heritage assets within the site.
	PR6a (16)	A surface water management framework shall be prepared to maintain run-off rates to greenfield run-off rates and volumes, with use of Sustainable Drainage Systems.
	PR6a (23)	The application shall include an Employment, Skills and Training Plan to be agreed with the Council.
Cherwell Residential Design Guide Planning Supplementary Document (SPD)	Supplementary To ESD2 Energy Hierarchy & Allowable Solutions	All schemes should consider the potential to deliver Passivhaus buildings. ⁴ In choosing building materials, embodied carbon should be considered (together with pollution impacts).
	Supplementary To ESD4 Decentralised Energy Systems	Biomass CHP, solar, wind and ground source heat pumps should be considered.
	Supplementary To ESD7 Sustainable Drainage Systems (SuDS)	SuDS are a key piece of green infrastructure and should be considered as a structural element of the overall masterplan.
Cherwell District Council Climate Action Framework 2020		The 2020 Climate Action Framework describes how the authority will transform the way it works to systematically drive lower carbon outcomes, focusing on priority areas of action including the estate, the relationship with suppliers, and ensuring policies allow for low-carbon choices.
Oxfordshire's Strategic Vision		The Vision will be used to help create an agreed set of long-term, strategic economic, infrastructure and environmental priorities designed to deliver the outcomes that Oxfordshire local people want. At the end of 2020, the Future Oxfordshire Partnership undertook a public engagement exercise asking for public feedback on a Draft Strategic Vision for Oxfordshire. Following consideration of the responses received, a revised draft was endorsed by the Partnership on 22 March 2021.

⁴The delivery of Passivhaus buildings has been considered in the Energy Strategy section.

3. Sustainability Strategy

This chapter sets out the sustainability strategy for the proposed site. It addresses the local and national planning policy requirements through the applicants' seven design principles of Connectivity, Identity, Community, Ecology, Energy, Carbon, Health and Wellbeing.



3.1 Connectivity

A people-first approach will be used at Water Eaton to ensure residents are as close as possible to key services and facilities and public transportation. The site will be designed with a focus on reducing the need to travel and then ensuring that most trips can be undertaken by sustainable modes of transportation such as walking or cycling. There are opportunities to improve the local pedestrian and cycle route network, which include:

- For the pedestrian network:

There are two public rights of way (PRoW) which cross the site east to west. Footway 229/8/10 will connect the southern part of the site to a parcel of land within Oxford City which is the subject of full planning permission for 134 dwellings (OCC Ref.

21/01449/FUL) and the countryside to the east. Bridleway 229/9/30 which is also the access to the Water Eaton Estate will provide a connection to PR6B via a new Toucan crossing and onwards towards Oxford North. They will be retained to provide traffic-free connections to the proposed local centre and primary school.

A north-south spine through the site will provide links to Oxford Parkway and the Park and Ride to the north, a connection to the adjoining parcel of land within Oxford City which is the subject of full planning permission for 134 dwellings (OCC Ref. 21/01449/FUL) and into Cutteslowe Park. An all-weather leisure route accommodating walking and cycling is also to be provided north to south through the site.

- For the cycle network:

There are several existing National Cycle Networks, regional cycleway, and local quiet cycleway routes within the vicinity of the site.

Oxfordshire County Council (OXCC) have an aspiration for a segregated cycle superhighway between Kidlington and

Oxford City via Cutteslowe along the Oxford Road / Banbury Road. The scheme will deliver this along its site frontage and will contribute towards the sections north towards Kidlington and south towards Cutteslowe. The site access is to be a Cycle Optimised Signal Junction (CYCLOPS), It is designed with an orbital cycle route around the junction situated to the south of the existing St Frideswide's Farm access. The design, which links into the cycle superhighway, leads to the segregation of walking and cycling from vehicles, creating a safe environment for cyclists and pedestrians. The design can accommodate a fourth / western arm for a future access into the PR6b site.

In addition, the development will:

- Accommodate buses that will remain on Oxford Road / Banbury Road but with new bus stops that are within a reasonable walk distance of the new homes (both PR6a and PR6b); and
- Provide vehicular access to the site from Oxford Road that prioritise safe crossing movements for pedestrians and cyclists.
- Provide a Travel Plan and Mobility Hubs, with opportunities for ongoing stewardship, promote active travel, public transport, car

sharing, and deliver a car club (with low / zero emission vehicles) with the aim of reducing single occupancy car trip to and from the site. The masterplan allows for mobility hubs to be developed within the site. These will act as interchange points between modes of transport and could include space for ebikes, scooters, car club vehicles, delivery lockers and EV charging (cars and bikes).

- EV charging and secure cycle parking will also be provided at each home with dedicated parking.



3.2 Identity

Defining a sense of identity, while integrating and respecting the surrounding environment is fundamental to the design of Water Eaton. The masterplan has been drawn to create a development that delivers high quality, contemporary designs, but also aligns with the local character through the consideration of:

- The matters of appearance and layout will be considered in detail in the Reserved Matters applications. How the material and planting palette respond to, and learn from, local and historical context is being considered and will evolve.

- The internal spaces of the buildings will be designed to provide healthy living conditions and enable a healthy lifestyle.
- Creating opportunities for play for different age groups, which will recognise the needs of children and adults at different stages of life.
- Using a consistent range of local tree and shrub types, with hierarchical planting scheme enhancing character areas and street hierarchies.
- A long-term management commitment including ensuring stewardship / governance.



3.3 Community

Water Eaton has been designed as a safe and inclusive space, that provides opportunities to live, work, socialise and enjoy an active lifestyle. Actions are and will be taken to involve the local community during the design process and build a connected development. These will include:

- The potential for food growing to celebrate local produce and encourage people to eat healthily, (possibly including a café / restaurant).
- An appropriate and effective stewardship and placemaking solution.



3.4 Ecology

Plans for Water Eaton involve the creation of a network of multi-functional green spaces and habitats, retaining and enhancing local biodiversity. Homes and green spaces will be connected, ensuring that residents can easily access green spaces throughout the development:

- The development is aiming for Building with Nature accreditation across the site with a pre-assessment at the submission of the outline application. This is to make high quality green infrastructure integral to placemaking in Water Eaton, maximising benefits for both citizens and biodiversity.

- Deliver a biodiversity net gain metric of in excess of the 10% policy requirement which can help the design, plan and make land management decisions that take better account of biodiversity.
- The site is predominantly arable farmland with small population of grass snakes, farmland birds breeding and other ecological features. Most of the key landscape and ecological features will be retained. Any lost habitats will be replaced by ecological spaces. For example, internal hedgerows retained with any loss offset through additional hedgerow and shrub planting, loss of Pipal Barn roost to be replaced on site, and loss of breeding habitat offset through creation of skylark plots and arable field margins within nearby farmland.
- Create large areas of multi-functional green spaces ensuring green connections with local facilities and appropriate accessibility. Green spaces including networks of walking and cycling routes, parks, squares, sports grounds, play facilities and community infrastructure.
- Careful consideration of planting/species selection for extreme weather and mitigating

the impacts of extreme weather and flooding by the appropriate use and design of SuDS.

- Areas managed primarily for wildlife/biodiversity interest and Long-term engagement with local wildlife and community groups.



3.5 Energy

Water Eaton will follow the 'Energy hierarchy'⁵. The proposal is to meet the full Future Homes Standard for the whole development from day one, with an EPC rating of level B as a minimum.

This exact specification will be developed during detailed design, but will involve high fabric standards, all-electric heat pumps and solar generation. These measures will reduce energy demand and bills significantly and place the dwellings on the path to a net zero future.

Water efficient fixtures and fittings will be installed to meet the 110l/p/d target within the Cherwell Local Plan.



3.6 Carbon

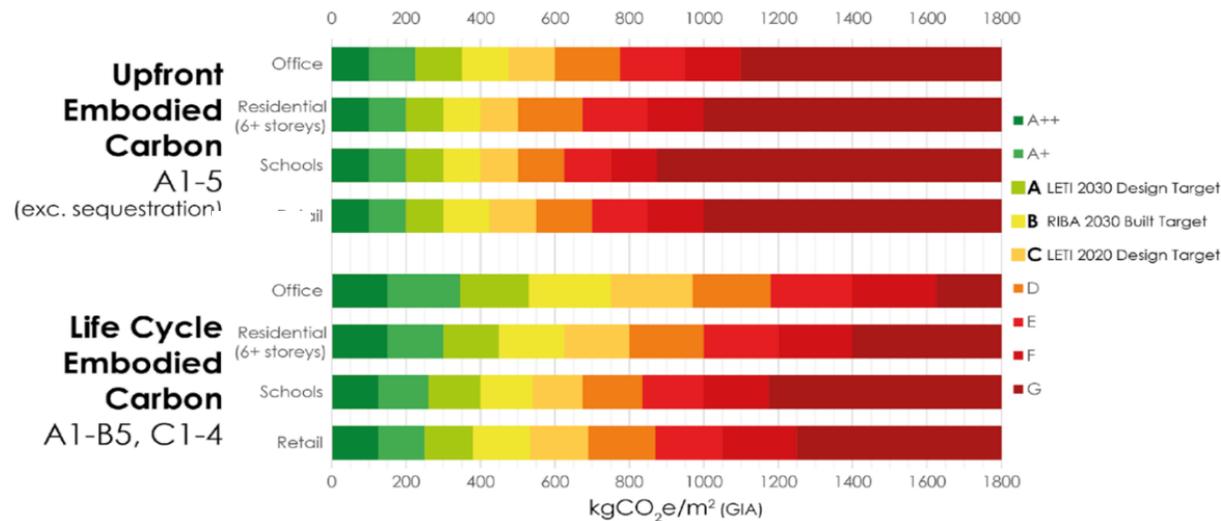
The carbon strategy of the development aims to create a pathway to net zero carbon. This will be achieved through careful design, local procurement,

sustainable construction practices and an emphasis on active travel and electrification. Actions include:

- Homes built to the Full Future Homes Standard effectively creating net zero ready dwellings.
- Creation of a waste management/recycling strategy to reduce waste and associated carbon emissions.
- Following circular economy principles and embed the ability to re-use and re-purpose materials more than once.
- Minimising whole life carbon and lifecycle cost impacts through design (including maintenance, replacement, and disposal).

⁵https://www.london.gov.uk/sites/default/files/gla_energy_assessment_guidance_april_2020.pdf

Figure 5 LETI Embodied Carbon Targets



- Being guided by the Low Energy Transformation Initiative (LETI) embodied carbon targets will be referenced to guide and test. **Figure 5** shows the LETI embodied carbon targets for four typologies for the upfront and life cycle embodied carbon perspective separately⁶.
- Incentivising all residents to do their part to fulfil the net zero ambition, provide guide to help them set/use energy equipment in a more efficient way to reduce the environmental impact and their cost.
- Embedding sustainable low carbon transport in the development, including the

improvement of pedestrian and cycle network and reduce street lighting where possible.

- Implementing grey and investigating black water recycling strategy where feasible and encourage occupants to recycle and reuse water for watering plants or cleaning needs to reduce water waste.



3.7 Health & Wellbeing

Water Eaton will put people at the forefront of its design, construction, and operation. Active and healthy lifestyles will be encouraged through the design and construction of Water Eaton’s transport networks, green

infrastructure, and buildings. Measures to be included are:

- Indoor thermal comfort for future climate scenarios and openable windows to allow residents to regulate internal conditions. Provide open space with some natural shading for outdoor spaces.
- A Health Impact Assessment (HIA) has been carried out to ensure that the effect of development on both health and health inequalities are considered and responded to during detailed design.
- Creating varied, active, and engaging outdoor spaces for residents early in the development, where they are in control of management, functions, and changes. Ensuring the first cohort of residents is provided with good quality external space, including community facilities, even temporary ones, and involved in its ongoing management.
- Bringing residents closer to nature within the site and its surroundings to encourage exercise and serendipitous meetings, through the improvement of the local pedestrian and cycle networks and provision of green/edible streets.

⁶ [252d09_25fc266f7fe44a24b55cce95a92a3878.pdf \(leti.uk\)](https://www.leti.uk/252d09_25fc266f7fe44a24b55cce95a92a3878.pdf)

- Community-focused design such as optimising the access to public space and positioning of doors to provide opportunities for building an active and cohesive community to counteract issues such as loneliness.

These actions will be able to improve the future occupiers' health and wellbeing by building salubrious places and spaces.

Specific Schemes

Accreditation or alignment to specific schemes will be integrated, in line with the principles of the ethical use of land. This includes

- Building for a Healthy Life

Achieving at least 9 out of 12 green lights. Building for a Healthy Life is the latest edition of - and new name for - Building for Life 12, which is a Design code to help people improve the design of new and growing neighbourhoods.

- Building with Nature (BwN):

Design and delivery accreditation. Building with Nature is a design approach to develop Nature-based Solutions for water-related infrastructure such as flood defences, sustainable port development and for the

restoration of ecosystems. It harnesses the forces of nature to benefit economy, society and the environment.

- Home Quality Mark:

A 4-star rating is targeted for Water Eaton, subject to viability. HQM awards certificates with a simple star rating for the standard of a home's design, construction, and sustainability.

HQM is designed to ensure a home has a reduced effect in the environment; benefits health and wellbeing; costs less to run and meets a level of quality that can be trusted.

- Social Value TOMs:

An initial assessment has been undertaken using Social Value TOMs.

Social Value is the contribution to society made by community projects, investments, mainstream businesses and developments. TOMs stand for Themes, Outcomes and Measures. It is an evidence-led framework, reviewed annually to put a financial value on social value.

The TOMs Framework has been developed in spreadsheet format for ease of ongoing monitoring as well as for assigning responsibilities, actions, timeframes etc. This allows the social value to be tracked in the

same way as other metrics as the project progresses.

4. Energy Strategy

This chapter explains how Water Eaton will provide an energy strategy which aligns with the applicants' ambitions and local and national Planning Policy.

4.1 Methodology

The energy strategy to be deployed at Water Eaton in accordance with the 'Energy hierarchy' set out in policy ESD2 from the Cherwell Local Plan 2011 – 2031 (Part 1):

- **Be Lean:** use less energy and manage demand during operation.
- **Be Clean:** exploit local energy resources and supply energy efficiently and cleanly.
- **Be Green:** maximise opportunities for renewable energy by producing, storing and using renewable energy on-site.

4.2 Be Lean

At this first stage of the energy hierarchy, the features that contribute to a reduction of CO₂ emissions compared to Building Regulations are

passive and active design measures, i.e., fabric energy efficiency and efficient building services.

The Water Eaton development will be built to a high specification prioritising a 'fabric first' approach. Energy demand reductions will be achieved through:

- **Building Orientation:** The layout will maximise the number of rooms which receive direct sunlight throughout the day and optimise south and north facing glazing for maximising daylight and minimising overheating risk.
- **Fabric Performance:** The heat loss of different building elements is dependent upon their U-value. The lower the U-value, the better the level of insulation of a particular element. A building with low U-values has a reduced heating demand during the cooler months.
- **Air tightness:** Heat loss may occur due to air infiltration. Although this cannot be

eliminated altogether, good construction detailing, and the use of best practice construction techniques can minimise the amount of air infiltration.

Table 2 offers a comparison between the building fabric standards for the draft Future Homes Standard, (FHS) with those of previous standards.⁷

Table 2: National Building Standards

Building Elements U-value (W/m ² .K)	Part L	Part L	FHS
	2013	2021	2025
Wall	0.18	0.18	0.15
Roof	0.13	0.11	0.11
Floor	0.13	0.13	0.11
Windows	1.4	1.2	0.8

After reducing the energy demand of the development, the next stage is to use energy efficient building services, lighting and controls throughout the scheme to reduce fuel

⁷ The Future Homes Standard: 2019 Consultation on changes to Part L and Part F of the Building Regulations for new dwellings

consumption. The proposed energy strategy includes the following measures:

- **Minimise energy demand:** In line with the full Future Homes Standard.
- **Avoid Overheating:** Water Eaton will use glazing, ventilation and shading to minimise the risk of overheating.
- **High Efficiency:** Using low energy fixtures and fittings, alongside water efficiency measures, where appropriate.
- **Smart Controls:** The buildings will be able to optimise the overall energy equipment performance with the help of smart controls

4.3 Be Clean

Once demand for energy has been minimised, the energy systems efficiency should be considered.

An all-electric strategy will be used for Water Eaton to reduce CO₂ emissions and eliminate air pollution from the buildings. (The development will be designed to allow for the transition to electric vehicles, as well.)

Air Source Heat Pumps are likely to be the predominant source of heating. (See Green)

Any buildings utilising electricity will see their carbon footprint fall in line with grid decarbonisation as shown in **Figure 7**, with the government now expecting the grid to be near or

at net zero by the mid-2030s, allowing Water Eaton to follow the same trajectory. In addition, by creating an all-electric development, homeowners will be immediately net zero through the purchase of certified renewable energy.

Other approaches, such as the creation of a site wide heat network, are not considered viable. This is due to the efficiency and low thermal demand of the proposed development. As a rule of thumb a minimum thermal demand density of 30kWh/m²/annum is required to make consideration of a heat network reasonable. Water Eaton's figure is likely to be <10 kWh/m²/annum.

Decarbonisation of the national grid and improvements to Building Regulations mean that

heat networks fuelled by gas actually increase emissions, even compared to a standard gas boiler. (Figure 7)

4.4 Be Green

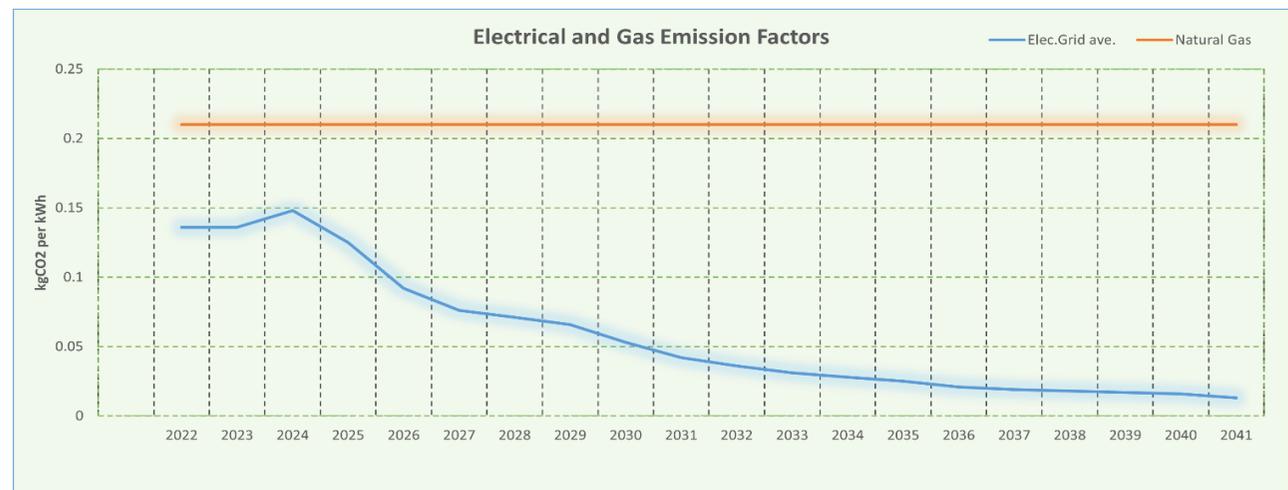
Introducing renewable energy systems on site will further reduce emissions from the development.

Renewable energy options considered for the proposed development include:

Proposed

- **Solar Power:** Solar electricity systems capture the sun's energy using photovoltaic (PV) cells. The cells convert the sunlight into electricity, which can be used to run household appliances and lighting or can be fed back into the national grid. PVs will work

Figure 7: Electrical and Gas Grid Emission Factors Projection



well on the development and are expected to be a standard renewable energy technology at Water Eaton.

- **Air Source Heat Pump:** An Air Source Heat Pump (ASHP) absorbs heat from outside air and then transfers it to provide both hot water heating and space heating. By doing this an ASHP can typically provide 3-4 units of heat for each unit of electricity used. These are likely to be the main form of heating on the development.

Not Proposed

- **Solar Thermal:** Solar thermal systems produce hot water for use within the home using rooftop collectors in a manner like PVs. This technology is a direct alternative for PV systems, but as PV systems are more flexible it is likely they will be favoured.
- **Wind Power:** Wind turbines produce electricity and are cost-effective. They require a large land area and distance from sensitive receptors, such as houses, that could not be achieved at Water Eaton.

4.5 Be Smart

An area largely ignored by regulation and standards is the issue of smart energy management and storage.

As the electrical grid integrates intermittent renewable generation it is less able to respond to increases and reductions in demand. To provide this balance fossil-fuelled power stations ramp-up and down, from providing very little power to the vast majority. The result of this is the cost of electricity and CO₂ emission intensity can vary greatly.

It is relevant for the energy strategy at Water Eaton because a home that can vary when it uses electricity by storing energy for later use or turning off at certain times will be able to reduce bills and real CO₂ emissions.

In the longer term it will be crucial as the grid moves to almost 100% wind, nuclear and solar. Flexibility of demand will be necessary to allow their integration.

As well as the benefits at a building level, managing energy smartly will reduce peak electrical demand at the site. This may reduce grid connection issues.

The approach will have three main elements:

- **Energy Storage:** Hot water storage and batteries can reduce imbalances between energy demand and energy production. They can store energy when there is excess and discharge it when there is a shortfall.
- **EV Charging:** Electric vehicles reduce air pollution and CO₂ emissions greatly. The

benefits can be increased by charging the vehicle at periods of low energy demand, or at times of high renewable energy generation. The process can even be reversed, discharging the car battery to provide energy when demand is high. As well as the CO₂ emission benefits it can reduce energy bills, using variable energy tariffs.

- **Demand Management:** This involves controlling energy uses such as washing machines, dishwashers, fridges and freezers, so that they run at times to reduce peak electrical demand, CO₂ emissions and energy bills. How this operates at Water Eaton will be confirmed at detailed design.

4.6 Passivhaus

The potential to deliver Passivhaus buildings is being considered to align with the Cherwell Residential Design Guide Planning SPD.

Passivhaus is a well-known certification scheme that sets targets around overall energy demand and space heating, as below:

Table 3: Passivhaus Requirements

Space Heating (kWh/m ² /yr)	15 kWh/m ² /yr
Primary Energy Demand	120 kWh/m ² /yr
Air tightness	N50 <0.6ac/hr

There are benefits with Passivhaus, including rigour around completion testing and low heating demand. There are issues around its integration; Passivhaus uses a proprietary calculation system that does not align with English Building Regulation's SAP system, it also does not cover issues such as solar power which are expected to be incorporated in the Future Homes Standard. It is possible that a new home may be certified as Passivhaus, but not comply with the Future Homes Standard.

There are also supply chain issues, with only 1,900 Passivhaus certified buildings in the UK now, although this is growing.

Whether Passivhaus will be used will be considered in detail in the next stage of work.

4.7 Results

The result of following the energy strategy is shown in the graph below (Figure 8). This compares a typical existing home in the UK, a new home built at the time of writing, and the expected performance of a dwelling at Water Eaton. The results demonstrate the substantially lower carbon footprint of homes at Water Eaton.

During the detailed design phase, the energy strategy will be developed in more detail and communicated as part of the reserved matters applications.

The all-electric nature of the development will also allow for continuing decarbonisation to net zero, expected around 2035.

Note: The Allowable Solutions mentioned in the Local Plan were not implemented by government and therefore are not relevant for this strategy.

Figure 8 compares the regulated CO₂ emissions from an average house of the UK stock, a new house built today and that expected at Water Eaton.

Figure 9 overleaf summarises the energy strategy for Water Eaton development at a home level. It presents a range of measures that will be considered during detailed design.

Figure 8: Regulated CO₂ Emissions Comparison

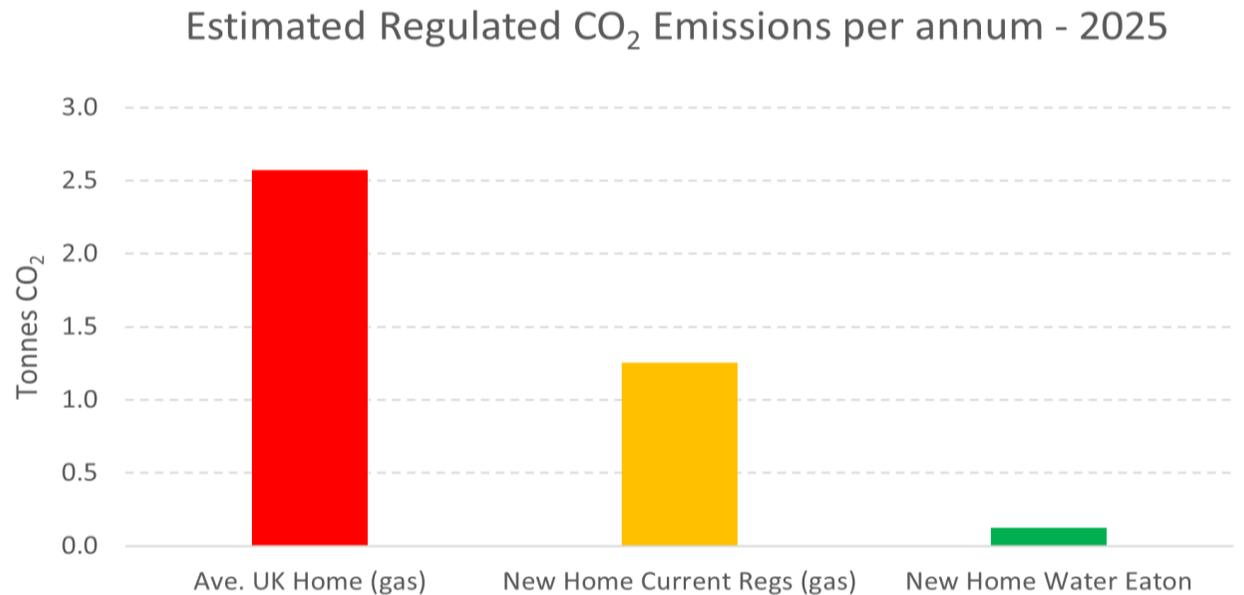


Figure 9: Potential Energy Strategy

8. Energy Storage

Energy storage in hot water tanks, EVs and possibly batteries to reduce bills and CO₂ emissions

4. Daylighting / Overheating

Glazing optimised for good daylight but minimising risk of overheating

5. All Electric Energy

No gas on-site with zero air pollution

9. EV Charging

Electric charging points alongside cycle storage provided

6. Air Source Heat Pump

Very low carbon heating

7. Solar Power

Provision of photovoltaic panels to generate energy

1. Good Fabric

Designed in accordance with future home standards for low energy demand

3. Smart Controls

Advanced controls for managing energy smartly

2. Efficient

Low energy fixtures and fittings, where provided, alongside water efficiency measures



5. Conclusion

This report presents the Sustainability and Energy Strategies for the proposed development at Water Eaton which follow or exceed the local policies and principles set:

- Building Regulations Part L 2021 and beyond;
- National Planning Policy Framework (NPPF);
- Cherwell Local Plan 2011-2031 (Part 1) and Partial Review;
- Cherwell Residential Design Guide Supplementary Planning Document (SPD);
- Cherwell District Council Climate Action Framework 2020;
- Oxfordshire's Strategic Vision.

The proposed sustainability strategy will implement a range of measures and investigate further measures during detailed design by following the seven design principles which include:

- **Connectivity:** The development will prioritise pedestrian and cycle networks, and will be well-connected with local transport networks,

with scope to change as lifestyles and technologies evolve;

- **Identity:** The development will deliver high quality design that integrates the local character and values the viewpoints of the occupants;
- **Community:** Putting people at the heart of the development and creating a caring and connected community by providing opportunities to live, work, socialise and enjoy an active lifestyle for the residents;
- **Ecology:** Enhance existing landscape fabric and ecological habitats and create multi-functional green spaces to maximise local biodiversity and connect people with nature;
- **Energy:** Minimise the environmental impact caused by energy use through following the 'Energy Hierarchy' and 'Be Smart' strategy during the design and operation stages;
- **Carbon:** Integrate the whole life cycle assessment and circular economy principles into design, delivery, use and future use

stages to lead the pathway to a net-zero development;

- **Health & Wellbeing:** Provide public outdoor spaces and indoor environments that enable and encourage a healthy lifestyle.

Therefore, the proposed development at Water Eaton 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.

6. Appendix

6.1 Adopted Cherwell Local Plan 2011-2031

The Adopted Cherwell Local Plan 2011-2031 (Part 1) contains strategic planning policies for development and the use of land. It forms part of the statutory Development Plan for Cherwell to which regard must be given in the determination of planning applications. Policies relevant to this document are listed below:

Policy ESD 1 Mitigating and Adapting to Climate Change – requires the measures to be taken to mitigate the impact of development within the District on climate change.

Policy ESD 2 Energy Hierarchy and Allowable Solutions – promotes an ‘energy hierarchy’ which includes:

- Reduce energy use
- Supply energy efficiently and give priority to decentralised energy supply
- Make use of renewable energy
- Make use of allowable solutions

Policy ESD 3 Sustainable Construction – mentions all new residential development will be expected to achieve zero carbon development. Cherwell District Council seeks a higher level of water efficiency than required in the Building Regulations, with new residential developments achieving a limit of 110 litres/person/day.

Use of sustainable drainage methods is encouraged.

All new non-residential development will be expected to meet at least BREEAM ‘Very Good’. The demonstration of the achievement of this standard should be set out in the Energy Statement.

All development proposals will be encouraged to reflect high quality design and high environmental standards, demonstrating sustainable construction methods, including but not limited to:

- Minimising both energy demands and energy loss

- Maximising passive solar lighting and natural ventilation
- Maximising resource efficiency
- Incorporating the use of recycled and energy efficient materials
- Incorporating the use of locally sourced building materials
- Reducing waste and pollution and making adequate provision for the recycling of waste
- Making use of the embodied energy within buildings wherever possible and re-using materials where proposals involve demolition or redevelopment

Policy ESD 4 Decentralised Energy Systems – demonstrates the use of decentralised energy systems, providing either heating (District Heating (DH)) or heating and power (Combined Heat and Power (CHP)) will be encouraged in all new developments.

Policy ESD 5 Renewable Energy – shows the support to renewable and low carbon energy provision. The potential local environmental, economic and community benefits of

renewable energy schemes will be a material consideration in determining planning applications.

Policy BSC8: Securing Health and Well-Being – The Council will support the provision of health facilities in sustainable locations which contribute towards health and well-being including the replacement of the Bicester Community Hospital.

Policy BSC9: Public Services and Utilities – The Council will support proposals which involve new or improvements to public services/utilities if they are required to enable the successful delivery of sites and where they accord with other relevant policies in the Plan. All new developments will be expected to include provision for connection to Superfast Broadband.

Policy BSC10: Open Space, Outdoor Sport and Recreation Provision – The Council will encourage partnership working to ensure that sufficient quantity and quality of, and convenient access to open space, sport and recreation provision is secured.

Policy BSC11: Local Standards of Provision - Outdoor Recreation – Development proposals will be required to contribute to

the provision of open space, sport, and recreation, together with secure arrangements for its management and maintenance.

Policy BSC12: Indoor Sport, Recreation and Community Facilities - The Council will encourage the provision of community facilities to enhance the sustainability of communities, and encourage partnership working to ensure that built sports provision is maintained in accordance with local standards of provision.

Policy ESD10: Protection and Enhancement of Biodiversity and the Natural Environment - Protection and enhancement of biodiversity and the natural environment will be achieved by the following:

- In considering proposals for development, a net gain in biodiversity will be sought by protecting, managing, enhancing and extending existing resources, and by creating new resources.
- The protection of trees will be encouraged, with an aim to increase the number of trees in the District.
- The reuse of soils will be sought.

- If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or as a last resort, compensated for, then development will not be permitted.
- Development which would result in damage to or loss of a site of international value will be subject to the Habitats Regulations Assessment process and will not be permitted unless it can be demonstrated that there will be no likely significant effects on the international site or that effects can be mitigated.
- Development which would result in damage to or loss of a site of biodiversity or geological value of national importance will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site and the wider national network of SSSIs, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity.
- Development which would result in damage to or loss of a site of biodiversity or geological value of regional or local importance including habitats of species of principal importance for biodiversity

will not be permitted unless the benefits of the development clearly outweigh the harm it would cause to the site, and the loss can be mitigated to achieve a net gain in biodiversity/geodiversity.

- Development proposals will be expected to incorporate features to encourage biodiversity and retain and where possible enhance existing features of nature conservation value within the site. Existing ecological networks should be identified and maintained to avoid habitat fragmentation, and ecological corridors should form an essential component of green infrastructure provision in association with new development to ensure habitat connectivity.
- Relevant habitat and species surveys and associated reports will be required to accompany planning applications which may affect a site, habitat or species of known or potential ecological value.
- Air quality assessments will also be required for development proposals that would be likely to have a significantly adverse impact on biodiversity by generating an increase in air pollution.

- Planning conditions/obligations will be used to secure net gains in biodiversity by helping to deliver Biodiversity Action Plan targets and/or meeting the aims of Conservation Target Areas. Developments for which these are the principal aims will be viewed favourably.
- A monitoring and management plan will be required for biodiversity features on site to ensure their long-term suitable management.

Policy ESD13: Local Landscape Protection and Enhancement - Opportunities will be sought to secure the enhancement of the character and appearance of the landscape, particularly in urban fringe locations, through the restoration, management or enhancement of existing landscapes, features or habitats and where appropriate the creation of new ones, including the planting of woodlands, trees and hedgerows.

Policy ESD15: The Character of the Built and Historic Environment - Successful design is founded upon an understanding and respect for an area's unique built, natural and cultural context. New development will be expected to complement and enhance the character of its context through sensitive siting, layout

and high-quality design. All new development will be required to meet high design standards. Where development is in the vicinity of any of the District's distinctive natural or historic assets, delivering high quality design that complements the asset will be essential.

Policy ESD17: Green Infrastructure - The District's green infrastructure network will be maintained and enhanced.

6.5 Oxfordshire County Council's Local Transport and Connectivity Plan

OXCC's Local Transport and Connectivity Plan (LTCP), adopted July 2022, sets out OXCC's vision for developing a world leading, innovative and carbon neutral transport system with a focus on how people move safely and quickly around their communities, Oxford City, and the County.

The LTCP outlines a vision to deliver a net-zero Oxfordshire transport and travel system that enables the county to thrive while protecting the environment and making Oxfordshire a better place to live for all residents. To track the delivery of the vision, the LTCP includes a

set of headline targets. These include the following targets:

By 2030:

- Replace or remove 1 out of every 4 current car trips in Oxfordshire;
- Increase the number of cycle trips from 600,000 to 1 million cycle trips per week; and
- Reduce road fatalities or life changing injuries by 50%.

By 2040 the targets are to:

- Deliver a net-zero transport network; and
- Replace or remove an additional 1 out of 3 car trips in Oxfordshire.

By 2050 the targets are to:

- Deliver a transport network that contributes to a climate positive future; and
- Have zero, or as close as possible, road fatalities or life-changing injuries.

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