

ENERGY AND SUSTAINABILITY STATEMENT

Site: Broadfields, Station Road, Ashwell

Proposal: Erection of One Detached Four-Bedroom Dwelling

1. Introduction

This Energy and Sustainability Statement has been prepared by Oakwood Planning & Design Ltd in support of a full planning application for the erection of one detached four-bedroom dwelling at Broadfields, Station Road, Ashwell.

The application proposes the development of a single detached dwelling within part of the existing residential curtilage of Broadfields. The development is facilitated by the demolition of the existing attached garage/outbuilding and the reconfiguration of the existing driveway and parking arrangements.

The purpose of this Statement is to demonstrate how sustainability and energy efficiency have informed the development and how the proposal will respond to relevant national and local planning policy relating to climate change, energy efficiency, sustainable construction, water use, biodiversity, sustainable transport and surface water management.

Given the modest scale of the development, comprising a single dwelling, the approach taken is proportionate to the nature of the proposal whilst establishing clear principles which will be carried forward through the detailed technical design and construction stages.

2. Site and Development

The application site forms part of the existing residential curtilage of Broadfields, a detached dwelling situated on Station Road, Ashwell.

The site lies between the existing dwellings of Broadfields and Eastholme and forms a contained gap within the established residential frontage. The site presently comprises residential garden land together with the existing attached garage/outbuilding which is to be demolished.

The proposed development comprises a detached family dwelling arranged over two floors and providing four bedrooms.

The ground floor provides an entrance hall, lounge, WC, utility space and an open-plan kitchen, dining and living area with direct access to the rear garden. The first floor provides four bedrooms, bathrooms/en-suites and associated circulation and storage space.

The development will utilise the established vehicular access onto Station Road, with the existing driveway widened within the site and a shared private driveway, parking and turning arrangement provided for the existing and proposed dwellings.

The proposal therefore makes efficient use of an existing residential site and existing access infrastructure rather than requiring the creation of a separate new access or the development of an isolated parcel of undeveloped land.

3. Planning Policy Context

3.1 National Planning Policy Framework

The National Planning Policy Framework establishes sustainable development as a central objective of the planning system.

National policy recognises the environmental, social and economic dimensions of sustainable development and requires the planning system to support the transition towards a low-carbon future, adapt to the effects of climate change and encourage the prudent use of natural resources.

New development should therefore seek opportunities to reduce energy consumption, minimise greenhouse gas emissions, use resources efficiently and incorporate measures which improve resilience to the effects of climate change.

The proposal has been considered against these objectives from an early stage and incorporates a number of measures intended to reduce both its operational environmental impact and the impacts associated with its construction.

3.2 North Hertfordshire Local Plan 2011–2031

The North Hertfordshire Local Plan places considerable emphasis upon the delivery of sustainable development.

Policy SP1 seeks to achieve sustainable development throughout North Hertfordshire, whilst Policy SP9 establishes overarching design and sustainability objectives.

Of particular relevance is Policy D1 – Sustainable Design, which requires development to respond positively to its local context and take all reasonable opportunities, proportionate to the nature and scale of the scheme, to reduce energy consumption and waste, retain vegetation, introduce appropriate planting, incorporate sustainable drainage and future-proof development for changes in technology and lifestyle.

Policy D1 also requires residential development to meet the Council's water efficiency requirements.

The proposed development has been designed with these principles in mind and the measures set out within this Statement will be carried through into the detailed design and construction of the dwelling.

3.3 North Herts Sustainability Supplementary Planning Document

The North Herts Sustainability Supplementary Planning Document provides further guidance regarding the Council's expectations for sustainable development.

The SPD identifies eight principal sustainability themes:

1. Optimising Passive Design and Fabric Performance;
2. Achieving Low Carbon Energy;
3. Minimising Carbon Footprint;
4. Healthy Placemaking;

5. Promoting Biodiversity;
6. Sustainable Travel;
7. Conserving Water; and
8. Incorporating Sustainable Drainage.

The application constitutes a minor residential development, comprising fewer than ten dwellings.

The proposals have therefore been considered proportionately against each of these sustainability themes, as set out below.

4. Energy Strategy

4.1 Energy Hierarchy

The energy strategy for the dwelling follows a fabric-first approach and the general energy hierarchy of:

Be Lean – Reduce energy demand

Energy demand will first be minimised through the design and performance of the building fabric.

Be Clean – Use energy efficiently

Efficient building services, controls, lighting and appliances will be utilised to reduce operational energy consumption.

Be Green – Facilitate low-carbon and renewable energy

Low-carbon heating and renewable technologies will be considered as part of the detailed energy design, having regard to the performance of the dwelling and the requirements applying at Building Regulations stage.

This approach prioritises reducing the dwelling's underlying energy requirement before relying upon renewable technologies to compensate for unnecessary energy demand.

5. Passive Design and Fabric Performance

A principal component of the sustainability strategy is the creation of a thermally efficient building envelope.

The dwelling will be constructed to meet or exceed the energy performance requirements of the Building Regulations applicable at the time of construction, including the relevant requirements of Part L.

The development will incorporate:

- high levels of insulation to external walls, roof and ground floor construction;

- energy-efficient windows and external doors;
- appropriately specified double or triple glazing where required by the detailed energy assessment;
- careful detailing of junctions to minimise thermal bridging;
- an appropriately airtight building envelope;
- effective ventilation appropriate to the airtightness and occupation of the dwelling;
- efficient space and water-heating controls; and
- energy-efficient fixed lighting.

Particular attention will be given during detailed construction design to continuity of insulation at wall, roof, floor, window and door junctions in order to minimise unwanted heat loss.

The use of a fabric-first approach will reduce the dwelling's space-heating demand throughout its lifetime, reducing both operational energy consumption and associated carbon emissions.

6. Orientation, Natural Light and Solar Gain

The dwelling has been designed to provide good levels of natural daylight throughout the principal habitable accommodation.

The internal arrangement provides substantial living accommodation at ground-floor level, including the kitchen/dining/living area which benefits from a direct relationship with the private rear garden.

Windows are provided to the principal living and sleeping accommodation, reducing dependence upon artificial lighting during daylight hours.

Solar gain will be considered in conjunction with the need to avoid summertime overheating. The detailed glazing specification will therefore seek an appropriate balance between daylight, beneficial winter solar gain, thermal performance and summer comfort.

The building will be designed and constructed in accordance with the applicable Building Regulations requirements relating to overheating.

7. Energy Performance

The development will achieve, as a minimum, the energy performance standards required by the Building Regulations applicable to the dwelling at the time the building work is undertaken.

The Council's Sustainability SPD identifies an EPC rating of at least **C** as the baseline requirement for minor residential development. The dwelling will be designed to meet or exceed this standard.

Detailed SAP calculations will be undertaken as part of the technical design and Building Regulations process. These will establish the final:

- dwelling energy performance;

- Energy Performance Certificate rating;
- calculated operational energy demand;
- Space Heating Demand;
- regulated carbon dioxide emissions;
- building fabric specification; and
- final heating and renewable energy requirements.

At the planning stage, the final construction specification, U-values, air permeability figure and building services specification have not yet been fixed. It would therefore not be technically appropriate to provide definitive Energy Use Intensity or Space Heating Demand figures before the detailed energy model has been undertaken.

The detailed design will nevertheless seek to minimise both Energy Use Intensity and Space Heating Demand through the fabric-first measures identified within this Statement.

8. Low-Carbon Heating and Renewable Energy

The detailed building services strategy will prioritise efficient and low-carbon forms of space and water heating in accordance with the Building Regulations applying at the time of construction.

The dwelling will be designed so that modern low-carbon electric heating technologies can be incorporated without material alteration to the approved form of development.

An air-source heat pump or equivalent low-carbon heating system will be considered as the preferred approach during detailed services design, subject to final heat-loss calculations and system design.

The roof form also provides the opportunity for photovoltaic panels to contribute towards on-site electricity generation should these be required or considered beneficial following completion of the detailed energy assessment.

The final energy strategy will therefore respond to the calculated energy requirement of the dwelling rather than installing technology independently of the performance of the building fabric.

This approach ensures that investment is first directed towards reducing energy demand permanently through the construction of the dwelling itself.

9. Climate Change and Overheating

Climate resilience has also been considered as part of the design approach.

New dwellings must increasingly respond not only to winter heat loss but also to higher summer temperatures and more frequent periods of extreme weather.

The development will therefore seek to minimise overheating through a combination of:

- appropriate glazing specification;
- openable windows providing purge ventilation;
- effective background ventilation;
- avoidance of unnecessary areas of highly glazed elevation;
- good levels of insulation;
- consideration of solar gain during detailed glazing design; and
- the cooling and shading benefits provided by surrounding soft landscaping and retained vegetation.

Detailed compliance with the applicable Building Regulations relating to overheating will be demonstrated during the technical design stage.

10. Materials and Embodied Carbon

The dwelling has been designed using a relatively simple and durable form of construction which is appropriate to its residential context.

Materials will be selected having regard to their durability, environmental performance, maintenance requirements and relationship with local character.

Where technically appropriate and commercially available, preference will be given to:

- responsibly and sustainably sourced materials;
- materials with recognised environmental certification;
- recycled or recyclable products;
- materials with recycled content;
- materials sourced from suppliers within a reasonable distance of the site;
- timber obtained from responsibly managed sources; and
- products with a long service life and limited maintenance requirements.

The architectural approach incorporates a combination of traditional materials including brickwork, render and weatherboarding. The use of durable materials will reduce the frequency with which building components require replacement during the lifetime of the property.

11. Construction Waste and Resource Efficiency

Construction will be undertaken with regard to the waste hierarchy of:

Prevention → Reuse → Recycling → Recovery → Disposal

Waste generated during demolition and construction will be minimised wherever practicable.

Suitable materials arising from demolition or site preparation will be considered for reuse on site where technically appropriate.

Construction materials will be ordered and stored efficiently to reduce damage, unnecessary surplus material and packaging waste.

Where waste cannot reasonably be reused on site, it will be separated into appropriate waste streams to maximise opportunities for recycling and recovery by appropriately licensed contractors.

These measures will assist in reducing the embodied environmental impact associated with both material production and waste disposal.

12. Water Efficiency

North Hertfordshire is within an area where water conservation represents an important sustainability consideration.

The new dwelling will therefore be designed to achieve a calculated internal potable water consumption of no more than 110 litres per person per day, in accordance with the optional water efficiency standard supported by North Hertfordshire planning policy.

This will be achieved through an appropriate combination of water-efficient:

- WC cisterns;
- taps;
- showers;
- baths;
- kitchen fittings; and
- water-using appliances.

The precise specification will be determined at technical design stage and the required water-use calculation will be submitted as part of the Building Regulations process where required.

Consideration will additionally be given to the use of external rainwater collection, such as water butts, for garden irrigation. This provides a simple means of reducing the use of treated mains water for external landscaping.

13. Surface Water and Sustainable Drainage

The development will seek to manage surface water as close to its source as reasonably practicable.

The detailed drainage arrangement will have regard to the principles of Sustainable Drainage Systems and will seek to avoid any material increase in surface-water runoff from the site.

Where ground conditions permit, infiltration-based drainage will be prioritised.

Potential measures include:

- permeable or semi-permeable external surfacing where appropriate;
- infiltration through soft landscaped areas;
- soakaway drainage where ground conditions allow;
- minimisation of unnecessary impermeable hardstanding; and
- rainwater collection for garden use.

The substantial area of private garden and soft landscaping retained within the site will continue to provide areas of natural infiltration.

Final surface-water drainage details will be established during detailed technical design having regard to site conditions and the relevant drainage requirements.

14. Landscaping and Biodiversity

Sustainability is not limited to the energy performance of the building itself and the landscape strategy provides an important contribution to the environmental performance of the proposal.

The development has been designed to retain existing vegetation wherever practicable.

Existing boundary hedgerows and trees are retained in substantial part, whilst further hedgerow planting is proposed along the site boundary together with areas of soft landscaping around the dwelling and within the front and rear amenity areas.

These measures will:

- maintain green infrastructure within the site;
- provide habitat and foraging opportunities;
- assist with surface-water interception;
- provide natural cooling and shade;
- contribute to carbon sequestration;
- maintain the semi-rural character of the site; and
- improve the visual integration of the development.

A Preliminary Ecological Appraisal has also been undertaken in support of the development. This identified no overriding ecological constraints and no Priority Habitat within the application site.

Although the development qualifies for the applicable small-development Biodiversity Net Gain exemption, opportunities to retain and enhance habitat value have nevertheless informed the design.

15. Healthy Placemaking

The proposal will provide a high-quality and healthy residential environment.

The dwelling benefits from:

- well-proportioned internal accommodation;
- good natural daylight;
- natural ventilation;
- direct access from the principal living accommodation to the garden;
- a substantial private rear garden;
- soft landscaping around the dwelling;
- secure residential accommodation; and
- separation from adjoining properties sufficient to provide an appropriate standard of privacy and outlook.

The dwelling has also been designed to meet or exceed the Nationally Described Space Standards.

The provision of good internal space, natural light, external amenity space and a landscaped setting collectively contributes to the health and wellbeing of future residents.

16. Sustainable and Future-Ready Transport

The development makes use of the existing access onto Station Road rather than introducing an additional access point.

Parking and turning facilities are provided within the site so that vehicles can manoeuvre safely and exit in forward gear.

The dwelling will additionally incorporate electric vehicle charging infrastructure in accordance with the applicable requirements of Part S of the Building Regulations.

Provision of EV charging infrastructure will enable the dwelling to accommodate the continuing transition towards electric vehicles and avoids the need for significant retrospective works.

Secure cycle storage can also be provided within the residential curtilage, providing future occupiers with the ability to store cycles conveniently and securely.

17. Future Adaptability

The proposed dwelling represents a long-term addition to the housing stock and has therefore been designed as conventional, flexible family accommodation rather than for a specialised or short-term form of occupation.

The internal layout provides a number of rooms capable of adapting to changes in household requirements over time.

In particular, the fourth bedroom can also function as a home office, allowing home working without requiring additional dedicated built floorspace.

The provision of modern electrical infrastructure, EV charging capability and a building envelope designed around current energy-efficiency standards will also assist the property in responding to future changes in technology.

The development therefore seeks to reduce the need for substantial future alterations and to provide accommodation capable of meeting changing patterns of living.

18. Summary of Sustainability Measures

The sustainability strategy can therefore be summarised as follows:

Energy and carbon

- Fabric-first approach to energy efficiency.
- Compliance with the applicable requirements of Part L of the Building Regulations.
- High-performance insulation and glazing.
- Reduced thermal bridging and controlled air permeability.
- Efficient building services and low-energy lighting.
- Low-carbon heating to be prioritised at detailed design stage.
- Potential incorporation of solar PV subject to the final energy assessment.

Climate resilience

- Natural daylight and ventilation.
- Consideration of overheating within the detailed design.
- Appropriate glazing design and solar control.
- Retention and introduction of landscaping assisting with shade and cooling.

Materials and waste

- Durable and responsibly sourced materials where practicable.
- Efficient material use.

- Reuse and recycling of construction and demolition materials where appropriate.
- Construction waste managed in accordance with the waste hierarchy.

Water

- Maximum internal potable water consumption of 110 litres/person/day.
- Water-efficient sanitaryware and fittings.
- Opportunity for rainwater collection for external use.

Drainage

- Sustainable drainage principles incorporated into detailed design.
- Retention of substantial permeable landscaped areas.
- Infiltration-based drainage prioritised where ground conditions allow.
- Permeable surfacing considered where practicable.

Landscape and ecology

- Existing vegetation retained wherever practicable.
- Existing hedgerow retained.
- New hedgerow planting.
- Soft landscaped front and rear amenity areas.
- Continued habitat opportunities notwithstanding the development's BNG exemption.

Transport

- Existing vehicular access reused.
- On-site parking and turning.
- Electric vehicle charging infrastructure.
- Ability to accommodate secure cycle storage.

Social sustainability

- High-quality family accommodation.
- Compliance with national space standards.
- Good natural light and ventilation.
- Substantial private outdoor amenity space.
- Flexible internal accommodation capable of adapting to future household requirements.

19. Conclusion

The proposed development has been designed with sustainability as an integral consideration rather than as a series of standalone technological additions.

The development adopts a fabric-first approach which will reduce underlying energy demand, supported by efficient building services and the ability to incorporate low-carbon and renewable technologies as required through detailed design.

The proposal will provide a new dwelling constructed to modern standards of energy efficiency and thermal performance, with careful consideration given to water use, surface-water management, material selection, construction waste, biodiversity, landscaping, sustainable transport, climate resilience and future adaptability.

Importantly, the scheme also makes efficient use of an existing residential site, utilises an established access and retains substantial areas of existing vegetation and soft landscaping.

Detailed SAP, Energy Use Intensity and Space Heating Demand calculations will be undertaken once the construction build-up, services and heating specifications are fixed at technical design stage. These calculations will inform the final specification and ensure compliance with the applicable Building Regulations and energy-efficiency requirements.

Taken collectively, the measures identified within this Statement demonstrate that all reasonable opportunities, proportionate to the scale and nature of a single-dwelling development, have been taken to minimise the environmental impact of the development and provide a durable, efficient and sustainable home.

The proposal therefore accords with the sustainability objectives of the National Planning Policy Framework, Policies SP1, SP9 and D1 of the North Hertfordshire Local Plan and the principles contained within the North Herts Sustainability Supplementary Planning Document.