

5.17 Drainage strategy

5.0 Proposals

The drainage strategy for the Site has been produced by Hardy Tunstall Engineering Ltd. and is shown (right).



Drainage strategy plan (Hardy Tunstall Engineering Ltd.)

**Former Big Cat Sanctuary
Codicote Road, Welwyn**



6. Sustainability

The energy strategy for the Codicote Road development has been developed in line with the energy policies of both North Hertfordshire District Council and Welwyn Hatfield Borough Council, the site falling across both council boundaries. A three-step energy hierarchy has been implemented and the estimated regulated CO₂ savings on site are 25.7% against a Part L 2021 compliant scheme.

The following energy strategy has been carried out using the latest Building Regulations Part L 2021 methodology and SAP 10.2 emissions factors.

Use less energy

The first step addresses reduction in energy demand, through the adoption of passive and active design measures.

The proposed energy efficiency measures include levels of insulation beyond the limiting fabric standards of Part L 2021, low air permeability, efficient lighting, MVHR, and energy saving controls for space conditioning and lighting.

The assessment has been carried out with a combined baseline for all new build areas. Each dwelling archetype has been modelled individually in SAP and the results weighted by unit count and floor area.

By means of energy efficiency measures alone, regulated CO₂ emissions are shown to reduce by:

Regulated CO ₂ savings at use less energy stage		
	%	t/yr
Site wide	3.5	3.75

Supply energy efficiently

The application site is not located within, and is not expected to be served by, any existing or proposed district heat network.

A site-wide heat network has not been deemed a suitable approach for this development, because the majority of dwellings are houses, where low heat density and high pipework heat losses make individual systems more efficient. There is a small block of 10 flats, but a dedicated communal system is unfeasible given its low total heat load and disproportionate space requirements. Individual systems are therefore proposed across the entire development, comprising gas boilers with a seasonal efficiency of 92%. No savings arise at this stage of the hierarchy.

Use renewable energy

The feasibility study carried out for the development identified PV panels as the technology to be adopted for this scheme. Air source heat pumps were assessed as technically feasible but have not been adopted, and gas boilers are proposed instead.

The incorporation of photovoltaics is expected to reduce CO₂ emissions further, with estimated savings as follows:

Regulated CO ₂ Savings at Renewable Energy Stage		
	%	t/yr
Site wide	22.2	24.07

Cumulative on-site savings

The overall regulated CO₂ savings on-site against a Part L 2021 compliant scheme are therefore:

Cumulative Regulated CO ₂ Savings		
	%	t/yr
Site wide	25.7	27.82

The energy consumption and potential CO₂ savings for the development were calculated using extrapolated benchmarks based on modelling of similar buildings from recent projects.

Conclusions

Following the implementation of the three step energy hierarchy, the cumulative regulated CO₂ savings on site are 25.7% against a Part L 2021 compliant scheme.

	Regulated domestic carbon dioxide savings	
	Tonnes CO ₂ per annum	% over baseline
Savings from energy demand reduction	3.75	3.5%
Savings from heat network/CHP	0.00	0.0%
Savings from renewable energy	24.07	22.2%
Cumulative on-site savings	27.82	25.7%



The sustainability strategy for Codicote Road, Welwyn has been developed with the design team to comply with the relevant environmental policies of both North Hertfordshire District Council and Welwyn Hatfield Borough Council, the site falling across both council boundaries. Relevant energy policies have been addressed in the accompanying Energy Statement. The proposed development is expected to reduce on-site regulated carbon emissions by 25.7% with SAP 10.2 emission factors.

The key sustainable design and construction measures incorporated in the proposals are summarised below:

Effective Resource Management

- Reuse of existing materials on-site, where viable, informed by a pre-demolition audit;
- Retention of the majority of existing mature trees, boundary vegetation and the northern woodland, with new native planting to maximise biodiversity across the site;
- The post-development design proposals will realise an estimated XXX gain in Habitat Units (equivalent to XXX% for Habitat Units) and XXX gain in Hedgerow Units (equivalent to XXX% for Hedgerow Units) TBC;
- Specification of high-performance fabric and glazing to minimise heat losses;
- The incorporation of renewable technologies maximised photovoltaics; and
- The specification of water fittings with the aim of reducing residential water consumption to less than 105 litres per person per day to optimise water efficiency.

Adaptation to Climate Change

- Insulated pipework and efficient lighting will minimise heat generated internally;
- An energy assessment has been carried out for the site, and the estimated CO₂ savings are 27.82 tonnes per annum across the scheme;
- Energy efficiency will be maximised through passive and active measures such as optimising daylight and maximising potential for passive solar heating, whilst mitigating overheating with low g-values and operable glazing;
- Including low energy light fittings throughout the scheme;
- The Proposed Development is expected to have minimal impact on the daylight and sunlight of neighbouring and surrounding properties;
- The landscape proposals retain the majority of the existing mature trees and boundary vegetation and introduce native structural planting, public open space and a play area, so green cover across the site is increased. Planting prioritises native and drought resistant species;
- A sustainable drainage strategy will attenuate surface water on site and limit discharge to the greenfield QBAR rate of 6.8 litres per second, a reduction of approximately 64% against the existing 1 in 100 year runoff rate.

Pollution Management

- To reduce air pollution from vehicular transport, the development provides dedicated cycle parking for every dwelling, an electric vehicle charging point at each dwelling, and improved pedestrian and bus stop infrastructure on Codicote Road;
- Air pollution risks from construction and demolition activities on site will be minimised;
- Acoustic constraints on the plots fronting Codicote Road will be mitigated through higher specification glazing and acoustic or mechanical ventilation, in line with the recommendations of the Noise Impact Assessment;
- Space heating and hot water are provided by individual gas boilers, so combustion emissions are not eliminated on site. Boilers will be specified with dry NO_x emissions no greater than 40 mg/kWh to limit the effect on local air quality;
- Light pollution and subsequent disruption to wildlife will seek to be minimised through a lighting scheme that will be more friendly to local wildlife.

In summary, the Proposed Development at Codicote Road meets the targets set out by North Hertfordshire and Welwyn Hatfield Councils.



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Codicote Road, Welwyn**

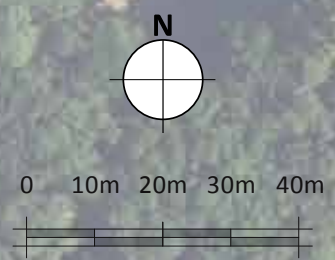


7. Conclusion

7.1 Summary

- ✓ 109 new homes including 1, 2, 3 & 4 bedroom houses and apartments
- ✓ 50% affordable homes
- ✓ A density of 27.5 dwellings per hectare gross based on a Site area of 4.0 hectares
- ✓ All new homes will be no more than two and a half storeys in height
- ✓ Access provided via a new junction from Codicote Road
- ✓ Allocated on-plot or frontage parking for the majority of dwellings
- ✓ 25 visitor parking spaces
- ✓ Secure cycle stores in rear gardens
- ✓ Existing boundary trees and hedges retained and enhanced to screen the new dwellings
- ✓ A landscape buffer along the frontage of the Site to maintain the privacy of existing properties on Codicote Road
- ✓ Sustainability credentials including electric vehicle charging for all properties
- ✓ Enhanced landscape planting throughout the Site







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