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E & S ASSESSMENT

DATE: 30.11.23
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East Halewood SUE: Energy & Sustainability Assessment

1.0 Introduction

This Energy & Sustainability Assessment has been prepared by Architectural Emporium Ltd in relation to a development of 7 new dwellings, associated access, drainage and landscaping at the land off Lower Road, Halewood.

This outline assessment considers the issues surrounding sustainable construction and it considers and evaluates the measures incorporated into the design of the development to reduce the predicted energy usage and carbon emissions.

The following relevant policy documents were considered in the production of this assessment:

Building Regulations 2013 - as new build dwellings, Part L1A is of particular note. Part L1A sets minimum standards for fabric and energy efficiency for new build dwellings.

National Planning Policy Framework 2018 - strengthens the emphasis on sustainable development and requires new developments to secure the highest viable resource and energy efficiency and reduction in emissions by considering Governments and other national standards.

Knowsley Local Plan Core Strategy Policy CS22: New development will be required to meet high standards of sustainable design and construction and minimise carbon emissions.

2.0 Design

Consideration was given to the orientation and layout of the buildings to try and help maximise energy efficiency as part of the development however due to the limitations of the site (unusual shape, existing pond, existing buildings) we do not have a blank canvas to allow this solely to influence the design. To compensate for this larger than market standard windows were used to maximise day light and natural ventilation.

We are proposing a fabric first energy strategy; the performance of the building fabric, the efficiency of the building services and the management strategies of the occupants of a dwelling broadly determine the energy consumption and carbon emissions of a dwelling.



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Large opening windows and well-proportioned not oversized rooms have been designed to allow natural ventilation. Large quantities of the existing landscape have been retained and hard landscaping has been minimized as much as possible to provide natural and localized infiltration. The existing pond will play a large part in this.

The site has been designed to promote sustainable travel by having clearly defined pedestrian routes, each dwelling has ample well designed cycle storage and adjacent parking to houses allows eclectic charge points for vehicles.

Internally, the accommodation has been laid out to maximise the internal space and light afforded, with primary habitable rooms benefitting from a pond view orientation, where possible. Each of the principal living rooms will have sufficient glazing to allow natural light to penetrate the rooms, reducing the need for artificial lighting. The pleasant views of the pond and associated flora & fauna it attracts will have a positive impact on the mental health of the residents.

All properties will benefit from a garden or private space for recreation, thus allowing external space for relaxation, exercise and clothes drying. All residents will also have access to the Pond for additional amenity.

Hedges will be an integral part of several boundary treatments and trees will be used to screen buildings to soften the development visually and encourage biodiversity in the area.

The white goods installed in each property will be energy efficient with an A+ / A rating.

All homes will incorporate internal recycling facilities. The client will provide homeowner information packs highlighting the importance of recycling domestic waste, including location and details of the nearest local authority recycling centre.

3.0 Materials

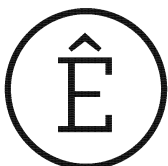
Natural resources & energy are used in the production, transportation and disposal of building materials. Two issues are significant in the specification of building materials; the environmental impact of materials and the responsible sourcing of materials.

Our Design Team is committed to taking pro-active measures to address these issues and commit to responsible sourcing of the building elements of each dwelling.

Local suppliers and local distribution centres will be used to reduce carbon emissions where possible.

Suppliers will be asked to provide evidence that timber and timber products have been lawfully obtained from forests or plantations that are being sustainably managed.

Acceptable certification includes Forestry Stewardship Council (FSC) and Programme for the Endorsement of Forest Certification (PEFC) Chain of Custody.



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4.0 Landscape Design

A design approach has been adopted that seeks to safeguard landscape features, primarily the pond, and the natural topography of the site are integrated within the new development where possible.

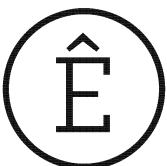
The sculpting of the pond edge will be kept to a minimum to allow the rich biodiversity to remain on the site during construction.

The aim is to ensure a strong landscape which retains the focal point of the pond as an asset for all dwellings on the site.

5.0 Management

The proposed housing scheme has been designed to decrease wastage during construction as follows:

- A Site Waste Management Plan will be prepared before the construction phase commences;
- Waste that is produced is, if possible, segregated on-site and handled by waste management contractors. The majority is reused, recycled or, disposed of in a conscientious manner;
- Inductions to all contractors and sub-contractors will be standard, as are careful site management of stockpiling and storage, segregation of waste groups and the prevention of cross contamination;
- Waste contractors will be required to segregate demolition waste off site and provide records of its final destination;
- Agreements will be sought with suppliers to reduce the amount of packaging on goods delivered to site;
- Landfill will be the last option when no economic solution can be found.



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6.0 Water

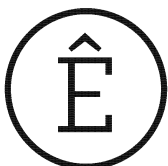
To reduce water usage, all new houses will incorporate the following measures:

- Dual flush lavatories which use approximately one third less water;
- Low overflow devices on baths;
- Aerator Shower Heads;
- Kitchen tap flow reduction devices;
- External Water Butts will be incorporated to reduce water usage via hose pipes & watering cans for general garden maintenance.

7.0 Energy Efficiency

The following measures will be incorporated into the new dwellings to reduce carbon emissions and energy usage:

- High levels of insulation across all thermal elements within the build to comply with current Part L Building Regulations;
- High levels of air tightness within the construction of the dwelling to reduce unnecessary heat loss. Pre-completion testing to be utilised to endure quality control;
- Highly efficient space and hot water heating systems, accompanied by thermostatic controls, zoned heating and override facilities to ensure that heating is optimally controlled to use the least amount of energy;
- Thermal blocks as they are made of a sustainable material which has a high recycled content and excellent insulation and acoustic absorption properties;
- Low energy fittings to all lighting will be used. Motion sensors will be used where applicable to reduce usage;
- All external light fittings will be provided with energy efficient light bulbs with appropriate control systems for efficient usage;
- Generous cycle storage facilities will be provided to all properties to reduce car usage.



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8.0 Micro Scale Sustainability Opportunities

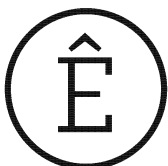
Micro Scale sustainability Options have been considered and actioned as follows:

- Building orientation was considered to maximise solar gain, however the existing site constraints of the:
 - Existing buildings interface distances,
 - Visual amenity of the pond, and;
 - The trainline

made it not possible to use this as a way of laying out the housing in the Masterplan solely.

However, building orientation has been used subtly to maximise passive heating as follows. Large windows are proposed generally to maximise the visual amenity so when they are south facing they allow passive heat into buildings, with high thermal mass walls creating an insulated barrier to heat loss.

- Tree planting has been introduced along the main access roads to the site to help to shelter spaces from colder prevailing winds and limit exposure to direct wind passage.
- Building / plot drainage techniques improving natural attenuation, reducing water runoff and contributing to climate adaptation have been considered. The following have been implemented:
 - External Rainwater harvesting tanks have been incorporated into all new house types for watering plants / lawned areas;
 - Soft and permeable surfaces have been utilised where possible to allow rainwater to 'soak away';
 - The existing pond is retained in the development which acts as a giant rainwater harvesting device.
- High standards of water efficiency measures will be utilised through low-flow fittings, low use fixtures and fittings, dual flush WCs, low water use appliances (provided), low flow showers and reduced volume baths etc.
- Appropriate provision of Electric Vehicle Charging Points which is conveniently located within each dwelling plot or associate parking bay.
- Building roof design has been considered so it does not prevent the opportunity for future residents to install Photovoltaic panels, to maximise their efficiency. *Note: Local Plan Core Strategy Policy CS22 and Supplementary Planning Document 'New Residential Development' provides further clarification on the use of solar technology.*
- Imaginative on-plot storage of waste, recycling and composting and the encouragement of home food production has been considered in the external landscape design.



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- An approach to natural ventilation which maximises penetration of natural light into flexibly designed spaces for the range of household sizes has been considered to all units as follows:
 - Larger than standard windows have been designed into all house types to provide good natural lighting and ventilation.
 - Tickle ventilation will be provided to all rooms;
 - Cross house ventilation is also designed into all units.
 - Reduction, reuse and recycling of waste in construction, demolition and operation phase, in accordance with the waste hierarchy will be considered as part of the site management plan.

9.0 Conclusion

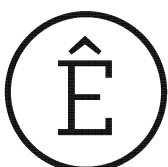
In accord with the necessities of Knowsley's Local Plan Core Strategy Policy, this Sustainability Statement demonstrates that sustainability, energy efficiency and a reduction in carbon emissions is key to the housing development.

The strategy places a great importance on the efficiency of a property's thermal envelope and internal building service strategy.

Each dwelling in the scheme benefits from built-in energy reduction actions and the development meets the needs of the present without compromising the ability of future residents to meet their developing requirements, whatever they may be.

If you require any further information, clarification or have any suggestions for incorporation please do not hesitate in contacting Architectural Emporium.

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