Rackery Lane, Llay Industrial Estate

Energy Statement

On Behalf of

RA & CE Platt Ltd

Revision No: 03

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CONTENTS

1. EXECUTIVE SUMMARY 1
1.1 General 1
2. INTRODUCTION 2
2.1 General 2
2.2 Proposed development 2
3. POLICY REVIEW 4
3.1 General 4
3.2 Future Wales: The National Plan 2040 4
3.3 Local Sustainability Policy 5
3.3.1 Wrexham County Borough Local Development Plan 5
4. SUSTAINABILITY APPRAISAL 6
4.1 General 6
4.2 Energy Hierarchy 6
4.2.1 Energy reduction 7
4.2.2 Energy efficiency 7
4.2.3 Renewable and low carbon technologies 7
4.2.4 Conventional energy 8
4.2.5 Summary 9

1. Executive Summary

1.1 General

This energy statement has been prepared on behalf of RA & CE Platt Ltd and is in support of the planning submission for the development of outline logistics scheme for up to 125,000sqft/ 11,613sqm GEA of employment floorspace Use Classes B1/B2/B8 with ancillary offices and associated landscaping, hardstanding and infrastructure within an approx. 7.98 acres / 3.23 ha of land within Llay Industrial Estate, with all other matters reserved.

The statement addresses the energy requirements as set out within the 'Wrexham County Borough Local Development Plan 2013 - 2028' adopted December 2023.

To address policy 'RE1: Development and Renewable Energy/Low Carbon Technology' of the adopted 'Wrexham County Borough Local Development Plan 2013 - 2028', the carbon dioxide emissions are proposed to be reduced in line with the sequence of priorities set out in the policy and energy hierarchy.

The development shall follow the principles of the energy hierarchy to reduce carbon emissions. This shall include measures for demand reduction, improve energy efficiency before the incorporation of solar photovoltaics as the most appropriate low carbon and renewable technologies for the site. The incorporation of air source heat pumps will be re-appraised for each unit at reserved matters application stage as the design progresses.

2. Introduction

2.1 General

This energy statement has been prepared on behalf of RA & CE Platt Ltd and is in support of the planning submission for the development of outline logistics scheme for up to 125,000sqft/ 11,613sqm GEA of employment floorspace Use Classes B1/B2/B8 with ancillary offices and associated landscaping, hardstanding and infrastructure within an approx. 7.98 acres / 3.23 ha of land within Llay Industrial Estate, with all other matters reserved.

The statement addresses the energy requirements as set out within the 'Wrexham County Borough Local Development Plan 2013 - 2028' adopted December 2023.

2.2 Proposed development

The application seeks an outline planning permission for the following:

> *'Outline planning permission with all matters reserved for an industrial development of up to 11,613 sqm / 125,000sqft of Class B1, B2 and / or B8 employment floorspace (including ancillary office accommodation) together with associated infrastructure and works (including estate roads, yards, parking, footpaths, internal hard and soft landscaping and drainage works)'.*

Two indicative layouts for the proposed development (for illustrative purposes only is shown below:

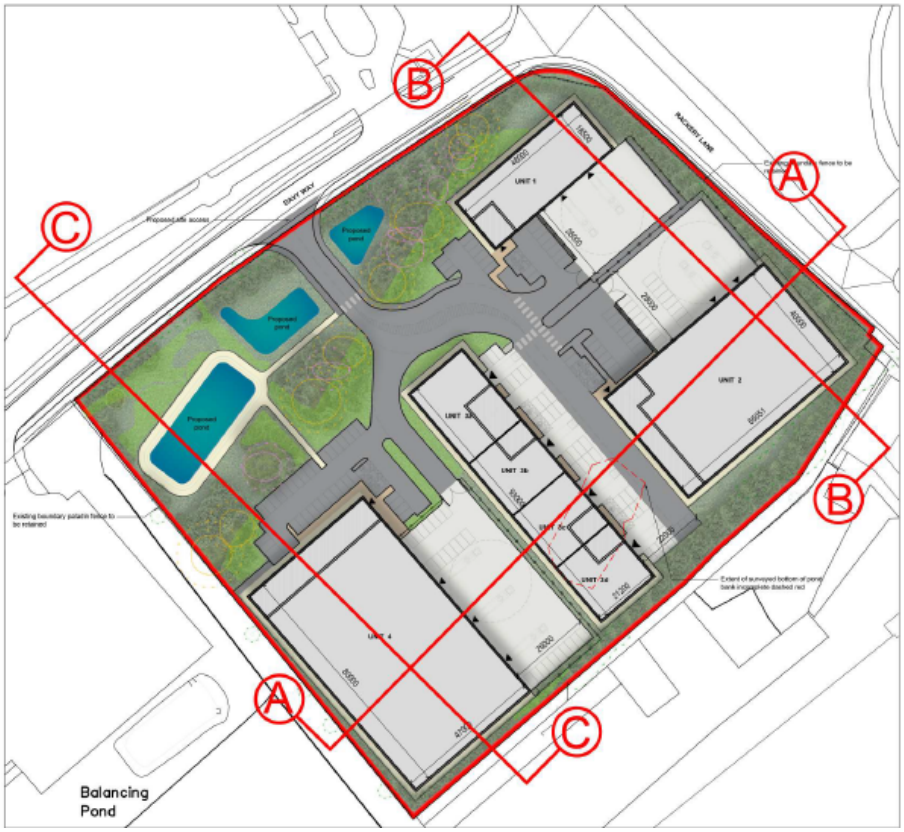


Image 1: Indicative site layout



Image 2: Indicative site layout

3. Policy Review

3.1 General

This section summarises the policy context for the development energy statement, with a focus upon energy and carbon reduction and the various policies from international to local level.

3.2 Future Wales: The National Plan 2040

'Future Wales – The National Plan 2040' is a 20-year national development plan that covers the whole of Wales. It has been produced by Welsh Government and covers the period up to 2040.

The plan seeks to provide a strategy for addressing key national priorities through the planning system. The plan covers big issues including the economy, housing and environment. It shows where nationally significant developments like energy, transport, water and waste projects should take place. It shows where growth should happen, what infrastructure and services are needed and how Wales can help fight climate change. It tries to make the best use of resources, create accessible healthy communities and protect our environment.

As well as covering the big planning issues that affect Wales, the plan will affect the shape and direction of future planning policy in Wales, including Local Development Plans (LDPs).

Future Wales: The National Plan 2040 replaces the previous Wales Spatial Plan. Unlike the Wales Spatial Plan, the National Plan has development plan status and therefore be of greater significance.

The National Plan is a large piece of the planning jigsaw in Wales. The hierarchy of development plans is:

- Future Wales: The National Plan 2040
- Strategic Development Plans (SDPs)
- Local Development Plans (LDPs)

SDPs and LDPs must be consistent with the National Plan. The National Plan will also be relevant to large scale infrastructure projects through the Developments of National Significance (DNS) process. So, whilst the National Plan is a Wales-wide plan, it will inform decisions on nationally significant infrastructure projects and will affect future planning policy at a local level.

The National Plan seeks to provide a Wales where people live and:

- work in connected, inclusive and healthy places.
- in vibrant rural places with access to homes, jobs and services.
- in distinctive regions that tackle health and socio-economic inequality through sustainable growth.
- in places with a thriving Welsh Language.
- and work in towns and cities which are a focus and springboard for sustainable growth.
- in places where prosperity, innovation and culture are promoted.

- in places where travel is sustainable.
- in places with world-class digital infrastructure.
- in places that sustainably manage their natural resources and reduce pollution.
- in places with biodiverse, resilient and connected ecosystems.
- in places which are decarbonised and climate-resilient.

3.3 Local Sustainability Policy

3.3.1 Wrexham County Borough Local Development Plan

The 'Wrexham County Borough Local Development Plan 2013 - 2028' adopted December 2023 contains the following policies relating to Energy and Sustainability:

> Policy RE1: Development and Renewable Energy/Low Carbon Technology
>
> The Council require developers of the Key Strategic Sites and major sites (100 dwellings or more or development exceeding 1000m^2) to incorporate schemes which generate energy from renewable and low carbon technologies unless it is demonstrated that it would not be financially or technically viable to do so. This includes opportunities to minimise carbon emissions associated with the heating, cooling and power systems for new development.
>
> An independent energy assessment investigating the financial viability and technical feasibility of incorporating such schemes will be required to support applications.

4. Sustainability Appraisal

4.1 General

The requirements of policy 'RE1: Development and Renewable Energy/Low Carbon Technology' of the adopted 'Wrexham County Borough Local Development Plan 2013 - 2028' will be addressed in the following sections.

4.2 Energy Hierarchy

The energy hierarchy is a classification of energy strategies, prioritised to assist progress towards a more sustainable energy system. It is represented in the figure below and highlights the priority of each step within the hierarchy as you progress downwards through the strata.

Energy demand reduction provides the greatest opportunity for minimising a building's potential CO_2 emissions. Design strategies typically include building form and fabric measures (passive design) and energy efficient building services (active design). Focusing on form and fabric in particular at an early stage in the build process is often the most cost-effective way to reduce energy consumption and CO_2 emissions. Following demand reduction measures, the residual CO_2 emissions can be reduced through low or zero carbon technologies.

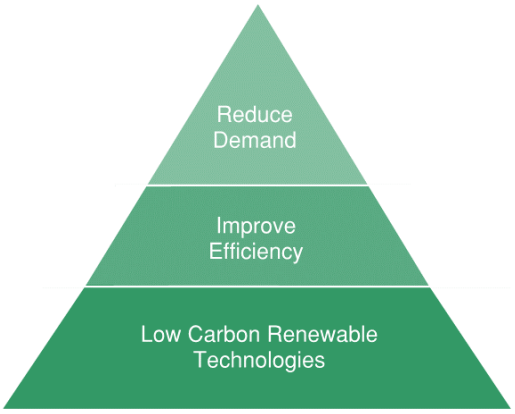


Image 3: Energy hierarchy

Prioritising a reduction in overall energy demand is the most effective way in which to minimise environmental impacts associated with energy use. The use of efficient technologies and renewables to supply the remaining load results in lower greenhouse gas emissions as compared with the use of conventional alternatives.

Cost effective measures can be adopted to reduce energy demand without making a significant impact on the design, appearance or character of the building. It is intended to implement energy efficiency measures to improve on the minimum standards required in Part L of the Building Regulations.

In line with policy 'RE1: Development and Renewable Energy/Low Carbon Technology' of the adopted 'Wrexham County Borough Local Development Plan 2013 - 2028', the following sections detail how the carbon dioxide emissions are proposed to be reduced in line with the sequence of priorities set out in the policy and energy hierarchy.

4.2.1 Energy reduction

In order to reduce overall energy demand the following U-values and air permeability will be targeted to increase the thermal efficiency of the building envelope. These figures meet or exceed the limiting notional fabric values as stated within Part L of the Building Regulations. They will be no higher than those listed in table 1 below.

Element	U-value
Ground Floor	0.15
External Walls	0.22
Pitched Roof	0.16
Flat Roof	0.18
Windows	1.40
Rooflights	1.60
Vehicle Access Door	1.30
Air Permeability	5

Table 1: Proposed building envelope values

4.2.2 Energy efficiency

Once the heat loss through the external building envelope has been reduced through passive design measures, the efficiency of the delivered building services can be addressed to further reduce the heating, ventilation, cooling and lighting demand within a building. The following active design measures are proposed to improve the efficient use of energy at the development:

- Improved efficiency of the space heating, cooling and hot water.
- Use of energy efficient LED lighting.
- Use of intelligent lighting controls.
- Use of variable speed pumps, fans and drives to match supply and demand.
- Improve efficiency of heat recovery to mechanical ventilation systems.

The efficiency of the proposed building services shall meet or exceed the limiting values as stated within Part L of the Building Regulations.

4.2.3 Renewable and low carbon technologies

The feasibility of a number of potentially appropriate renewable and low carbon energy technologies have been discussed for the proposed development, these are detailed in table 2 below.

Technology	Suitable?	Observations
Air source heat pumps	X	Could be included within the energy efficient design for installation to office and core areas to provide heating and cooling.
Ground source heat pumps	X	Not considered feasible due to high capital costs. Air source heat pumps are preferred heat pump solution.

Biomass hot water	X	May affect lettability for potential future occupiers as biomass is not a common heating solution.
Solar thermal water heating	X	Proposed hot water generation is likely to be instant electric which is not easily compatible with solar thermal water heating.
Solar Photovoltaics	√	Roof space available, and proposed for the scheme to comply with building regulations.
Combined Heat and Power (CHP)	X	No constant heating baseline to make CHP viable solution.
Wind turbines	X	Solar photovoltaics preferable option.

Table 2: Potential renewable and low carbon energy technologies

The most suitable option renewable and low carbon energy option for the industrial units would be the incorporation of a solar photovoltaic array to generate zero carbon energy for each individual unit. The proposed layout of solar photovoltaics will be determined at reserved matters stage submission.

Air and ground source heat pumps could be installed, however only the Air Source Heat Pump (ASHP) system is considered feasible due to high capital expenditure requirements of ground source systems.

Dependent upon the final layout and scope of the developer works for the speculative units, it may be feasible for an ASHP VRF system to provide heating and cooling to the office and core areas. This technology is considered low carbon when in heating mode, and will provide a highly efficient solution for the conditioning of the office spaces. The incorporation of air source heat pumps will be re-appraised for each unit at reserved matters application stage as the design progresses.

Potential carbon emission savings from biomass are significant, however biomass heating plant and storage area would reduce the lettable space within the building. It is also not considered a common heating solution and may impact the potential lettability of the units.

Potential energy saving from solar thermal water heating could be achieved, however it is likely the proposed domestic hot water generation will be via instant electric hot water units, which are not easily compatible with a solar thermal water heating system. This could be revisited later in the design process if the solution changes.

A Combined Heat and Power (CHP) solution is not deemed feasible for the proposed development as it requires a steady baseload of heat to increase the running hours and justify the economical viability of this solution.

A wind turbine would be able to provide zero carbon energy, however the solar photovoltaics are deemed the preferable option.

4.2.4 Conventional energy

Once the energy consumption of the proposed development has been reduced via energy reduction mitigation, energy efficiency measures are introduced before renewable and low carbon technologies are implemented, the residual energy will be met via conventional grid electricity.

This is in line with the government's Future Homes and Buildings Standard 2025, a key objective of which is the aim to make homes and buildings net zero carbon ready, meaning they will be fully electric and need no retrofitting to produce zero carbon emissions as the electricity grid decarbonises.

4.2.5 Summary

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